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ABSTRACTS

The 47th ESPN Congress in Porto, Portugal, September 18-20, 2014

COMMITTEES AND ORGANIZATION

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SCIENTIFIC PROGRAM

Thursday, September 18th, 2014

Timing **9.00** **10.30**	**INFANTE HALL** **CME 1** **ESPN Working Group** **CAKUT/UTI/Bladder Dysfunction** **Chair Person** **Stephanie WEBER (Germany)** **Giovanni MONTINI (Italy)** Adrian WOOLF (UK) *Genetics of Bladder Dysfunction Disorders* Giovanni MONTINI (Italy)		**D. MARIA HALL** **CME2** **ESPN Working Group** **Dialysis** **Chair Person** **Alberto EDEFONTI (Italy)** **Constantinos STEFANIDIS (Greece)** Fabio PAGLIALONGA (Italy) *Clinical and Technical Aspects of Hemodialysis in Small Children*
	Urinary Tract Infections in Children with CAKUT and Introduction of the PREDICT Trial Karlijn VAN STRALEN (Netherlands) *Progression of Renal Insufficiency in Children with CAKUT – Results of the ERA-EDTA Registry*		Rukshana SHROFF (UK) *Hemodiafiltration Principles and Advantages Over Conventional HD* Michel FISCHBACH (France) *Importance of Varying Dwell Time and Fill Volume to Optimize Volume Control in Children on Peritoneal Dialysis* Constantinos STEFANIDIS (Greece) *Strategies of Prevention and Management of Encapsulating Peritoneal Sclerosis in Children on Peritoneal Dialysis*
Timing **11.00** **14.00**		**D. MARIA HALL** **EWOPA/ESPN Joint Symposium** **11.00-14.00** **Part I** **Chair Person** **Christopher REID (UK)** **Pierre COCHAT (France)** Christopher REID (UK) *Overview of EWOPA History, Activity, Priorities* Pierre COCHAT (France) *Global International Issues in Pediatric Nephrology* Dirk BETHE (Germany) *Nonadherence; Very Common, Often Frustrating, Always Complex Update on The*	**INFANTE HALL** **Pediatric Urology Session** **Vesicoureteral Reflux** **Medical vs Surgical Treatment** **Chair Person** **Ana FROGOSO (Portugal)** **Giovanni MONTINI (ITALY)** Henri STEYART (Belgium) *Medical vs Surgical Treatment Long Term Outcomes* Tej K. MATTOO (USA) *Antimicrobial Prophylaxis for Children with Vesicoureteral Reflux* Daniela PINTO (Portugal) *Postnatal Diagnosis of VUR – The Role of*

		Phenomenon, The Etiology And Adherence Support Measures Frances FLINTER (UK) *Ethical Issues of Genetic Testing and Diagnosis* **LUNCH BREAK (12.30-13.00)** **Part II** **Chair Person** **Elena LEVTCHENKO (Belgium)** **Alberto CALDAS AFONSO (Portugal)** **Oral Presentations (3 Abstracts)** **1432** **Long-term Quality of Life and Social Outcome of Childhood End-stage Renal Disease** LIDWIEN TJADEN 1 JUDITH VOGELZANG 1 KITTY JAGER 2 KARLIJN VAN STRALEN 2 HELEEN MAURICE-STAM 3 MARTHA GROOTENHUIS 3 JAAP GROOTHOFF 1 **877** **Neurodevelopmental Long-term Outcome in Children After Hemolytic Uremic Syndrome** GIUSEPPINA SPARTÀ 1 BEA LATAL 2 SAMUEL NEF 1 THOMAS J. NEUHAUS 3 GUIDO F. LAUBE 1 KATHRIN	*Magnetic Resonance* Henri STEYART (Belgium) *Minimally Invasive Surgery for Surgical Treatment of VUR The Role of Robotic Surgery in Pediatric Urology* Discussion **LUNCH BREAK (12.30-13.00)**
		BUDER 1 **775** **Cortical Arousals and Periodic Limb Movements During Sleep are Associated with Lower Quality of Life in Children with Monosymptomatic Nocturnal Enuresis.** CHARLOTTE VAN HERZEELE 1 KARLIEN DHONDT 3 ANN RAES 1 ALBERT-LUITZEN GROEN 2 SANNE ROELS 4 PIET HOEBEKE 2 JOHAN VANDE WALLE 1	

14.30 16.00	ARQUIVO HALL **ESPN- ERA/EDTA Registry** **Chair Person** **Franz SCHÄFER (Germany)** **Karlijn VAN STRALEN (Netherlands)** Nick CHESNAYE (Netherlands) *Differences in Pediatric RRT Policies Across European Countries* Djalila MEKAHLI (Belgium) *RRT in Children with Polycystic Kidney Disease* Enrico VIDAL (Italy) *Infant dialysis: The European Experience* Tuulla HOLTTÄ (Finland) *Outcome of Finnish Type Nephrotic Syndrome in Children from Finnland and Other European Countries*		
14.30 15.30	INFANTE HALL **RAPTOR SATELLITE SYMPOSIUM**		
16.00 17.30	INFANTE HALL **CERTAIN** **Registry Transplantation** **Chair Person** **Burkhard TÖNSHOFF** **(Germany)** **Oguz SOYLEMEZOGLU**		D. MARIA HALL **CME 3** **ESPN Working Group** **CKD and Metabolic Bone Disease** **Chair Person** **Dieter HAFFNER**
	(Turkey) Britta HÖCKER (Germany) *Antiviral Prophylaxis for CMV – An Analysis of The CERTAIN Registry* Hans HIRSCH (Switzerland) *BK Nephropathy – Current Guidelines and New Study Proposal for Pediatric Renal Transplant Recipients* Luca DELLO STROLOGO (Italy) *Risk Factors and Molecular Pathogenesis of EBV-Related PTLD in Pediatric Renal Transplant Recipients*		**(Germany)** **Elke WÜHL (Germany)** Sevcan BAKKALOGLU (Turkey) *Bone Biopsy: Uses and Limitations* George REUSZ (Hungary) *Assessment of Vessels in CKD* Franz SCHÄFER (Germany) *Bone and Vessels in CKD: How To Take Care for Both*
17.30 18.00	**COFFEE BREAK**		
18.00 19.00	ARQUIVO HALL **OPENING CEREMONY** **State of The Art Lecture** **Chair Person** **Alberto CALDAS AFONSO (Portugal)** **Rosanna COPPO (Italy)** **Ryszard GRENDA (Poland)** Otto MEHLS (Germany) *Changing Pattern of Paediatric Nephrology in Europe in Last Three Decades*		
19.00 21.00	**WELCOME MEETING**		

Timing 7.00 8.00	ARQUIVO HALL **Master Class 1** **Hypertension** **Moderators** **Mieczyslaw** **LITWIN (Poland)**	INFANTE HALL **Master Class 2** **Therapeutic Drug Monitoring in Pediatric Nephrology**	D. MARIA HALL **Master Class 3** **Nephro-oncology** **Moderators** **Roderick SKINNER (UK)** **Laurence DUBOURG (France)**
	Janusz FEBER (Canada) Janusz FEBER (Canada) *Blood Pressure (BP) Assessment - from BP Level to BP Variability?* Mieczysław LITWIN (Poland) *Primary Hypertension is an Immuno-Metabolic Disease Complicated by Blood Pressure Elevation*	**Moderators** **Janne BACKMAN (Finland)** **Etienne BÈRARD (France)** Janne BACKMAN (Finland) *Developmental Pharmacokinetics and Pharmacogenetics of Cyclosporine in Pediatric Renal Transplant Patients* Celine VERSTYUFT (France) *Pharmacogenetics of Tacrolimus and Mycophenolic Acid* Etienne BÈRARD (France) *Drugs and The Kidney – Specific Aspects of Pharmacotherapy in Children and in Renal Diseases*	Laurence DUBOURG (France) *Early Renal Dysfunction During The Treatment of Childhood Malignancy – a Paediatric Nephrologist's Views on Mechanisms, Evaluation and Management* Roderick SKINNER (UK) *Late Renal Toxicity of Treatment for Childhood Malignancy – a Paediatric Oncologist's Thoughts About Risk Factors, Surveillance and Long-Term Outcomes*
8.15 **9.00**	ARQUIVO HALL **Plenary Lecture 1** ***Pathomechanism of HUS*** **Chair Person** **Chantal LOIRAT (France)** *Speaker* *Christoph Licht (Canada)*		
9.00 **10.30**	D.MARIA HALL **Symposium 1** **ESPN Working Group Immune-mediated Renal Diseases** **Haematuria/IgAN/Vasculit**	ARQUIVO HALL **Symposium 2** **Kidney Injury in Young Children** **Chair Person**	INFANTE HALL **Symposium 3** **ESPN Working Group Inherited Diseases** **Chair Person**
	is **Chair Person** **Alessandro AMORE (Italy)** **Seza OZEN (Turkey)** Jesus EGIDO (Spain) *Haematuria The Forgotten CKD Factor?* Jean-Claude DAVIN (Netherlands) *Henoch-Schoenlein Purpura in Children Expert Opinion Versus Guidelines*	**Stephen MARKS (UK)** **Christer HOLMBERG (Finland)** Rachel VIEUX (France) *Renal Concequences of Prematurity* Liane CORREIA COSTA (Portugal) *Inflammation and Vascular Injury-Impact on The Young Kidney*	**Martin KONRAD (Germany)** **Francesco EMMA (Italy)** Shamima RAHMAN (UK) *Mitochondrial Disease As The Cause of ERSD* Francesco EMMA (Italy) *Renal Dysfunction in Methyl-Malonic Acidurias* Hannu JALANKO (Finland) *Combined Liver-Kidney Transplantation in Genetic Diseases*

	Constatinos DELTAS (Cyprus) *Molecular Genetics in The Diagnosis Of Familial Haematuria* **Best Relevant Abstract** ***1231*** ***Toll-like Receptors Expression and Switch From Proteasome to Immunoproteasome in Children with Henoch-Schoenlein Purpura and Primary IgA Nephropathy.*** *LICIA PERUZZI 1 MARIA ELENA DONADIO 1 ELISA LOIACONO 1 RACHELE GALLO 1 ALESSANDRO AMORE 1 ROBERTA CAMILLA 1 FEDERICA CHIALE 1 CARLA GUIDI 2 MARGHERITA CONRIERI 3 MANUELA BIANCIOTTO 3 FRANCESCA MARIA BOSETTI 3 INNA LASTAUKA 4 ROSANNA COPPO 1*	Rezan TOPALOGLU (Turkey) *Young Children With Chronic Kidney Disease (CKD) – Are They Different?* **Best Relevant Abstract** ***1322*** ***Outcome in Children Starting Renal Replacement Therapy Before 24 Months Of Age in France.*** *JULIEN HOGAN 1 CECILE COUCHOUD 1 MARI E-ALICE MACHER 2*	**Best Relevant Abstract** ***820*** ***TRPV1 Dysfunction in Cystinosis Patients Carrying The 57kb Deletion*** *BUNTINX LINDE 1 DE HOON JAN 1 VOETS THOMAS 1 VERMEERSCH STEVE 1 MORLION BART 1 JANSSEN MIRIAN 2 CORNELISSEN MARLIES 2 LEVTCHENKO ELENA 1*
10.30 11.15	**COFFEE BREAK**		
10.30 11.15	**INFANTE HALL** **RAPTOR MINI SYMPOSIUM**		
11.15 12.45	**D. MARIA HALL** **Oral Communications (OC1)** **Chair Person** **Johan VANDE WALLE (Belgium)** **Aleksey TSYGIN (Russia)** *956,1031,1270,1439,1601,1625*	**ARQUIVO HALL** **Oral Communications (OC2)** **Chair Person** **Augustina JANAUSKIENE (Lithuania)** **Anna BJERRE (Norway)** *829,876,890,892,1147,1562*	**INFANTE HALL** **Oral Communications (OC3)** **Chair Person** **Necla BUYAN (Turkey)** **Eric GIRARDIN (Switzerland)** *1081,1196,1418,1465,1542,826*
12.45 14.15	**LUNCH AND POSTER VIEWING (PP1-PP3)** **Moderators** **PP1** **Lutz WEBER (Germany)** **Dorota DROŻDŻ (Poland)** *828,844,993,1117,1199,1393,1485,1518,1553* **PP2** **Amira PECO-ANTIC (Serbia)** **Tim ULINSKI (France)** *824,936,1095,1149,1165,1202,1211,1272,1400* **PP3** **Teresa JUNGRAITHMAYR (Austria)** **Margarida ABRANCHES (Portugal)** *833,925,932,945,1046,1220,1298,1329,1578*		

12.45 14.15	**ARQUIVO HALL ALEXION SATELLITE SYMPOSIUM**		
14.15 15.45	**D.MARIA HALL Symposium 4 AKI Chair Person**	**ARQUIVO HALL 1st ERA-EDTA/ESPN Joint Symposium Chair Person**	**INFANTE HALL Symposium 5 ESPN Working Group Nephrotic Syndrome**
	Bruno RANCHIN (France) Lesley REES (UK) Stefano PICCA (Italy) *Peritoneal and Extracorporeal Dialysis in Pediatric AKI: Pros And Cons* Theophile GAILLOT (France) *French trial – Prescription Of Dialysis in Pediatric AKI (EPURE Trial)* Stuart GOLDSTEIN (USA) *CRRT Techniques in Pediatric AKI* **Best Relevant Abstract** ***847 Outcome of Acute Kidney Injury in Pediatric Patients Admitted to the Intensive Care Unit*** *JAMEELA KARI 1 MOHAMMED SHALABY 1 NORAH AL-KHATHLAN 1 OSAMA SAFDER 1 YOUSEF FARAG 1 AJAY SINGH 1*	**Rosanna COPPO (Italy) Markus KETTELER (Germany)** Christer HOLMBERG (Finland) *How to Organize Transitional Clinic (to Adult Nephrology)* Markus KETTELER (Germany) *CKD-MBD in Children/Adults* Rosanna COPPO (Italy) *Starting Early; Life-Time Risks of Health and The Potential Benefits of Early Prevention* Peter HOYER (Germany) *Clinical Trials on CKD at Pediatric Age; Barriers and Solutions*	**Chair Person Georges DESCHÈNES (France) Markus KEMPER (Germany)** Nicholas WEBB (UK) *Idiopathic Nephrotic Syndrome of Immune Origin; Strategies to Stop The Disease Steroid Therapy at The First Flare* Jerome HARAMBAT (France) *Cyclophosphamide in Nephrotic Syndrome* Markus KEMPER (Germany) *Rituximab in Nephrotic Syndrome* **Best Relevant Abstract** ***1177 B-cell Repertoire Reconstitution After Rituximab Treatment in Steroid-Dependent Idiopathic Nephrotic Syndrome*** *MANUELA COLUCCI 1 FRANCESCO EMMA 1 MARINA VIVARELLI 1*
15.45 16.00	**COFFEE BREAK**		
16.00 17.30	**ARQUIVO HALL Oral Communications (OC4) Chair Person Janusz FEBER (Canada) Mieczyslaw LITWIN (Poland) 849,882,995,1345, 1371,1442**	**D. MARIA HALL Oral Communications (O C5) Chair Person Sverker Hansson (Sweden) Tomas Seeman (Czech R) 770,1132,1194,1246, 1314,1586**	**INFANTE HALL Oral Communication (OC6) Chair Person Amal BOURQUIA (Algerie) Fernando COELHO ROSA (Portugal) 858,974,985,1321,1394 1431**
17.30 18.30	**ARQUIVO HALL ESPN GENERAL ASSEMBLY**		
20.00	**GALA DINNER**		

Timing			
7.30 8.30		**ARQUIVO HALL** **Master Class 4** **Renal Transplantation** **Moderators** **Burkhard TÖNSHOFF (Germany)** **Luca DELLO STROLOGO (Italy)** Caner SÜSAL (Germany) *TTS Consensus Guidelines For Post-Transplant Antibody Monitoring* Stephen MARKS (UK) *Clinical Relevance of Antibody-Mediated Rejection and Strategies for Prevention* Burkhard TÖNSHOFF (Germany) *Treatment Options for Antibody-Mediated Rejection*	**INFANTE HALL** **Master Class 5** **RTA/electrolytes** **Moderators** **Gema ARICETA (Spain)** **Bernd HOPPE (Germany)** Rosa VARGAS-POUSSOU (France) *Renal Tubular Acidosis – Mechanisms* Gema ARICETA (Spain) *RTA - clinical aspects* Martin KONRAD (Germany) *Disorders of Magnesium*
8.30 **9.15**	**ARQUIVO HALL** **Plenary Lecture 2** ***Genetics in Clinical Practice of Pediatric Nephrologist ?*** **Chair Person** **Elena LEVTCHENKO (Belgium)**		

	Speaker Stefanie WEBER (Germany)		
9.15 **10.45**	**D.MARIA HALL** **Symposium 6** **Cystic Renal Diseases** **Chair Person** **Velibor TASSIC (Macedonia)** **Remi SALOMON (France)** Elena LEVTCHENKO (Belgium) *Many Ways to Form A Renal Cyst* Edgar ALMEIDA (Portugal) *Renal cystic disease presentation in adults vs children* Peter HOYER (Germany) *Pharmacological Interventions in ADPKD - Where Are We Now ?* John Bissler (USA) *Tuberous Sclerosis Renal Disease: A Changing Paradigm* **Best Relevant Abstract** ***1602*** ***Comprehensive Genetic Testing in more than 200 Patients with Early and Severe Polycystic Kidney Disease Underscores The Importance of Phenocopies and a Dosage-Sensitive Network*** *EVA DECKER 1 STEFFEN NEUBER 1 TOBIAS EISENBERGER 1 CHRISTIAN DECKER 1 ELISABETH OTT 2 CARINA*	**INFANTE HALL** **Symposium 7** **Renal Pathology** **Chair Person** **Jan BECKER (Germany)** **Vera KOCH (Brazil)** Montserrat ANTON GAMERO (Spain) *Renal Biopsy in Children. Current Perspectives.* Fernando NOLASCO (Portugal) *Renal biopsy in nephrotic syndrome* Alexander KOLSKY (Czech R) *Changing Pattern of Renal Pathology - Czech Registry of Renal Biopsies (Pediatric Experience)* Jan BECKER (Germany) *Renal Graft Pathology - Current Status of Banff Classification* **Best Relevant Abstract** ***1307*** ***Percutaneous Renal Biopsy in Children: Safety and Efficiency, Evaluation of Professional Practice in Single-Center*** *DE MACEDO ALIX 1 GARAIX FLORENTINE 1 ROUSSET-ROUVIERE CAROLINE 1 DANIEL LAURENT 1 TSIMARATOS MICHEL 1*	**ARQUIVO HALL** **Symposium 8** **ESPN Working Group** **CKD-MBD** **Vasculopathy in CKD** **Chair Person** **Georgy REUSZ** **(Hungary)** **Fernando SANTOS** **(Spain)** Debate 1: Vit D Uwe QUERFELD (Germany) Rukshana SHROFF (UK) *Vitamin D - Is This The New Wonder Drug We Have All Been Waiting for?* Lesley REES (UK) *The Demise of Calcium Based Phosphate Binders – Is This Appropriate for Children?* Fernando SANTOS (Spain) *Growth in Renal Diseases* **Best Relevant Abstract** ***971*** ***Bone Metabolism in Children with Autosomal Dominant Polycystic Kidney***

	KRAMER 2 HANNO J. BOLZ 1 CARSTEN BERGMANN 3		***Disease*** *STEPHANIE DE RECHTER 1 JUSTINE BACCHETTA 2 LAURENCE DUBOURG 2 PIERRE COCHAT 2 MARIA VAN DYCK 1 JEAN DE SCHEPPER 3 PIETER EVENEPOEL 4 ELENA LEVTCHENKO 1 DJALILA MEKAHLI 1*
10.30 11.00	**COFFEE BREAK**		
11.00 12.30	**ARQUIVO HALL** **Oral Communications (OC7)** **Chair Person** **Aleksandra ŻUROWSKA (Poland)** **Radovan BOGDANOVIC (Serbia)** *747,917, 934,972,1296,1424*	**INFANTE HALL** **Oral Communications (OC8)** **Chair Person** **Lars PAPE (Germany)** **Rosario STONE (Portugal)** *1010,1233,1342,1390, 1528,1564*	**D. MARIA HALL** **Oral Communications (OC9)** **Chair Person** **Fatos YALCINKAYA (Turkey)** **Marijan SARAGA (Croatia)** *798,873,913, 1070,1161 1343*
12.30 14.00	**LUNCH AND POSTER VIEWING (PP4-PP6)** **Moderators** **PP4** **Larisa PRİKHODİNA (Russia)** **Thomas NEUHAUS (Switzerland)** *779, 813,855,907,938,1181,1193,1475,1609* **PP5** **Jiri DUSEK (Czech R)** **Helena PINTO (Portugal)** *778,804,816,827,957,998,1263,1433,1554* **PP6** **Britta HÖCKER (Germany)** **Paula MATOS (Portugal)** *717,740,773,791,904,1123,1229,1315,1622*		
14.00 15.30	**INFANTE HALL** **Oral Communications (OC10)** **Chair Person** **Gianluigi ARDISSINO (Italy)** **Ana TEIXEIRA (Portugal)** *718,807,867,954,1022 1023*	**ARQUIVO HALL** **Oral Communications (OC11)** **Chair Person** **Kjell TULLUS (UK)** **Helena JARDIM (Portugal)** *716,1131,1201,1440 1583,1590*	**D.MARIA HALL** **Oral Communications (OC12)** **Chair Person** **Nicholas WEBB (UK)** **Rukshana SHROFF (UK)** *762,799,832,966, 1130, 1454*
15.30 16.00		**ARQUIVO HALL** **What's hot - What's new?** **Chair Person** **Alberto CALDAS AFONSO (Portugal)** **Pierre COCHAT (France)** Speaker Rosanna COPPO (Italy) *What's hot - What's new in paediatric nephrology 2014?*	
16.00	**CLOSING CEREMONY**		

ORAL PRESENTATIONS

O01

Long-Term Quality of Life And Social Outcome of Childhood End-Stage Renal Disease

Lidwien Tjaden [1], Judith Vogelzang [1], Kitty Jager [2], Karlijn Van Stralen [2], Heleen Maurice-stam [3], Martha Grootenhuis [3], Jaap Groothoff [1]
[1] *Department Of Pediatric Nephrology, Emma Childrens Hospital, Academic Medical Center, The Netherlands* [2] *Department Of Medical Informatics, Academic Medical Center, Amsterdam, The Netherlands* [3] *Psychosocial Department, Emma Children's Hospital, Academic Medical Center, Amsterdam, The Netherlands*

Introduction: Overall prognosis of paediatric end stage renal disease (ESRD) has improved dramatically over time but little is known about social functioning and quality of life (QoL) on the long term. In this 10-year extension of the Late Effects of Renal Insufficiency in Children (LERIC) study, we assessed QoL and social status after 30 years of renal replacement therapy (RRT) and explored determinants of QoL.
Material and methods: The cohort comprised all Dutch patients, born <1979, who started RRT at age <15 years in 1972-1992. All patients still alive in 2010 were asked to complete questionnaires on QoL (RAND-36) and socio-demographic outcomes. Scores were compared with those in the age-matched general population and with previous patient scores obtained in 2000. We performed logistic regression analysis for prediction of QoL outcomes.
Results: 89 out of 152 patients still alive in 2010 participated. Compared with the general population, QoL was more often impaired in dialysis patients for most physical domains, in transplanted patients only on general health perception. Both transplanted and dialysis patients had normal or high scores on mental health. Scores in most physical domains were lower than in 2000. Patients were less often employed (61.8% vs. 81.0%), had less often offspring (31.5 vs. 64.8%) and less often had an income equal to- or above average (34.8% vs. 61.1%) compared to the general population. Disabilities, co-morbidity and unemployment were associated with impaired QoL.
Conclusions: After 30 years of RRT, adult survivors of paediatric ESRD have an impaired physical, but a good mental QoL. The decrease of general health perception and physical functioning over time is worrying and may further hamper employment status and social functioning of these relatively young patients.

O02

Neurodevelopmental Long-Term Outcome in Children After Hemolytic Uremic Syndrome

Giuseppina Spartà [1], Bea Latal [2], Samuel Nef [1], Thomas J. Neuhaus [3], Guido F. Laube [1], Kathrin Buder [1]
[1] *University Children Hospital Zurich Pediatric Nephrology Unit Switzerland* [2] *University Children Hospital Zurich Child Development Center Switzerland* [3] *Children Hospital Lucerne Switzerland*

Introduction: Haemolytic uremic syndrome (HUS) is a multiorgan and life-threatening disease, characterized by haemolytic anaemia, thrombocytopenia and acute renal injury and may result in long-term renal and extrarenal sequelae. Studies reporting on neurodevelopmental outcome after HUS are scarce and suggest a normal neurocognitive outcome. However, a trend towards impaired full scale and verbal comprehension IQ in these children is also described. Data on neuromotor outcome are limited to information on impaired fine motor skills in children with history of HUS and severe central nervous system (CNS) involvement. To investigate the neurodevelopmental long-term outcome in children after HUS and to compare outcome dependent on CNS involvement during the acute episode of HUS.
Material and methods: A single-center retrospective cohort of 47 children was examined at a median age of 10.6 years (6 – 16.9) and a median follow-up of 7.8 years (0.4 – 15.3) after HUS. Intellectual and neuromotor performance were assessed with the German version of the Wechsler Intelligence Scale 4th version and the Zurich Neuromotor Assessment, respectively. The occurrence of neurological symptoms during the acute phase of HUS was evaluated retrospectively.
Results: Mean IQ was within the normal range (median full-scale IQ 104, 54 – 127). Neuromotor performance was significantly poorer in the domains "adaptive fine", "gross motor", "static balance" (all $p < 0.05$) and "associated movements" ($p < 0.001$). Only the "pure motor" domain was within normal range. Neurological symptoms occurred in 16/47 patients (34%) during the acute episode of HUS. Neurodevelopmental outcome was not significantly different between children with versus without CNS involvement.
Conclusions: Follow-up of children after HUS showed a favourable cognitive outcome. Neuromotor outcome, however, was impaired. Neurological impairment during the acute episode of HUS was not predictive of outcome. Long-term cognitive and neuromotor examination of children with a history of HUS might be important for early detection of motor deficits in order to introduce appropriate therapeutic interventions.

O03

Cortical Arousals And Periodic Limb Movements During Sleep Are Associated With Lower Quality Of Life In Children With Monosymptomatic Nocturnal Enuresis

Charlotte Van Herzeele [1], Karlien Dhondt [3], Ann Raes [1], Albert-luitzen Groen [2], Sanne Roels [4], Piet Hoebeke [2], Johan Vande Walle [1]
[1] *Pediatric Nephrology, University Hospital Ghent, Belgium* [2] *Pediatric Urology, University Hospital Ghent, Belgium* [3] *Centre For Neurophysiological Monitoring (cnm), University Hospital Ghent, Belgium* [4] *Data-analyses, University Ghent, Belgium*

Introduction: To investigate whether cortical arousals and periodic limb movements (PLMS) during sleep are related to daytime psychological functioning in children with monosymptomatic nocturnal enuresis (MNE) based on nocturnal polyuria (NP).
Material and methods: Thirty children (7 girls) 6 to 16 years (mean 10.43y, SD (+/-3.08)) with MNE and NP referred to a tertiary enuresis centre were included. This multi informant multi method study includes overnight video-polysomnography, questionnaires, clinical interviews and neuropsychological testing.
Results: An increase in PLMS and in cortical arousals were both associated with an increase of the score on the Pediatric incontinence Quality of life questionnaire (PinQ), indicating a lower quality of life (QoL), according to the child (respectively $\rho=0.517$, $p<0.01$; $\rho=0.431$, $p<0.05$)). There is a positive linear relationship between the PLMS and rulebreaking behaviour according to the parents ($\rho=0.413$, $p<0.05$). There is a positive linear correlation between PLMS and sustained attention ($\rho=0.388$, $p<0.05$). Cortical arousals have a negative linear relationship with planning problems, an executive function, according to the teachers ($\rho=-0.409$, $p<0.05$).
Conclusions: This study clarifies the relationship between sleep parameters and psychological functioning of the child with MNE according to the child, the parents and the teachers. In children with MNE and NP, PLMS and cortical arousals are both associated with a lower QoL of the child.

O04

Toll-like Receptors Expression And Switch From Proteasome To Immuneproteasome In Children With Henoch-schoenlein Purpura And Primary Iga Nephropathy

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Introduction: Henoch Schoenlein Purpura (HSP) nephritis and primary IgA Nephropathy (pIgAN) present with glomerular IgA deposits, but differ for clinical features. The suspected involvement of different immune system pathways is largely unknown. Innate immunity is mostly activated through Toll-Like Receptors (TLR) ligation, which activates the interferons pathway, with dendritic cell maturation and switch of the proteasome (PS) to immuneproteasome (iPS), by substituting 3 catalytic units beta1, 2 and 5 with 3 new ones LMP2, LMP7 and MECL-1. This modification confers an optimal catalytic property for peptide presentation to MHC Class I, leading to T lymphocyte activation.
Material and methods: This study was aimed at investigating TLR expression and PS/iPS switch in 63 children with HSP with/without renal involvement and in 25 pIgAN. Real time PRC (Taqman) was used to quantify mRNA levels in peripheral blood mononuclear cells (PBMC).
Results: The expression of mRNAs encoding for TLR4 in both HSP and pIgAN was higher than in controls (HC) (HSP 2.20 ± 0.27 ; pIgAN 2.0 ± 0.39; both $p<0.04$ vs HC 1.42 ± 0.08), without significant difference between the two diseases. Conversely, a significant difference was found in the expression of TLR2mRNA, higher in children with HSP than in those with pIgAN (HSP 2.36 ± 0.31; pIgAN 1.27 ± 0.23, $p=0.035$) .A switch from PS to iPS was detected only in PBMC of HSP (LMP2/ β1) (HSP 1.23 ± 0.66; HC 0.91 ± 0.42, $p=0.008$) and it was correlated with the increase in TLR2mRNA ($p<0.01$
Conclusions: Children with HSP and pIgAN present with similar signs of engagement of TLR4 in PBMC. The increased immuneproteasome switch, correlated with TLR2 activation may suggest an innate immunity pathway peculiar to HSP vasculitic presentation.

O05
Outcome In Children Starting Renal Replacement Therapy Before 24 Months Of Age In France

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Introduction: In this national cohort study, we evaluate the outcome of children starting renal replacement therapy (RRT) between 0 and 24 months old and the risk factors of death and graft loss.
Material and methods: All children reaching ESRD before 24 months old and between 01/01/1992 and 31/12/2012 were included through the national ESRD registry (REIN) and the national transplantation database. The primary endpoints were 1) patient survival and 2) 10 years' graft survival. The Kaplan-Meyer method and log-rank test were used for univariate analysis, Cox model for multivariable analysis.
Results: 244 patients were included (69% boys, median age 10.5months, IQ[5.8-15.8]). Ten years' survival rate was 85.8%. Factors associated with an increased risk of death were hemodialysis as first treatment modality (HR 2.6[1.01-6.49] vs. peritoneal dialysis (PD)) and presenting a hereditary nephropathy (HR 3.13 [0.92-10.64] vs. uropathy-dysplasia). After reaching ESRD, the percentage of time spent on dialysis is conversely related to the risk of death (0-35% HR 0.04[0.01-0.18], 35-99% HR 0.19[0.06-0.58] vs. dialysis only). There is a trend towards a decrease in risk with age ([6-18 months[HR 0.62[0.25-1.50], [18-24mois] HR 0.29[0.06-1.39] vs. <6mois). 174 patients were transplanted during follow-up (median age at transplantation 10.5 months, IQ[5.8-15.8]). Ten years' graft survival was 73.8%. Factors associated with a decreased graft survival (univariate analysis) were a recipient weight <10kg ($p=0.02$), a donor weight over five time the recipient' one ($p=0.04$) and the number of HLA DR mismatch ($p=0.01$). There was a trend towards an increase in graft survival over time (5 years graft survival 71.2% [59.9%-82.4%] between 1992 and 2002 vs. 88.1% [81.1%-95.1%] between 2002 and 2012).
Conclusions: We observed an overall good outcome in patients reaching ESRD between 0 and 2 years in France. The use of PD as first RRT and a rapid access to renal transplantation seem to be associated with a better survival.

O06
Trpv1 Dysfunction In Cystinosis Patients Carrying The 57kb Deletion

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Introduction: The objective of this study was to investigate whether the most common mutation in cystinosis patients of Northern Europe (57-kb deletion), which affects the first 2 non-coding exons of the transient receptor potential vanilloid (TRPV1) gene, results in dysfunctioning of the TRPV1 receptor.
Material and methods: Cystinosis patients (n=25, 11 homozygous and 14 heterozygous for the 57-kb deletion), and matched (age and sex) healthy volunteers were recruited. Testing consisted of: (1) capsaicin-induced dermal blood flow (DBF) with Laser Doppler Imaging (Periscan PIM III®), (2) capsaicin-induced pain with the numerical rating scores (NRS-11), (3) mechanical stimulation with Von Frey hairs (Somedic®) and (4) temperature sensitivity with Advanced Temperature Testing (ATS) (Denmedical®). For the statistical analysis, One-way ANOVA and Kruskal-Wallis test were performed (Statsoft®). Values are expressed as means ± the standard error of the mean (SEM).
Results: Capsaicin-induced DBF (expressed as %change from baseline) was lower in homozygous patients at all time-points: 10min (-3.6±4 vs 159±44%), 20min (42±28 vs 518±64%), 30min (197±93 vs 632±58%) and 40min (251±87 vs 633±56%) post capsaicin application compared to control subjects ($p<0.01$) and at 10min (-4±4 vs 76±36%) and 20min (42±28 vs 354±92%) compared to heterozygous patients ($p<0.05$). Additionally, capsaicin-induced pain is lower in homozygous patients at 10min (0.45±0.21 vs 1.40±0.21 NRS), 20min (0.57±0.20 vs 2.16±0.25 NRS) and 30min (0.70±0.19 vs 1.90±0.26 NRS) post capsaicin application, compared to control subjects ($p<0.05$). The homozygous patients had more difficulty in detecting innoxious warmth, compared to control subjects (36.67±0.60 versus 34.27±0.63 °C, $p=0.027$).
Conclusions: Deletion of the first 2 non-coding exons of the TRPV1 gene results in dysfunctioning of the TRPV1 receptor in homozygous cystinosis patients, compared to heterozygous cystinosis patients and healthy control subjects. This dysfunctioning was shown by a reduced sensitivity to capsaicin and an impaired detection of heat. General neuropathic problems were excluded by mechanical stimulation and detection of cold temperatures.

O07
Outcome Of Acute Kidney Injury In Pediatric Patients Admitted To The Intensive Care Unit

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Introduction: Acute kidney injury (AKI) is common in the pediatric intensive care unit (PICU). We aimed to describe the etiology, clinical features, and outcome of AKI in pediatric patients and

to determine the predictors for initiation of renal replacement and mortality.
Material and methods: A retrospective chart review was performed of the medical records for all patients who were admitted to the PICU at King Abdulaziz University Hospital between January 1 and December 31, 2011. The pediatric-modified RIFLE criteria were used to classify AKI.
Results: We included 102 children aged 4-60 months. Oliguria (61.5%, p<0.0001) and hypervolemic signs (38.5%, p = 0.03) were more common among patients with RIFLE class Failure. They also had the highest mortality (53.9%, p=0.01). Oliguric patients were approximately 23 times more likely than their non-oliguric counterparts to be initiated on renal replacement therapy (RRT) (RR=23.38, 95% CI: 3.07-178.16). Diuretic infusion was also a strong predictor for RRT initiation (RR=10.00, 95% CI: 2.77-36.12). Hypervolemic patients were twice more likely to die during hospitalization in both unadjusted and adjusted models (RR=2.06, 95% CI: 1.09-3.90, and aRR=2.45, 95% CI: 1.09-5.51, respectively). Mechanical ventilation and RRT initiation were associated with higher likelihood of death (aRR=13.23, 95% CI: 1.90-92.04, and aRR=2.20, 95% CI: 1.18-4.12, respectively). Patients with RIFLE class Failure were about thrice more likely than patients with RIFLE class Risk to die in both the unadjusted (RR=2.76, 95% CI: 1.35-5.65), and adjusted models (aRR=2.88, 95% CI: 1.38-6.04).
Conclusions: Severe AKI predicted high mortality in critically-ill children.

O08

B-cell Repertoire Reconstitution After Rituximab Treatment In Steroid-dependent Idiopathic Nephrotic Syndrome

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Introduction: Rituximab, a monoclonal antibody against CD20, is an effective treatment in steroid-dependent (SD) forms. We describe the reconstitution of B cell subpopulations in pediatric SDNS patients treated with rituximab.
Material and methods: B-cell reconstitution was evaluated by flow cytometry in 29 patients with SDNS during a follow-up of up to 37 months (mean follow-up = 16 months). For patients with a short follow up we extrapolated the reconstitution trend of the subpopulations by fitting curves.
Results: Sixteen patients maintained a long-term remission after rituximab (mean follow-up = 20 months). Thirteen patients relapsed (mean follow-up = 12 months, p = 0.022 versus non-relapsers). Two non-relapsers despite stopping all therapy with a long follow-up (>30 months) had not reconstituted CD19+ B cells at last observation (2.72% and 2.71% of gated lymphocytes). No statistical difference was observed between non-relapsers and relapsers in the baseline value of CD19+ (13.55 ± 1.82% of gated lymphocytes versus 10.89 ± 2.03%), transitional (0.54 ± 0.13% versus 0.44 ± 0.17%), mature (5.46 ± 0.85% versus 4.14 ± 0.93%), memory (3.30 ± 0.72% versus 3.20 ± 1.09%), IgM memory (1.64 ± 0.40% versus 1.72 ± 0.48%) and switched memory B cells (1.36 ± 0.41% versus 1.80 ± 0.50%). The median value of each subpopulation at 9 months was considered as the threshold to compare the reconstitution trend of relapsers and non-relapsers. The determined threshold for each B cell subpopulation was 3.54% of gated lymphocytes for CD19+, 0.075% for transitional, 0.59% for mature, 0.051% for memory, 0.076% for IgM memory, and 0.028% for switched memory B cells. Significantly delayed reconstitution of switched memory B cells was observed in non-relapsers versus relapsers (15.27 ± 3.55 months versus 6.21 ± 1.07 months to reconstitute 0.028% of switched memory B cells; p = 0.034).
Conclusions: Recovery of switched memory B cells could be a predictor of relapse in rituximab-treated SDNS patients.

O09

Comprehensive Genetic Testing In More Than 200 Patients With Early And Severe Polycystic Kidney Disease Underscores The Importance Of Phenocopies And A Dosage-sensitive Network

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Introduction: Polycystic kidney disease (PKD) is the most common potentially life-threatening human genetic disorder and paved the way for the growing number of cilia-related disorders (ciliopathies) of which most show cystic kidneys. In contrast to the more heterogeneous field of cystic kidneys, PKD is thought to be restricted to mutations in only three genes: PKD1 and PKD2 in the dominant form ADPKD, and PKHD1 for the recessive counterpart ARPKD. Notably, both ADPKD genes (PKD1 and PKD2) can also be inherited in a recessive way. There is increasing evidence for various different PKD phenocopies. In a small subset of patients a dosage-sensitive network model with hypomorphic second-site modifiers has been proposed for early and severe disease manifestation.
Material and methods: We performed genetic testing in a cohort of more than 200 patients with early and severe polycystic kidney disease. In the majority of patients, we performed a targeted NGS (next-generation sequencing) capture approach that enabled the parallel analysis of disease genes. By using high-coverage NGS data and a comprehensive bioinformatics approach, we extended our analysis to additionally uncover copy number variations (CNVs). All mutations and CNVs detected by NGS were subsequently validated by Sanger sequencing and MLPA.
Results: We present unpublished data and demonstrate that in a subgroup of patients PKD can be mimicked by mutations in a number of other genes (e.g. BBS1, BBS10, HNF1ß, NPHP3, TMEM67, ANKS6). Some of our cases clearly indicated that caution is required when only novel or rare changes are found, especially when only data from single gene sequencing is available. We also show that a considerable proportion of patients harbour mutations in more than just one single gene supporting the idea of a dosage-sensitive network especially in cases with early disease manifestation. We used zebrafish for validation of some of our human findings and as a model for vertebrate development to gain a better understanding of disease processes and variable expressivity.
Conclusions: This is the most comprehensive study performed so far on patients with early and severe polycystic kidney disease. The increasing number of genes that have to be considered in patients with cystic kidney disease is challenging to address by conventional techniques and largely benefits from Next-Generation Sequencing (NGS) based approaches. Parallel analysis of targeted genes by NGS considerably increases the detection rate, allows for better interpretation of identified variants and avoids genetic misdiagnoses. The proposed dosage-sensitive network model with hypomorphic second-site modifiers may indeed explain a considerable proportion of cases with early and severe disease. An accurate genetic diagnosis is crucial for genetic counselling, prenatal diagnostics and the clinical management of patients and their families.

O10

Percutaneous Renal Biopsy In Children: Safety And Efficiency, Evaluation Of Professional Practice In Single-center

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Introduction: Percutaneous renal biopsy (PRB) is essential in the diagnosis, prognosis and guiding therapy of native kidney disease or renal transplant. Success of the PRB is defined by the ability to attain adequate

tissue for diagnosis, and the safety profile of the procedure. We report our experience on the success and safety of PRB.

Material and methods: We performed a retrospective observational study, including data from patients who underwent PRB from April 2010 to July 2013 in pediatric nephrology single-center. Major complications were defined as anemia requiring blood transfusion, intraparenchymal arteriovenous fistula or arterial bleeding requiring embolisation or nephrectomy. And as minor complications: anemia without blood transfusion, intraparenchymal arteriovenous fistula without embolisation, hematomas or perirenal collections, hematuria. The number of glomeruli on light microscopy (LM) and immunofluorescence (IF) were collected. Adequate biopsy sample was defined if biopsy provides sufficient number of glomeruli for definitive diagnosis of renal diseases. We studied native and transplanted kidney. All biopsy were performed by radiologist, with ultrasound guidance and automatic devices with 16-gauge biopsy needles.

Results: We performed 265 PRB on this period, 165 native kidney and 100 transplanted kidney. Patients were aged 10.1 years. 58.1% of RB were performed under general anesthesia. At least 10 glomeruli were found in 78.1% of biopsy on LM. The median of total glomeruli count per biopsy was 17.8 +/- 9.2 for LM and 3.7 +/-2.1 on IF. Major complications occurred in 0.7% with 1 transfusion. Minor complications occurred in 40%. We observed 36.9% of macroscopic hematuria, 12.4% of supra centimetrique hematomas and 3% of arterioveinous fistula with no need of embolization. 97% occur 8 hours after the biopsy.

Conclusions: PRB using real-time ultrasound with a 16-gauge automated needle remains a successful and safe procedure. The diagnostic yield has improved to over 98.9%. Children must be monitored at least 8 hours after RB.

O11

Bone Metabolism In Children With Autosomal Dominant Polycystic Kidney Disease

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Introduction: Autosomal dominant polycystic kidney disease (ADPKD) is the most common monogenic cause of kidney disease. It is a systemic disorder associated with extra-renal symptoms such as polycystic liver disease. Clinical data have revealed in an ADPKD adult population that Fibroblast Growth Factor 23 (FGF23) increases while circulating Klotho levels decrease, with a low TmP/GFR even in patients with normal renal function. The underlying mechanisms are largely unknown. Moreover, it has been demonstrated recently in animal ADPKD models that the polycystic kidneys produce FGF23 but is resistant to its actions. No data are available in a pediatric ADPKD population. To fill this gap, we prospectively assessed bone metabolism and renal phosphate handling in children with ADPKD in a dual-center study (Leuven – Lyon).

Material and methods: Children with ADPKD and normal renal function were eligible for inclusion. Blood and urine samples were collected and analysed for parameters of bone mineral metabolism. Based on normal values according to age, we made percentile (P) charts for serum phosphate and TmP/GFR. Hypophosphatemia and urinary phosphate wasting were defined as values ≤ P5.

Results: We included 69 ADPKD patients (42 males, median (range) age 10.7 (2.3 – 17.5) years. Mean eGFR was 121.6 ± 19.9 mL/min/1.73 m^2. Parameters of mineral metabolism (Vit D and PTH) were in the normal range. Hypophosphatemia and urinary phosphate wasting were observed in 10%, and 22% of the children respectively. Serum phosphate levels and TmP/GFR were in P5-P50 range in 70% and 77% of the patients respectively.

Conclusions: This is the first report highlighting hypophosphatemia in combination with renal phosphate leak in ADPKD children with normal eGFR. These results confirm recent data in adult ADPKD patients and point to an abnormal FGF23 metabolism. Further studies are required to elucidate the underlying pathophysiology and to investigate potential clinical consequences.

O12

Urinary Hydroxy-oxo-glutarate (hog) As Diagnostic Factor For Primary Hyperoxaluria Type 3

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Introduction: Primary Hyperoxaluria (PH) comprises at least 3 mutational recessive diseases characterized by endogenous overproduction of oxalate: PH1 (AGXT mutations); PH2 (GRHPR mutations); and PH3 (HOGA mutations), the latter causes a defect in hydroxyproline metabolism in the mitochondria. Currently, genetic testing is the gold standard of diagnosing PH3. We hypothesized that the levels of 4-hydroxy-2-oxoglutarate (HOG) in the urine of patients with PH3 would discriminate among the PH diseases. We created a urinary HOG assay and analyzed HOG in urines of PH patients.

Material and methods: Analysis was conducted using ion chromatography/mass spectroscopy (IC/MS). We analyzed urine specimen from 61 patients with PH1 and 3 with PH2 and 28 with PH3. Urine specimen preparation included acidification with HCl and dilution 100x with 0.20M boric acid solution. The IC/MS system was calibrated using five standards of increasing concentrations of HOG. The HOG used for calibration was purchased from Santa Cruz Biotechnology. The M/S was calibrated to a span of 0.30 m/z at 161 m/z, negative polarity, dwell time of 0.5s, cone voltage of 25V, and a probe temperature of 450ºC for optimal HOG detection. A KOH gradient of 5mM gradually ramping to 100mM over 38 minutes was used in the IC.

Results: HOG was readily identified using an IC/MS system following proper calibration of the system. HOG concentration in the urine was substantially higher in PH3 patients (mean 21.05 μmol/l, range 1.06-278.2) than in PH1 and 2 patients (mean 2.81 vs. 3.89 μmol/l, range 0.48-5.02). There was a large heterogeneity of HOG excretion by PH3 patients, a slight overlap of values at the lower range in PH3, with the higher range in PH1/2. However, only PH3 patient had urinary HOG concentration >5.02 μmol/l. No noticeable correlation between urinary oxalate and HOG levels were detected.

Conclusions: The current IC/MS assay allows the rapid identification of HOG, which can be used as a diagnostic marker of PH3. We believe that offers a way for diagnosis, and may later be helpful in providing mechanistic insights into the disease itself.

O13

Urine-derived Human Renal Progenitor Cultures For Modeling Of Genetic Kidney Disorders

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Introduction: In patients with chronic kidney disease, the progressive decline in renal function is multifactorial and attributable to a variety of

mechanisms. In particular, the critical role of genetic factors in the etiology, pathogenesis and progression of many renal disorders is gradually becoming clear, especially in children. Indeed, the advent of high-throughput sequencing techniques has fostered the identification of novel causative genes of kidney disorders, and has allowed the continuous discovery of genetic variants of unknown significance often raising the problem of the functional testing of their pathogenic role. However, emerging evidence implicates that influence of the background genome of the patient, as well as epigenetics are critical for determining the clinical phenotype. With such a complexity, the need for disease models that recapitulate human kidney disorders in a personalized manner is paramount. Renal progenitor cell (RPC) cultures obtained specifically from the affected patient may represent an ideal alternative for personalized disease modeling. Since loss of renal cells in urine naturally occurs in patients, urine may represent a potential RPC source.

Material and methods: Urine samples were centrifuged and cells were plated in EGM-MV+20% FBS supplemented with a customized antibiotic mix. Primary cultures were analysed by flow-cytometry for CD133 and CD24 expression. Predesigned TaqMan low density array was performed in urine-derived cells. SCID mice with adriamycin nephropathy received intravenous administration of urine-derived RPC. Urinary albumin and creatinine ratio was determined in 24h urine. Urine-derived RPC were differentiated in vitro in tubular (REGM + HGF 50 ng/ml) and in podocyte (DMEM/F12+10% FBS +Vitamin D3 100nM + retinoic acid 100μM). Confocal microscopy was performed on renal frozen tissues or on cells cultured on chamber slides.

Results: In this study, we describe a method to select and amplify RPC cultures from the urine of patients with kidney disorders. Urine-derived RPC (u-RPC) exhibited identical phenotype and functional properties to those purified from kidney tissue, including the capacity to differentiate into tubular cells as well as podocytes. To evaluate the possibility to use these cells for modeling of genetic kidney disorders, RPC were obtained from urine of children affected by nephrotic syndrome carrying putative pathogenic mutations in genes encoding for podocyte cytoskeleton proteins, as well as from children without genetic alterations, as validated by next generation sequencing. RPC obtained from patients carrying pathogenic mutations generated podocytes that exhibited altered synthesis of mutated proteins, abnormal cytoskeleton structure and functional abnormalities. By contrast, podocytes differentiated from RPC obtained from urine of patients without genetic mutations showed normal phenotype, structure and function.

Conclusions: The development of functional assays with u-RPC obtained from patients with genetic kidney disorders could serve as a fundamental step for rapid testing of putative pathogenic mutations. In particular, this tool can provide an essential support for the clinical diagnosis of nephrotic syndrome in patients carrying variants of uncertain significance in podocyte genes. The results of this study demonstrate that u-RPC cultures represent an innovative research tool which provide information to optimize an affected individual's personalized medical care.

O14

Epithelial Morphogenesis Can Be Rescued By Modulation Of Actomyosin Contractility In Fibrocystin-deficient Mdck Cells

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Introduction: Fibrocystin (FPC), a type I transmembrane protein of largely unknown function, is encoded by the Pkhd1 gene, mutations of which cause autosomal recessive polycystic kidney disease (ARPKD). Among other potential functions, FPC appears to affects adhesion signaling of cells involving the FAK/Src axis. Contributions of epithelial cell adhesion and contractility to the disease process of ARPKD remain to be defined. The aim of this study is (i) to establish the link between FPC function and the capacity of renal collecting duct epithelial cells to generate normal epithelia, and (ii) to determine consequences of altered cell adhesion / contractility.

Material and methods: We analyze FPC function in Madin-Darby canine renal collecting duct epithelial cells (MDCK). In this cell line, formation of 3D spheroids can be employed to study establishment of polarity, lumen formation and ciliogenesis. A micro-pattered surface is used to confine (initial) adhesion / spreading of cells and induce spheroid formation. In this setup, establishment of polarity and lumen depend on the capacity of cells to properly control cell adhesion and actomyosin contractility. The impact of altered cell behavior is being addressed using modulators of actomyosin contractility e.g. blebbistatin and adhesion signaling.

Results: Pkhd1 siRNA-treated MDCK cells and controls were employed to analyze formation of spheroids (within three days), using specific markers for polarity, cell junctions and cilia. Knockdown of FPC strongly affects polarity and lumen formation in MDCK spheroids suggesting critical involvement of FPC protein in cellular control of adhesion signals and establishment of polarity. Furthermore, transient inhibition of actomyosin contractility using blebbistatin during the first day of spheroid formation restores 70% of (correct) epithelial morphogenesis in FPC-deficient cells.

Conclusions: FPC knock down in MDCK cells disturbs adhesion signaling, cell-cell interaction, and control of cell tension resulting in impaired epithelial morphogenesis, which can be rescued by transient reduction of cell contractility.

O15

An Attempt To Standardize Leucocyte Cystine Level Measurement In Order To Optimize Cystinosis Patient Monitoring

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Introduction: Leucocyte cystine concentration, which is regularly measured throughout cystinosis patient life, is a key parameter for physicians to assess treatment efficacy as well as patient compliancy. Accurate testing methods are therefore needed to ensure an optimal clinical management of patients. In France, 4 laboratories test leucocyte cystine, without a standardized method. Intra-patient variability represents the main hurdle for clinicians. The aim of our study was, in the objective of reaching a standardized method, to identify the parameters involves in result variability. We compared methods of blood sampling and cell isolation, inter-laboratories or intra-laboratories. In parallel, we also assessed whether plasmatic cysteamine level could represent a biomarker that may be associated with leucocyte cystine testing.

Material and methods: (i) Comparison of blood sampling in heparin-coated and citric acid citrate-dextrose (ACD) tubes (6 patients), (ii) Comparison of isolation of white blood cell (WBC) and polymorphonuclear neutrophil (PMN) (5 patients), (iii) Comparison of isolation of WBC by 4 technicians (in duplicate) (1 patient)

Results: Our results showed a better sample storage over time in samples collected in ACD tubes. Cystine levels measured in WBC were comparable to cystine levels in PMN, if the % of lymphocytes indicated by the full blood count, was applied as a correction factor. Also, cystine level variability was high when cell isolation in the same sample was performed by different technicians whereas intra-technician variability was

low. Finally, plasmatic cysteamine testing in parallel of cystine indicated whether the patient was compliant or not.
Conclusions: We identified parameters that could reduce cystine level variability. Nevertheless, our study highlights that cell preparation is the critical step in cystine level testing. Our work represents the first step towards the standardization of leucocyte cystine level assessment that could serve as a model for other European countries.

O16
Time-varying Myocardial Wall Stress In Children With Chronic Kidney Disease

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Introduction: Myocardial wall stress had been shown in both adults with hypertension and chronic kidney disease (CKD) to be a primary determinant of ventricular remodeling, which refers to the changes in left ventricular (LV) geometry and structure. Similar studies investigating time-varying arterial load and instantaneous LV geometry as the key determinants of wall stress in children with CKD have not been performed.
Material and methods: Transthoracic echocardiographic imaging of the left ventricle was performed and endocardial and epicardial volumes obtained from Tomtec wall tracking analysis. Carotid tonometry during systole was used to estimate LV pressure and was calibrated by mean and diastolic blood pressure (BP). Myocardial wall stress was calculated from LV volume and pressure measurements. Ninety-two children (59 boys) aged 11.2 ± 3.2 (mean ± SD) years, average GFR 75.6 ml/min per 1.73m2 (16 controls and 76 CKD) were studied; Group one (n=26) eGFR >90, Group two (n=23) eGFR 60-90 and Group three (n=27) eGFR<60.
Results: There was no significant difference in age, height, and weight in control and three CKD sub-groups. Although LV mass (p=0.582), LV mass index (p=0.55), systolic (p=0.154) and diastolic BP (p=0.058) were not significantly different between groups, peak stress (Control: 338.8 ±18.5, Group one: 354.3±14.7, Group two: 386.1±15.7 and Group three: 397.5±14.3 kdyne/cm2, p=0.039) and mean stress (Control: 276.8±13.6, Group one: 294.8±10.8, Group two: 315.4±11.6 and Group three: 330.5 ±10.5 kdyne/cm2, p=0.011) was following adjustment for age, body mass index and mean arterial pressure (MAP). Peak stress (standardized β=-0.253 p=0.028) and mean stress (standardized β=-0.276, p=0.016) were also negatively associated with eGFR.
Conclusions: In children with CKD, instantaneous LV geometry and time-varying arterial loading condition as determinants of LV wall stress would appear to be a more sensitive marker in detecting the change in ventricular hemodynamics.

O17
Fgf23 Acting On Hippocampal Neurons: Impact On Neuronal Morphology And Synapse Formation Ex Vivo

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Introduction: Children with congenital CKD often present with impaired cognitive development and memory deficits. The circulating levels of the phosphaturic hormone fibroblast growth factor 23 (FGF23) are markedly elevated in children with CKD and expression of both FGF23 and its co-factor klotho was demonstrated in the brain of rodents. The effects of FGF23 on cognitive function are unknown. The aim of this study was to investigate the impact of FGF23 on structure and function of hippocampal neurons involved in memory formation, and to evaluate the underlying molecular mechanisms.
Material and methods: Dissociated hippocampal neurons, prepared from postnatal day 5-8 wild-type C57BL/6J mice, were stimulated with FGF23, FGF23 and klotho, FGF receptors inhibitor or vehicle. To assess FGF23 dependent changes of neurite branching, a detailed Sholl analysis of digitized images calculating the number of intersections per radius were evaluated in hippocampal neurons, transfected with eGFP. To analyze whether FGF23 affects synaptogenesis, neurons were stained for synaptophysin and post-synaptic density protein - 95 (PSD-95) followed by quantification of functional synapses. To determine activation of FGF23-dependent signaling mediating neuronal morphology and synapse formation MAPK, Akt, and PLCg pathways were investigated.
Results: Hippocampal neuron cultures express FGFR 1-5. FGF23 increases branching of hippocampal neurons, and enhances synapse number (each p<0.01 vs. vehicle). Co-incubation of hippocampal neurons with FGF23 and klotho activate MAPK and Akt, but not PLCg pathways indicating induction of cell proliferation and survival. In contrast, incubation with FGF23 alone did not stimulate MAPK and Akt signaling.
Conclusions: Hippocampal neurons are a target of FGF23. FGF23 increases neuronal branching and number of synapses. Thus, we hypothesize that excessive FGF23 serum levels might cross the blood-brain barrier and modulate hippocampal function in patients with cogenital CKD.

O18
Cardiac Fgf23 Correlates With Left Ventricular Hypertrophy And Chronic Phosphate Load In Ckd Patients

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Introduction: Cardiovascular mortality is excessively increased in children with end-stage renal disease (ESRD) compared to the general population, and left ventricular hypertrophy (LVH) is the most common cardiac abnormality in these patients. The concentration of the phosphaturic hormone FGF23 is markedly elevated in CKD patients. Experimental and clinical studies demonstrated an association between elevated serum levels of FGF23 and LVH in CKD. The aim of the study was to investigate i) the endogenous FGF23 expression in heart tissue of pediatric CKD patients, ii) to establish the relationship between cardiac FGF23 and typical molecular mechanisms for pathological LVH, and iii) to evaluate whether cardiac FGF23 is associated with LVH and/or other clinical parameters.
Material and methods: We conducted a retrospective case-control study in 25 deceased with childhood onset ESRD (dialysis: n=18; transplanted: n=7), and 25 age and sex-matched controls. Formalin-fixed paraffin-embedded myocardial autopsy samples of the left ventricle were evaluated for endogenous FGF23 expression, calcineurin-NFAT signaling mediating LVH, genes regulating cardiac remodeling, and BNP expression by immunohistochemistry and qPCR analysis.
Results: Endogenous FGF23 expression was clearly detected in left ventricular myocardium in patients and controls. Cardiac FGF23 expression increased in patients with CKD, and strongly correlated with relative heart weight, and cardiomyocyte cross-sectional area. FGF23-dependent calcineurin-NFAT pathway, gene programs resulting in pathological hypertrophy, and BNP expression increased in LVH positive CKD patients. Time-averaged serum phosphate concentration was an independent

predictor of cardiac FGF23 expression in CKD patients. Cardiac FGF23 and pathways mediating LVH were normalized in patients with a functioning kidney transplant.
Conclusions: Our results unveil an association between enhanced cardiac FGF23 expression and chronic phosphate load, activated calcineurin-NFAT signaling, cardiac remodeling and LVH in CKD patients. Most important, this pathophysiological process is reversed after renal transplantation.

O19
Is Hepcidin-25 Related With Anemia And Bone Metabolism In Children With Non-diaysis Chronic Renal Failure?

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Introduction: Chronic kidney disease (CKD) associated anemia can be resistant to erythropoietin (EPO) mostly due to functional iron deficiency secondary to non-infective causes of inflammation and increased serum hepcidin levels. High parathyroid hormone (iPTH) and phosphate levels, and vitamin D deficiency can participate chronic inflammation which consequently lead to anemia. In this study, we evaluated the association between hepcidin, and CKD-associated anemia and bone mineral metabolism in non-dialysis pediatric patients with CKD.
Material and methods: Thirty-five patients aged 5-18 years with stage 2-4 CKD, and 35 age and sex matched healthy subjects were enrolled into the study. Complete blood count, blood urea nitrogen (BUN), serum creatinine, uric acid, C-reactive protein(CRP), interleukin-6(IL-6), iron, total iron-binding capacity (TIBC), transferrin saturation (TSAT), ferritin, calcium, phosphorus, iPTH, 25(OH)D, 1,25(OH)2D, fibroblast growth factor-23 (FGF-23) and hepsidin levels were compared in both groups.
Results: In CKD group, hemoglobin, hematocrit and TIBC were significantly lower than those in the control group ($p<0.05$), in contrast, serum BUN, creatinine, uric acid, IL-6, CRP, iPTH and ferritin levels were significantly higher ($p<0.05$). There was no statistically significant difference in terms of TSAT, serum iron, hepcidin, phosphorus, 25(OH)D, 1,25(OH)2D, and FGF-23 levels between the groups ($p>0.05$). Serum hepcidin levels were not correlated with anemia parameters, serum FGF-23, phosphorus, uric acid, CRP, iPTH, and 25(OH)D levels ($p>0.05$). However, serum hepsidin levels were significantly correlated with 1,25(OH)2D and IL-6 levels ($p=0.013$ and $p=0.02$ respectively).
Conclusions: The serum hepcidin levels are not elevated significantly in non-dialysis pediatric patients with CKD if there is no evidence of acute or chronic inflammation. It seems that inflammation of CKD does not show marked effect on serum hepcidin levels. It is also suggested that elevation of serum hepcidin levels may be inhibited by effective treatment of anemia and with iron supplements and EPO, and by treatment of secondary hyperparathyroidism with phosphate binders and active form of vitamin D which normalize serum PTH, FGF-23 levels and control inflammation to some extent.

O20
Adequate 25-hydroxyvitamin D Levels Are Associated With Less Proteinuria And Attenuate Renal Failure Progression In Children With Chronic Kidney Disease

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Introduction: Angiotensin converting enzyme inhibitors [ACEi] for renin-angiotensin-aldosterone system (RAAS) blockade are routinely used to slow CKD progression. Studies have shown that vitamin D may promote renoprotection by suppressing renin transcription, and possible antiproliferative and antifibrotic effects through cross-talk between RAAS and vitamin D - Fibroblast Growth Factor-23 (FGF23) - klotho pathways. We hypothesise that vitamin D levels influence proteinuria and CKD progression in children with non-proteinuric renal disease.
Material and methods: This is a post-hoc analysis of the ESCAPE (Effect of Strict Blood Pressure Control and ACE Inhibition on Progression of CKD in Pediatric Patients) cohort. Serum 25-hydroxyvitamin D [25(OH)D], FGF23 and klotho levels were measured at baseline (before ACEi treatment) and after a median of 8 months on ACEi. CKD progression was assessed by analysis of the annualized GFR loss and by renal survival analysis using a composite endpoint (loss of GFR>50% or start of renal replacement therapy).
Results: Of the 167 children (median age 11.4 years, 96 males), 129 had renal hypodysplasia, 15 glomerulopathies and 23 hereditary or other renal diseases. Median eGFR was 51 ml/min/1.73m2, median urinary protein/creatinine ratio 0.79 (IQR 0.26-2.1) and none had nephrotic syndrome. Serum 25(OH)D showed an inverse association with urinary protein/creatinine ratio both at baseline ($p=0.01$) and follow-up ($p=0.01$). 25(OH)D >50nmol/L was associated with lower urinary protein/creatinine levels ($p=0.04$). ACEi treatment significantly increased FGF-23 and klotho ($p<0.001$ for both), without notable changes in serum calcium or phosphorus. The annualized loss of eGFR was lower in patients with higher baseline 25(OH)D ($p=0.0003$, $r=0.28$). 5-year renal survival was 75% in patients with baseline 25(OH)D >50 nmol/L as compared to 50% in patients with lower 25(OH)D ($p<0.0001$).
Conclusions: 25(OH)D is inversely associated with proteinuria and loss of eGFR in children with CKD. Prospective studies on the renoprotective effects of vitamin D are required.

O21
Implementing A Safe And Effective Management Of Anticoagulation Therapy – A Three Center Pattern Study

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Introduction: Literatures emphasized that administration of anticoagulation in dialysis promotes minimal filter clotting, post dialysis bleeding, and improves patient quality of life through preserved vascular access. This study evaluated the protocol plan designed to deliver both High and Low Molecular Weight Heparins (HMWH, LMWH) as bolus and cath-dwell and develop a relationship between filter clotting, post dialysis bleeding (PDB), blood flow rate (Qb), and activated Partial Thromboplastin Time (aPTT) among hemodialysis (HD) patients.
Material and methods: 208 HD patients were included in an evaluative cross-over design; bolus-LMWH and HMWH as cath-dwell for the first 6 months and vis-à-vis on the next 6 months. Regression and ANOVA were used for analysis with R square as basis to heparin adjustment and different filters used.
Results: Results indicated filter clotting among fistula ($f=8$, $spv=0.742$) and catheter ($f=17$, $spv=0.323$) patients when bolus-LMWH was used. Consequently, an increase was noted when bolus-HMWH was used on similar procedures with fistula ($f=12$, $spv=0.79$) and catheter ($f=19$, $spv=0.510$). Relatively, filters show "streaky" formations ($f=26$, $R=0.910$) on both venous and arterial points with bolus-HMWH while only ($f=18$, $R=0.116$) in bolus-LMWH; partial correlation was noted ($p=0.039$). No incidences of clotted-catheters were noted when both heparins were used as dwell. The mean fistula/graft post dialysis bleeding time is 6.8 minutes (mean aPTT=15 to 25 sec) with 11.43% accounted cases of >10 minutes post dialysis bleeding and a mean Qb of 432ml/mn (fistula) and 278ml/mn (catheter). Clotting and bleeding were analyzed

using adjusted R square revealing a significance of (R=0.046). Moreover, strong correlation was notable on the use of bolus-LMWH to aPTT (p=+ 0.78) with 0.003 mean square in the regression analysis.

Conclusions: The results of the study have strengthened the use of the anticoagulation protocol designed to enhance effective therapy while promoting optimal dialysis. Significantly, the study enables the collaborative team to identify cost-efficiency while protecting patient safety.

O22

Risk Factors For Loss Of Residual Diuresis In Children On Chronic Peritoneal Dialysis

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Introduction: In patients on chronic dialysis, preservation of residual renal function is associated with better survival, lower morbidity and greater quality of life. We interrogated the global IPPN registry to identify risk factors for oligoanuria in children commencing chronic peritoneal dialysis (CPD).

Material and methods: In 401 pediatric patients from 39 countries commencing CPD with significant residual diuresis, urine output was followed prospectively by 6-monthly examinations. Associations of patient specific characteristics and time-variant covariates with (i) daily urine output and (ii) the risk of developing oligoanuria (<100 ml/m2/day) were analyzed by mixed linear modeling and extended Cox regression analysis, respectively.

Results: With an average loss of daily urine output of 122 ml/m2 per year on dialysis, the median time to oligoanuria was 49 months. Residual diuresis subsided more rapidly in children with underlying glomerulopathies (p<0.0001) and low eGFR/diuresis at start of PD (p<0.005). High dialytic glucose exposure (p<0.005) and ultrafiltration (p<0.005) and icodextrin use (p<0.05) were associated with a higher risk of oligoanuria, whereas the use of biocompatible PD fluid was asssociated with higher residual urine output (p<0.05). Notably, administration of diuretics reduced oligoanuria risk by 80% (hazard ratio 0.20, 95%CI 0.05-0.55; p=0.007), whereas the risk tended to increase by RAS antagonist therapy (HR 1.4, 95%CI 0.95-2.18; p=0.08). The incidence of PD-associated peritonitis was not predictive of residual urine output, nor were sex, age, or nutritional status.

Conclusions: In children undergoing CPD the evolution of residual diuresis depends strongly on the type of underlying kidney disease, but can be modified by diuretic therapy and the choice of PD fluid.

O23

Peritoneal Dialysis Access Failure In Children: Causes, Interventions And Outcomes

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Introduction: The objective of this study was to evaluate the incidence, reasons, risk factors and outcome of PD access malfunction.

Material and methods: The study population included 719 incident and 1427 prevalent patients enrolled in the IPPN (International Pediatric Peritoneal Dialysis Network) registry.

Results: 382 access revisions were reported in 153 (11%) incident and 114 (16%) prevalent patients. On average 1.75±0.95 (range 1-5) interventions were reported in incident patients; the incidence was 1:67 patient months; 70% occurred within first treatment year. The risk of initial access failure was associated with younger age (OR 0.95, p<0.001), coexisting ostomies (OR 1.5, p=0.02), swan-neck tunnel (OR 1.4, p=0.03) and tentatively with early (<7 days) catheter use (OR 1.36, p=0.04). Reasons for access revision included mechanical obstruction (61%), peritonitis (15%), exit site infection (12%), and leakage (6%). The risk of obstruction or leakage was independently associated with younger age (OR 0.92, p<0.0001) and swan neck tunnel (OR 1.6, p=0.04). Catheter exchange was performed in 81% and 66% of pts with infectious and mechanical complications respectively. Early (<4 wks) recurrent access failure after revision was reported in 47 patients (20%), in 35 cases following mechanical obstruction. Intervention failure, defined as recurrence or PD failure within 3 months post-intervention, was observed in 11% of the infectious and 21% of the mechanical complications (p=0.01). The need for access revision increased the risk of PD technique failure and switch to hemodialysis by 23% (HR 1.23, p=0.03). Access dysfunction due to mechanical causes doubled the risk of technique failure as compared to infectious causes (HR=1.95, p=0.03).

Conclusions: Access failure occurs in nearly 15% of pediatric PD patients, most commonly within the first treatment year. Mechanical obstruction is the most common cause of access dysfunction. Risk factors include

young age, co-existing ostomies and swan-neck tunnel. Access failure due to obstruction is associated with compromised technique survival.

O24

Eculizumab In Paediatric Patients With Atypical Haemolytic Uraemic Syndrome: Safety And Efficacy With Or Without Baseline Dialysis

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Introduction: aHUS is a life-threatening disease leading to ESRD and/or death in 29% of paediatric patients within the first year of diagnosis. Safety and efficacy of eculizumab treatment in paediatric patients with aHUS has been shown previously in a prospective trial. Here we present a sub-analysis of this trial where the patients have been stratified by baseline dialysis.
Material and methods: Sub-analysis at 26 weeks of an open-label, single-arm trial evaluating eculizumab in patients with aHUS aged 1 month to <18 years. Baseline dialysis was defined as any dialysis within Day -7 to Day 14 of eculizumab initiation.
Results: 22 patients were enrolled; 11 were on dialysis at baseline. 9 of 11 were able to discontinue dialysis during trial (2/22 on dialysis at end of study). In both groups, 6/11 had no identified mutation. Full genetic screening—including multiplex ligand probe amplification—was performed (not including DGKE). At baseline, 10 of 11 dialysis patients and 6 of 11 non-dialysis patients had their first clinical presentation. Median time from current TMA manifestation to start of eculizumab was 0.2 months in both groups, but range was 0–1.3 and 0–4.3 months in dialysis and non-dialysis group respectively. Mean (SD) baseline platelet count was lower in the non-dialysis versus dialysis group, respectively (69.4 [43] and 105.5 [34.2] x10^9/L). In patients with and without dialysis at baseline, eculizumab improved platelet counts (x10^9/L) by 149.8 (101) and 180.2 (34.9), and eGFR (mL/min/1.73 m^2) by 57.7 (57.3) and 70.3 (37.1), respectively. Treatment-emergent adverse events were similar for both groups with no new safety concerns.
Conclusions: Eculizumab treatment resulted in clinically meaningful improvements in haematologic and renal parameters in paediatric patients with aHUS, including those with prior dialysis. This sub-analysis further supports eculizumab as an effective and well-tolerated treatment in patients with aHUS, regardless of prior dialysis.

O25

Secular Trend Of Renal Replacement Therapy (rrt) Incidence In Iga Nephropathies: Roles Of Etiology And Age (era-edta Registry)

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Introduction: Although being related diseases, Henoch-Schönlein purpura nephritis (HSPN) and primary IgA nephropathy (IgAN) present with different clinical and pathophysiological features.
Material and methods: Data were extracted from the ERA-EDTA Registry for 10 countries to evaluate the trends in incidence and age at start of RRT as well as renal allograft survival in both diseases.
Results: A/Incidence of RRT from 1992 to 2011, new cases/year entering the registry (Mean nbr): a/HSPN < 20 years:1.9/year (stable); b/HSPN > 20 years: 11.4/year (stable); c/IgAN < 20 years: 4.3/year (stable); d/IgAN > 20 years: 260/year (+9.6 cases/year). A highly increased incidence of RRT for IgAN is observed for patients >40 years old without any decrease in the number of patients with unknown etiology. B/Mean age at start of RRT (Mean; 95%CI) 1992-1996 vs 2007-2011: a/HSPN:38.8 (33.3-44.2) vs 43.4 (38.5-48.4); b/IgAN:45.4 (44.4-46.3) vs 51.0 (50.3-51.8); c/CAKUT: 32.7 (31.6-33.9) vs 37.4 (35.9-38.8); The mean age at start of RRT is increased for both diseases. C/ 5-year graft survival was similar for HSPN (80%) and IgAN (84%) and worse in the group < 20 years old for both diseases.
Conclusions: 1/The increasing incidence of RRT for IgAN among older patients only is unexplained but was observed in all countries and does not result from an extension of the indications of renal biopsy since no decrease in the number of patients with unknown etiology was observed. A relation to environmental modifications, alcohol consumption or food antigens should be considered. 2/ The increasing age at start of RRT in both diseases might result from changes in treatment (increasing use of ACE-I and of steroids). 3/ The worse graft survival for both diseases in < 20 yrs patients is unexplained (puberty-related incompliance? genetic factors?)

O26

Paediatric Dialysis Practice Across The Eu

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Introduction: With the availability of intensified dialysis regimens such as hemodiafiltration (HDF) and frequent dialysis, details of hemodialysis (HD) practice and reasons for choosing a particular dialysis modality need to be determined. The ESPN / ERA-EDTA Registry provides country-specific demographics, but no reasons for the choice of a particular dialysis modality and no technical details.
Material and methods: Questionnaires sent to 51 paediatric dialysis units across the European Union.
Results: 47 (92%) of centres sent a complete response. All centres perform peritoneal dialysis; HD is performed in 49/51 centres and HDF in 24 (47%) centres. One centre performs nocturnal in-centre HD/HDF, 2 centres home hemodialysis. 210 children received HD (median 7 [range 0-22] per centre) and 125 HDF (4 [0–14] per centre). 44 (94%) respondents selected HDF as their preferred dialysis modality. In centres unable to provide HDF, obstacles were lack of appropriate dialysis machines (74%) and/or 'ultra-pure' water (63%), no trained staff (5%) and costs (32%). High flux membranes are used for conventional HD in 66% and 'ultra-pure' water in 58% centres, suggesting that some basic infrastructure for HDF may already be in place. All 24 centres performing HDF used high flux dialysers (with dialyser size ≥ body surface area) and ultrapure water. 21 centres applied post-dilution. 3 centres routinely offered >3 sessions per week HDF. 22 centres aimed for a convective volume >15L/m2 BSA; this was achieved in the majority of HDF sessions in 20 centres.
Conclusions: This study shows considerable variations in practice across paediatric dialysis units in the EU, which may allow for future trials to examine long-term outcomes of different hemodialysis modalities in children. The potential for all new machines to perform HDF, and new EU regulations mandating ultra-pure water usage with high flux membranes may increase HDF usage in children.

O27

Factors Excluding Renal Artery Stenosis In Children With Hypertension

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Introduction: While the prevalence of essential hypertension (HTN) in children is increasing, the minimal set of screening procedures required to exclude secondary, especially renovascular, HTN is still controversial. Here, we aimed to develop a clinical scoring system predicting the likelihood of not having renal artery stenosis (RAS) in children with suspected primary hypertension.
Material and methods: The charts of 402 patients presenting to our clinic with newly diagnosed hypertension between Jan/08 and Jul/13 were reviewed. Patients with pre-existing renal, hepatic or cardiac disease were excluded. A defined set of clinical, laboratory and imaging features was evaluated to identify factors predicting RAS.
Results: 143 patients (primary HTN 128, RAS 15; mean age 11.1 (0.4-20) years, 59% boys) were analyzed. RAS was proven by MRI, CT, or angiography. Renal doppler sonography failed to diagnose RAS in 13/14 examined patients; however, in 8/14 patients an abnormal size difference between the kidneys was reported. At first presentation to our clinic, RAS patients were significantly younger (8.2 vs. 11.4 rs, p=0.02) and had a higher prevalence of hyperreninism (100 vs. 52%, p=0.008), left ventricular hypertrophy (69 vs. 14%, p<0.0001), and severe hypertension (systolic blood pressure >4 SDS or ≥3 antihypertensive drugs: 64 vs. 31%, p=0.02). The combination of normal plasma renin concentration/activity, absence of left ventricular hypertrophy, normal kidney ultrasound, age >10 years, and mild to moderate hypertension excluded the presence of RAS with 100% specificity and 62% sensitivity.
Conclusions: A composite score including patient age, severity of hypertension, left ventricular mass, B-mode kidney sonography findings, and plasma renin, correctly classified 100% of hypertensive patients with RAS and 62% of those without RAS. In hypertensive children without any of the defined risk factors, imaging of the renal arteries by MRI or CT scans or angiography is not mandatory to exclude renovascular HTN.

O28

Prevention Of Vascular Calcification In Uremic Rats By Pharmacological Inhibition Of Matrix Metalloproteinases (mmp)

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Introduction: The presence of vascular calcifications is a marker for advanced CVD in patients with CKD. A transition of vascular smooth muscle cells (VSMC) from a contractile to a chondro/ostoblastic phenotype is a key event in the pathogenesis of media calcifications in uremic subjects.
Material and methods: We studied the question whether pharmacological inhibition of MMPs can decrease chondro/osteoblastic transition of VMSC and the development of media calcifications in an aggressive model of uremic vascular calcifications induced by treatment of uremic rats with calcitriol and a high phospate (HP) diet. Uremia was created by 5/6-nephrectomy and all animals were fed a HP diet (1,2% phosphate). Arterial calcifications were induced by treatment with calcitriol (250ng/kg/d). MMP inhibition was achieved with doxycycline (100mg/kg/d), an unspecific MMP inhibitor. Five groups of rats were studied: uremic rats (n=10), shamp-operated rats (n=10), uremic rats trated with doxycyclin (n=6), uremic rats treated with calcitriol (n=14) and uremic rats treated with calcitriol and doxycycline (n=14).
Results: 5/6 nephrectomy resulted in significantly increased plasma levels of creatinine in all uremic groups. Creatinine and phosphate levels were significantly higher in groups receiving calcitriol, and not significantly different in the doxycyline-treated group. Plasma calcium levels and systolic blood pressure (tail-cuff method) were similar in all groups. Massive calcifications were found in 5/6 nephrectomized rats treated with calcitriol and HP diet. MMP inhibition with doxycycline resulted in almost complete absence of media calcification in uremic rats treated with calcitriol and HP diet. Uremic rats treated with calcitriol and a HP diet, but not rats treated with doxycycline, showed significantly increased gene expression levels of MMP-2 MMP-9, osteopontin, osteocalcin and osterix.
Conclusions: Phenotypic transition of VSMC and the development of vascular calcification were almost completely prevented by MMP inhibition. This effect was not due to differences in the degree of uremia, phosphorus levels or systolic blood pressure in experimental animals. MMP inhibition seems a promising strategy in the prevention of uremic vascular calcifications.

O29

Prevalence And Evolution Of Ambulatory Hypertension In Children With Ckd: Results From The 4c Study

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Introduction: Children with chronic kidney disease (CKD) are at high risk for cardiovascular (CV) morbidity and mortality. In the Cardiovascular Comorbidity in Children with Chronic Kidney Disease (4C) Study ambulatory blood pressure monitoring (ABPM) is performed annually as children progress towards end-stage renal disease and renal replacement therapy (RRT). Here, we present the ABPM findings at baseline and after one and two years of follow up.
Material and methods: ABPM profiles were analyzed in 380 children with CKD stage IIIb-IV at baseline (63% males, 65% CAKUT, age 12.1 ±3.2 years, eGFR 28±11 ml/min/1.73m2, 45% on antihypertensive medication).
Results: Mean standardized 24-hour systolic, diastolic and mean arterial pressures (MAP) at baseline were 0.16±1.52, 0.52±1.88 and 0.68±1.66 SDS, respectively. 39% were normotensive without antihypertensive treatment, 30% showed pharmacologically controlled hypertension, 15.5% white coat hypertension, 6.5% masked hypertension, and 9% untreated/uncontrolled hypertension. Nocturnal dipping was subnormal or lost in 74%. Whereas eGFR was not associated with 24h-MAP-SDS or load (% MAP measurements >95th percentile), albuminuria significantly correlated with higher MAP-SDS (r=0.20, p=0.0003) and higher load (r=0.24, p<0.0001). Patients with glomerulopathies and tubulointerstitial disorders tended to have higher MAP-SDS and load. After 12/24 months, 56/64 patients had progressed to RRT [HD (hemodialysis) 17/11, PD (peritoneal dialysis) 23/23, Ntx (renal transplantation) 16/30]. Mean 24h-MAP-SDS significantly increased in children on RRT after the first/second year (HD 1.8/2.6 SDS, PD 1.9/1.8 SDS, Ntx 1.6/1.5 SDS; (p<0.05)) compared to 0.4/0.6 SDS in children remaining in CKD stage IIIb/IV and 1.2/0.7 SDS in those progressing to stage V without start of

RRT. Load tended to be highest in Ntx (35% vs 21%). While the overall prevalence of dipping did not change, HD patients were most frequently non-dippers (88%).
Conclusions: Children with advanced CKD exhibit a high prevalence of ambulatory hypertension. 24-hour BP control deteriorates both on dialysis and after Ntx as compared to pre-RRT CKD.

O30
Overhydration And Hypertension In Children With Renal Replacement Therapy Revisited: Is There A Missing Link?

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Introduction: Controlling the blood pressure is a great challenge in children with chronic kidney disease. The aim of the study was to investigate the interaction between hypertension and hydration status.
Material and methods: Bio-impedance spectroscopy was performed in 175 children, age 2-19 years (80 girls) within the RICH-Q project. Blood pressure, the mean of 3 sitting measurements, was expressed as the percentage of the 95th percentile for height and sex. Hydration was calculated as the ratio overhydration/extracellullar water in percentage. Hydration status was defined as a percentage of the 95th percentile for heigt and sex, based on data measured within a healthy pediatric population.
Results: A total of 175 children was measured, 30 children on peritoneal dialysis (PD), 44 children on hemodialysis (HD) and 101 children were transplanted (Tx). Age distribution and sex ratio did not differ between treatment groups. 57% of the children had no antihypertensive therapy, 23% was treated with one antihypertensive drug and 20% with two or more antihypertensive drugs. 50% of the children had a blood pressure above the 95th percentile. 27% of the children had a hydration status above the 95th percentile. 13% of the patients had both hypertension and overhydration, of which 6 HD, 8 PD and 9 Tx patients. 74% of these hypertensive, overhydrated children received no antihypertensive therapy.
Conclusions: Despite the fact that 50% of the patients is hypertensive, only 13% is overhydrated as well. Further investigation is needed whether we have to optimize the hydration status or focus on adequate antihypertensive treatment.

O31
Fgf23 Enhances No Release Via Secretion Of Soluble α-klotho In Human Vascular Endothelial Cells In Vitro

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Introduction: Endothelial dysfunction is the first detectable manifestation of cardiovascular disease in CKD patients and is associated with increased degradation of secreted nitric oxide (NO) in the presence of reactive oxygen species (ROS). The concentration of the phosphaturic hormone fibroblast growth factor 23 (FGF23) is markedly elevated in CKD patients, and correlated to cardiovascular mortality in these patients. The role of FGF23 in the pathophysiology of endothelial dysfunction is unclear. The aim of our study was to investigate the impact of FGF23 on NO production/release and ROS formation in endothelial cells.
Material and methods: Human coronary artery endothelial cells (HCAEC) were stimulated with FGF23 in a time and dose-dependent manner, and evaluated for protein expression and activation of FGFR 1-4, FGF23 co-factor klotho, ADAM-17 (a secretase cleaving α-klotho), and endothelial NO synthase (eNOS) by western blotting and immunofluorescence. FGF23-dependent NO production was assessed by the modified Griess assay, and formation of ROS was detected by fluorescence microscopy and flow cytometry. FGF23-dependent secretion of soluble α-klotho and ADAM-17 was evaluated by western blot analysis of conditioned medium (CdM) from HCAEC.
Results: HCAEC expressed FGFR 1, 2, 3, and 4 as well as the FGF23 co-receptor klotho. FGF23 activated FGFR 1 and 2 and significantly increased NO production, as well as eNOS activity in a time and dose dependent fashion. FGF23 stimulated the release of soluble α-klotho, which was not due to enhanced ADAM-17 protein levels. The NO stimulating effect of FGF23 was blunted by co-incubation with a klotho neutralizing antibody. FGF23 had no impact on ROS production under physiological conditions.
Conclusions: Vascular endothelial cells are a target of FGF23. In cultured HCAEC, FGF23 stimulates NO release via secretion of soluble α-klotho. Thus, FGF23 impairs endothelial function.

O32
Angioplasty For Renovascular Hypertension In 78 Children

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Introduction: Objectives: To evaluate the outcome of percutaneous transluminal angioplasty (PTA) in children with renovascular hypertension (RVH) treated at single center over 29 years.
Material and methods: A retrospective study of all children with RVH who underwent PTA between 1984 and 2012.
Results: Seventy eight subjects with median (range) age of 6.5 (0.5-17) years were studied. Twenty three (29.5%) had an underlying syndrome, Thirty-five (44.9%) children had bilateral renal artery stenosis (RAS), 18 (23%) intrarenal disease and 11(14%) showed both bilateral RAS and intrarenal disease. Twenty (25.6%) children had mid-aortic syndrome and 14 (17.9%) cerebrovascular disease. One hundred and fourteen PTA procedures were carried out including 31 stent insertions. The blood pressure (BP) was improved in 49 (62.8%) children and of those 18 (23.1%) were cured. Children in whom only the renal arteries were affected showed improved BP control in 79.9% of the children with cure in 39.5%. Blood pressure was intentionally maintained above the 95th percentile for age and height in four children with coexistent cerebrovascular disease. No change in BP was seen in 18 children despite observed technical success of the PTA, and in seven children due to technical failure of the procedure. There was a tendency to increased success over the most recent nine years. Improved BP control was observed in 68.9% compared to our previously reported 54.5% from the first 20 years.
Conclusions: PTA provided a clinical benefit in 62.8% of children with RVH. A tendency to better results and fewer complications was observed during recent years.

O33
Kidney Injury Molecule 1 (kim-1) In Neonates With Perinatal Risk Factors

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Introduction: The role of acute kidney injury biomarkers in children and adults has been well documented, however establishing their utility in neonates require further evaluations. The aim of the study was to assess KIM-1 level in neonates with perinatal risk factors (PRF).
Material and methods: The study group included 71 newborns with PRF – 39 term (TN), 26 preterm (PTN); control group (CG) - 5 healthy, term newborns. Mean gestational age in TN (23 ♂, 16 ♀) was 38.6±1.2, PTN (16 ♂, 9 ♀) 33.9±2.0, in CG (3 ♂, 2 ♀) 39.0±0.7 weeks, mean birth weight - 3354.4±532.3 g, 2246.0±534.5 g, 3398.0±458.3 g respectively.

Following coexisting PRF were noted: mothers diabetes, hypertension, infection, bacterial colonization of vagina; preterm rupture of membranes, fetal distress, birth asphyxia and newborn infection. KIM-1 was measured (ELISA) in urine, between 1-5 day of life. Values were presented as absolute concentration and normalized for creatinine (KIM-1/Cr) and converted to natural log to achieve normal distribution.
Results: Median absolute KIM-1 value in TN was 0.42 (0.01-6.97 ng/ml), in PTN 0.58 (0.02-4.99 ng/ml) and in CG 0.56 (0.16-2.0 ng/ml); median KIM-1/Cr level was 0.80 (0.01-12.31 ng/mg), 0.96 (0.17-11.34 ng/mg) and 1.14 (0.56-1.7 ng/mg) respectively, differences not significant. Both KIM-1 and KIM-1/Cr were higher in female TN and PTN, although the differences were not significant. Gestational age correlated positively with KIM-1, but not KIM-1/Cr values, in TN ($r=0.51$; $p<0.001$) and PTN ($r=0.43$; $p<0.05$). KIM-1 and KIM-1/Cr level did not depend on birth weight. The way of delivery (vaginal or cesarean section) had no impact on KIM-1 and KIM-1/Cr level. Among all analyzed PRF only newborn infection in TN had a significant ($p<0.05$) impact on KIM-1/Cr level, which was higher in comparison to newborns with other risk factors.
Conclusions: KIM-1 level depends on gestational age, KIM-1/Cr is higher in newborns with infection.

O34
Early Biomarkers Of Renal Injury And Protective Effect Of Erythropoietin On Kidneys Of Asphyxiated Newborn Rats

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Introduction: The aim was to determine which biomarker of renal injury (KIM-1 or cystatin C) is more sensitive and whether erythropoietin protects kidneys injured by perinatal asphyxia.
Material and methods: Animals were designated in 3 groups: AE - the pups that survived perinatal asphyxia and subsequently received 2.5 μg (0,1ml) of darbepoetin-alfa intraperitoneally; A - the pups that survived perinatal asphyxia and received 0.1ml 0.9% NaCl; C – control group. The pups were sacrificed in the different ages of life (6h, 24h, 48h, 7 days and 14 days of age - 10 rats in each subgroup). Immunohistopathological evaluation of kidneys was performed.
Results: At 48h, day 7 and day 14, absolute injury scores were significantly lower in group AE as measured by both biomarkers. Cystatin C expression was the most intensive 6h upon hypoxic event (average value of absolute injury score was 2.82) and declined over the time. Expression of KIM-1 was less intensive, average value of absolute injury score at 6h was 2.02, and 2.105 at 24h, with the peak value 48h after hypoxic event (2.155).
Conclusions: Erythropoietin has a protective effect on hypoxic kidneys. Cystatin C is more sensitive early biomarker of acute kidney injury in comparaton with KIM-1.

O35
The Renoprotective Effect Of Sigma-1 Receptor Agonist In Ischemia/reperfusion Injury

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Introduction: Previously we showed that pretreatment with the Sigma-1 receptor (S1R) agonist fluvoxamine (FLU) improved postischemic survival and resulted in milder deterioration of renal function and kidney damage. Here we studied the effect of FLU on the S1R-Akt-NOS signaling pathway and on intrarenal vasoregulation.
Material and methods: Male Wistar rats were subjected to unilateral renal ischemia followed by 24h reperfusion (T24). 30 min prior to ischemia (I/R) groups were treated ip either with vehiculum (VEH); FLU; FLU+S1R antagonist NE-100 (FN); FLU+ different NOS blockers: L-NAME, L-NIO or 7-NI. Controls were sham-operated animals. Renal S1R, pAkt, peNOS and nNOS protein levels were measured at different time-points. Alteration of intrarenal capillary diameters was determined in vivo using multiphoton microscopy. In vitro oxidative stress was induced with 0,4 mM H_2O_2 in HK2 cells which were treated with 10μM FLU. S1R knockdown cells were generated using specific siRNA.
Results: In controls the acute vasodilatative effect of FLU was suspended by L-NAME and 7-NI and reversed by L-NIO. S1R, pAkt and peNOS protein levels were elevated 30 min after FLU treatment, while nNOS expression was minimal. At T24 I/R induced renal vasoconstriction was ameliorated by FLU. This increase was neutralized by all NOS blockers. S1R; pAkt; peNOS and nNOS levels were more elevated in the FLU group compared to VEH and FN. S1R expression of H_2O_2 treated HK2 cells was slightly elevated after 30 min of FLU treatment. Oxidative stress induced increase of peNOS which was further elevated by FLU, but was prevented by NE100. peNOS levels were decreased in S1R knockdown cells even in the presence of FLU.
Conclusions: The S1R agonist FLU pretreatment directly acts on proximal tubular cells through the activation of S1R – NOS system in a time and NOS isoform specific manner. Thereby FLU improves postischemic renal perfusion and is renoprotective in I/R.

O36
Evaluation Of Eculizumab Treatment Of Paediatric Patients With Atypical Haemolytic Uraemic Syndrome: A Prospective Clinical Trial

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Introduction: Atypical haemolytic uraemic syndrome (aHUS) is a life-threatening disease of uncontrolled complement activation leading to thrombotic microangiopathy (TMA) and severe end-organ damage. Retrospective data and case reports have shown the terminal complement inhibitor eculizumab is well tolerated and effective for paediatric patients with aHUS. We now describe results from the first prospective paediatric clinical trial.
Material and methods: This was an open-label, 26-week, single-arm study, evaluating eculizumab safety and efficacy in patients with aHUS aged 1 month to <18 years. Inclusion criteria included platelet count <150x10^9/L, serum creatinine ≥97th percentile for their age at screening and LDH ≥1.5x upper limit of normal. An identified complement mutation was not required. Patients with Shiga toxin-producing E. coli (STEC)-HUS or severe ADAMTS13 deficiency (activity <5%) were

excluded. Primary endpoint was complete TMA response (platelet and LDH normalisation and ≥25% decrease from baseline in serum creatinine). Other assessments included estimated eGFR, haematologic outcomes, as well as dialysis status.
Results: In total 22 patients were enrolled and 19 (86%) completed 26 weeks of treatment. Mean age was 6.5 years (10 [45%] females; 16 [73%] newly diagnosed; 12 [55%] without prior plasma at current manifestation; 12 [55%] with no identified complement mutation/antibody). After 26 weeks of treatment: 14 (64%) patients had a complete TMA response and 21 (95%) patients had normal platelet levels (≥150x10^9/L); all had discontinued plasma exchange; 9/11 on dialysis at baseline had discontinued dialysis; 19 patients had an increase in eGFR of ≥15mL/min/1.73m^2 from baseline; the mean eGFR increase from baseline was 64mL/min/1.73m^2 (95% CI 50–79). Eculizumab was well tolerated. No meningococcal infections or deaths occurred and no safety concerns arose.
Conclusions: Eculizumab treatment inhibited complement-mediated TMA as well as improved haematologic and renal outcomes. Early intervention with eculizumab is effective and well tolerated in paediatric patients with aHUS.

O37

Renal Outcome In Childhood Of Very Preterm Babies With Neonatal Acute Renal Failure

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Introduction: Neonatal acute renal failure (NARF) is a severe complication of extreme prematurity, whose consequences on renal function in childhood are actually unknown. IRENEO was a prospective and controlled study aimed at searching for signs of nephronic reduction, between 3 and 10 years, in children born very preterm, who presented NARF.
Material and methods: Cases and controls were born before 33 weeks of gestational age (GA), between january 2003 and june 2010 in Nantes University Hospital and were enrolled in the LIFT cohort. Matching was based on a propensity score of NARF and on the age. NARF was defined as a serum creatinine value superior to 1.6 mg/dl at 24-27 weeks of GA, 1.1 mg/dl at 28-29 weeks of GA and 1mg/dl at 30-32 weeks of GA. Renal function was assessed in childhood.
Results: 25 cases and 49 controls were included. Mean age at evaluation was 6.6 years (from 3 to 10). There was no difference between cases and controls concerning microalbuminuria, estimated glomerular filtration rate (eGFR), blood pressure or pulse wave velocity (PWV) in childhood. BSA related renal volume was lower in the group cases (57 vs 68, p=0.04), but this difference was no longer significant in multivariate analysis. Concerning the entire cohort, 10.8% had a pathological microalbuminuria, 23% a diminished eGFR <90ml/min/1,73m^2 (median eGFR at 79ml/min/1.73m^2) , and 24% had abnormal PWV. eGFR was lower in children with very low birth weight birth weight <1000g (99 vs 107ml/min/1,73m^2, p=0,04).
Conclusions: Neonatal ARF does not seem to influence renal function in childhood of preterm children, unlike a very low birth weight. However, signs of nephronic reduction can be found early in childhood in very preterm children; a follow up by a nephrologist being thus indispensable.

O38

Altered Maternal Light Exposure During Pregnancy Affects Late Fetal Circadian Clock And Clock Target Gene Expression: Is Light Hygiene Critical For Neonatal Fluid And Electrolyte Homeostasis?

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Introduction: We recently demonstrated that the intrarenal circadian molecular clockwork is already operational at the end of intrauterine development and may facilitate the postnatal adaptation of homeostatic processes controlled by the kidney. Here, we sought to explore the impact of different patterns of maternal light cues during pregnancy on the integrity of the late fetal renal circadian clockwork and key clock-controlled genes.
Material and methods: Pregnant rats were randomly allocated to 4 groups. The rats were fed ad-libitum under 12h:12h light-dark cycles (LD), constant light (LL), constant darkness (DD), or 3h:21h light-dark cycles (3:21LD). Mothers (6-10 per group) with their offspring were sacrificed at 4-h intervals one day before the expected delivery. Intrarenal circadian gene expression patterns were profiled by real-time PCR for the canonical clock genes Clock, Per2 and Rev-erbα and the clock-controlled genes NHE3, αENaC, SGK1, and AVPR2.
Results: Kidneys of fetuses with maternal LD exposure displayed circadian expression of all investigated genes [Clock (p=0.008), Rev-erbα (p=0.014), Per2 (p=0.014), NHE3 (p<0.001), αENaC (p<0.001), SGK1 (p=0.017), and AVPR2 (p=0.003)]. Fetuses with maternal LL exposure exhibited robust circadian expression with phases similar to those observed at LD [Clock (p=0.004), Rev-erbα (p=0.027), Per2 (p<0.001), NHE3 (p<0.001), αENaC (p<0.001), SGK1 (p<0.001), AVPR2 (p=0.022)]. In contrast, circadian fluctuations of gene expression were completely absent in fetuses with maternal DD exposure. In pups whose mothers were exposed to short rest period cycles (3:21LD), the circadian rhythmicity of Per2 and Rev-erbα were lost and a distinct phase shift was seen for Clock and the clock-controlled genes.
Conclusions: Our findings confirm that the circadian clock network becomes operational even before birth. Oscillatory gene expression in the developing kidney is affected differentially by different alterations of the light-dark cycle during gestation. Hence, asynchronous light exposure during pregnancy might affect immediate postnatal kidney functions.

O39

Does Gitelman Syndrome Induce Lower Cardio-respiratory Fitness?

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Introduction: Gitelman syndrome (GS) is a rare autosomal recessive primary tubulopathy caused by loss-of-function mutations in the thiazide-sensitive Na-Cl cotransporter. Cruz (Kidney Int 2001) and Herrero-Morin (NDT 2011) reported asthenia, weakness, and impact of the disease on the quality of life in adult and pediatric patients with GS, respectively. The aim of our study was to evaluate cardio-respiratory fitness and possible associated muscle symptoms in families with GS.
Material and methods: Six genetically confirmed SG patients, age's range 10-42 years, and 8 relatives heterozygous for the disease, age's range 18-58 years, underwent a cardio-pulmonary exercise testing (CPET) on treadmill determined by modified Bruce test. The following variables were analyzed: electrocardiogram, VO2, heart rate, RQ (VCO2 to VO2 ratio), test duration, and achievement of Bruce stage (exercise protocol ranged from step 1 to step 5). Blood samples were extracted before and after the exercise testing for lactate determination. Written consent was obtained from all participants.
Results: Four patients and 4 carriers reached Bruce 5 stage on the CPET. No patient exhibited muscle symptoms or electrocardiogram abnormalities during the exercise. Two carriers presented physical deconditioning. Results are expressed as X (SD) for Patients and Carriers. Lactacte before the effort (mmol/L): 2.5 (1.4) and 1.5 (0.4); Lactate after the effort

(mmol/L): 8.2 (4.5) and 6.7 (2.3); RQ: 1.15 (0.1) and 1.1 (0.1); HR (bpm): 177.5 (9.6) and 164 (8.4); VO2 (ml/kg/min): 43.2 (4.1) and 30.2 (5.7); Test Duration (min): 14.0 (2.7) and 14.1 (1.8).
Conclusions: Patients with GS and related heterozygous carriers have normal response to an acute exercise testing. Thus, reported manifestations of sustained weakness and asthenia in GS individuals cannot be explained by impaired cardio-respiratory fitness. Further data in more patients will be necessary to confirm these preliminary findings.

O40
Genetic Registry Of Inherited Tubulopathies In Poland

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Introduction: Inherited renal tubular disorders (RTDs) are a group of rare kidney diseases. Research of RTDs is limited by the rarity of these disorders (small sample size) and sparse epidemiologic data. The nationwide survey study of pediatric nephrologists showed that only 20% of children with RTDs carry a molecular diagnosis. Our group aims to establish a larger cohort of RTD cases to facilitate epidemiologic and genetic studies. The POLTube Registry was established in 2012 to improve genetic testing and clinical knowledge of RTDs.
Material and methods: We aim to collect clinical data and blood samples from RTD patients with unclear molecular diagnosis for the purpose of molecular testing. Here, we outline our progres since the establishment of the registry in 2012.
Results: To date, 126 patients from 100 families with RTDs have been recruited. The patients were enrolled from 15 pediatric nephrology centers. Most patients come from central and south-east part of Poland (83%). In 98 (78%) patients genetic analysis confirmed the clinical diagnosis. The following RTDs were diagnosed: familial hypomagnesemia with hypercalciuria/nephrocalcinosis - FHHNC (CLDN16; n=28), cystinuria (SLC3A1/SLC7A9; n=15), nephrogenic diabetes insipidus - NDI (AVPR2/AQP2; n=12), Lowe syndrome (OCRL; n=12), Dent disease (CLCN5; n=9), distal renal tubular acidosis (SLC4A1/ATP6V1B1/ATP6V0A4; n=10), Gordon syndrome - GS (WNK1/KLHL3; n=9) and renal glicosuria (SLC5A2; n=3). The molecular basis remains unsolved in 28 patients suspected of RTDs, most with Bartter/Gitelman (n=5) and GS (n=4). Additional molecular analyses were performed in families of Dent/Lowe syndrome, NDI, and FHHNC, confirming carrier status for a pathogenic mutation in 37 out of 47 tested subjects.
Conclusions: Our registry provided some epidemiologic features and access to genetic testing, facilitating molecular diagnosis and genetic counselling for the majority of RTD cases. The causes of uneven distribution across Poland and underrepresentation of some RTDs need to be found.

O41
Multi-centre Uk Observational Cohort Study Of Bartter Syndrome (bs): 15 Year Follow-up

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Introduction: Review of literature on Bartter Syndrome, a rare autosomal recessive renal tubular disorder, elicited limited information on disease progression from diagnosis to adulthood, electrolyte supplementation dosages and medications used to reduce polyuria, prompting this review.
Material and methods: Retrospective review of medical records from 3 UK tertiary paediatric nephrology centres, covering a population of 15 million.
Results: Cohort of 35 patients. 64% were born prematurely (<36 weeks gestation). 43% were low birth weight (<2.5 Kg). Male to female ratio1:1, 80% were non-Caucasian with 57% born to consanguineous parents. The commonest mutation detected was CLCNKB. Length of admission following diagnosis ranged 12 days to 27 months (median 2 months). 57% were diagnosed in neonatal period. 21% had profound deafness from birth; deafness later in childhood was rarely recorded. 43% of children demonstrated nephrocalcinosis, developing after 5 years of age in the majority. Fluid requirements and urine output was age dependent and ranged from 50-220 mls/kg/day. Urine output ranged 15-250 mls/kg/day. Electrolyte supplementation ranged from 0.5-35 mmol/kg/day for potassium and sodium 0.2-12mmol/kg/day, greatest requirements noted during first year of life. Indomethacin (0.5-6 mg/kg/day) and captopril (0.1-1mg/kg/day) used frequently to reduce polyuria. Central venous access sited in 23% of patients to manage high fluid requirements in early infancy, with 75% requiring a naso-gastric tube (duration 7 to 36 months), 25% of this group receiving a gastrostomy. Nephrectomy was not undertaken. Associated conditions included Kawasaki type illness prior to diagnosis in 2 children, leptin receptor mutation in one child and 2 children with colitis, where ulcerative colitis was confirmed in one patient.
Conclusions: This retrospective review informs the understanding of medical management and progression of BS infants. Detailed attention to electrolyte requirements and drug dosages used to reduce polyuria during childhood are imperative to improve outcome.

O42
Utility Of Spot Urine Sample To Study Tubular Function: Validation And Agreement

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Introduction: We analyze the validity and agreement of different spot urine samples in comparison to 24 hour collection for the study renal tubular function.
Material and methods: Prospective observational study in children from our Pediatric Nephrology outpatient office aged 5 to 9 years who achieved night time dryness. The patients collected 6 serial timed urine specimens during 36 hours. We analyzed each one separately along with a blood sample and a 24 hour period sample obtained from 4 of these timed specimens. The principal variables were main solutes fractional excretions (FE) and secondary ones solute/creatinine ratios. ROC curve assessed validity. For agreement we tested Pearson Correlation, Interclass Coefficient Correlation (ICC) and Bland Altman plot.

Results: We recruited 52 patients. The most prevalent pathologies were unique kidney, pre-lithiasic state and uropathy. First morning void had an optimal area under curve (AUC) for calcium/creatinine (0,89 (CI 0,779-1,01)), protein/creatinine (0,885 (CI 0,8 - 0,989)) Calcium/creatinine ratio cut off point of 0,2 mg/mg had 90% sensitivity and 76,2% specificity. For protein/creatinine ratio 0,2 mg/mg had 92,7 specificity but only 54,4% sensitivity. In our patients, 0,15 mg/mg would work better as screening showing 81,8% sensitivity. First morning void showed the best agreement in Bland Altman plot for all parameters with a minimum negative bias for most of them. This agreement improved for low values. All parameters had good correlation with 24 hour specimen (r2 0,7-1, p<0,01), except potassium FE and phosphate tubular reabsorption (r2<0,6). ICC was excellent (ICC > 0,75) or acceptable (ICC > 0,4) except for uric acid FE and excretion ratio. Second morning sample had better AUC (0,99 (CI 969-1)) for calcium/creatinine ratio maintaining good agreement. Despite this, none of the samples were as accurate in the global study as first morning void.
Conclusions: First morning void may be useful for screening in the study of tubular function in children.

O43

Unusual Inheritance Of Atp6v1b1 Mutations In Four Children From Two Unrelated Families

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Introduction: Distal renal tubular acidosis (dRTA) with sensorineural deafness (SND) is inherited in an autosomal recessive manner and caused by mutations in the ATP6V1B1 gene. It is a rare entity and usually expected to born from consanguineous parents who are carriers for the same mutation.
Material and methods: Here we present four children whose heritage pattern and parents consanguinity are unexpected.
Results: Case 1: parents are cousins, however mother doesn't have any mutation in ATP6V1B1 and ATP6V0A1, father and child have the same heterozygous mutation ATP6V1B1: c.1394G>A in exon 14(p.Arg(CGC)465His(CAC). Any of them don't have any mutation in AE1 gene. Mother and father are healthy. Child has polydipsia and laboratory findings of dRTA but no SND. Case 2 and 3: parents are second degree cousins. However unexpectedly mother is heterozygous for p.Arg(CGA)31*(TGA) mutation, father is heterozygous for p.Thr(ACG)166Arg(AGG)fs*9 mutation. Both brothers have compound heterozygous mutations with full clinical presentation of dRTA and SND. Case 4: there is no consanguinity between the parents. However they both are heterozygous for p.Arg(CGA)31*(TGA) mutation. Mother is the aunt of case 2 and 3 (their mother's sister). A homozygous c.91C>T in exon 1 [p.Arg(CGA)31*(TGA)] in the ATP6V1B1 gene was detected in the child with full clinical presentation of dRTA and SND.
Conclusions: From these cases it is concluded that 1) previously reported c.1394G>A mutation in exon 14, causes mild dRTA without SND if the heritage is heterozygous 2) Consanguineous parents could be carrier for different heterozygous mutations. 3) Even in rare disease, nonconsangiuneous parents could be carrier for the same heterozygous mutation.

O44

Whole Exome Sequencing In A National Cohort Of Steroid Resistant Nephrotic Syndrome Reveals Extent Of Genetic Heterogeneity

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Introduction: Up to 95% of children presenting with Steroid Resistant Nephrotic Syndrome (SRNS) in early life will have a pathogenic single gene mutation in one of over 30 genes currently associated with this disease. Little is known of the effect of polymorphic variants. We followed up our previous findings that the increasing reliability of Next Generation Sequencing (NGS) provides the potential for revolutionising genetic investigation of this and similar patient groups.
Material and methods: We used exome sequencing to screen 100 paediatric SRNS patients for genes known to be associated with hereditary SRNS as well as to look for novel polymorphic variants in other genes, potentially involved in the disease. Patients were collected via a national UK Renal Registry with comprehensive detail of phenotype. Significant variants detected by NGS were confirmed by conventional Sanger sequencing.
Results: 22 patients had either a previously described mutation or a variant likely to be disease causing. Analysis revealed known as well as novel disease associated variations in routinely tested genes such as NPHS1, NPHS2 and WT1 as well as in other, less common genes such as MYO1E or recently identified ADCK4. Phenotypically unexpected mutations were COL4A5 (hemizygous missense) in a patient without hearing loss and a TRPC6 in a patient presenting aged 8 years. Response to immunosuppression was analysed across genotypes. Across the exome, a significant increased burden of certain rare variants was noted, in cases versus controls, implicating the presence of modifier genes associated with disease. Analysis of the next 100 patient exomes from this national cohort is currently underway.
Conclusions: Detailed and comprehensive genetic testing will rapidly revolutionise our management of this disease, leading to genotype based refined and individualised treatment pathways.

O45

"cns/srns-outcome-study": Efficacy Of Immunosuppressive Therapy And Renal Function In Patients With Hereditary And Non-hereditary Steroid-resistant Nephrotic Syndrome

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Introduction: Mutations in podocyte genes are associated with the manifestation of congenital or steroid-resistant nephrotic syndrome (CNS/SRNS). It is controversially discussed whether patients benefit from immunosuppression with ciclosporin A (CsA). Aim of the study is the clinical characterization of CNS/SRNS-patients with hereditary and non-hereditary disease regarding their response to intensified immunosuppressive therapy and their renal outcome.
Material and methods: 246 patients (57 CNS/189 SRNS) were included in this study (8 participating centers in Germany and Austria). Mutational analysis was performed along an algorithm based on the frequency of occurrence within different age groups (NPHS2, WT1 (all patients), NPHS1 (age at onset <6ys), TRPC6 (age at onset >6ys). Additional genes were analysed following special characteristics of renal histology, clinical course or extra-renal symptoms. Mean follow-up time was 10 years.
Results: In total, we identified 136 podocyte gene mutations (mutation detection rate 55%). The majority of patients presented with mutations in

NPHS2 (n=44), NPHS1 (n=35) and WT1 (n=33). In addition we detected mutations in SMARCAL, TRPC6, Lamb2, INF2, PLCE1, LMX1b, MYH9 and AHRGDIA. Therapy was based on CsA in 67% of patients. Only 12% of patients with genetic SRNS responded to CsA (all partial response) compared to 80% of the non-hereditary group. Renal function differed significantly between groups with end-stage renal failure (ESRD) in 77% of patients with genetic disease compared to 26% in patients with non-hereditary CNS/SRNS. Patients resistant to CsA therapy had a higher risk to develop ESRD than patients with remission of the disease (67% vs. 43% (partial remission) and 4% (complete remission)).
Conclusions: The mutation detection rate in this large CNS/SRNS-cohort was high. Patients with genetic SRNS had a major risk to develop ESRD and did not experience complete remission following CsA therapy. Resistance to CsA was associated with high incidence of ESRD irrespective of a hereditary background of the disease.

O46

Pituitary Adenylate Cyclase-activating Polypeptide (pacap) In Nephrotic Kidney: A Neutral Bystander Or An Active Player?

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Introduction: Recent studies have reported a nephroprotective effect of PACAP in a variety of renal disease models. Recently, we discovered plasma PACAP deficiency in nephrotic syndrome (NS) due to urinary loss. However, renal PACAP expression in NS has never been studied. The aim of this study was to explore the expression of PACAP and its receptors PAC1, VPAC1 and VPAC2 in healthy and nephrotic kidney tissue and to study a potential nephroprotective role of PACAP in NS.
Material and methods: RT-PCR, qPCR, werstern blot and IF stainings were performed for PAC1, VPAC1 and VPAC2 in 3 renal cell lines: conditionnally immortalized (ci) proximal tubular epithelial cells (PTEC), podocytes and glomerular microvascular endothelial cells (GMVEC). IH and IF stainings for PACAP, PAC1, VPAC1 and VPAC2 were performed on kidney tissue from 4 control children and 2 children with congenital and 5 with acquired NS. ciPTECs were exposed to an albumin concentration range, mimicking proteinuria related damage, with and without addition of recombinant PACAP. WST-1 cell viability tests were performed.
Results: ciPTEC showed VPAC1 expression. All other cell lines did not express the 3 receptors. PACAP and VPAC1 were found in the tubular epithelial cells and VPAC1 and VPAC2 were found in the glomeruli on renal tissue of both NS patients and controls. PACAP expression was more pronounced in tubular epithelial cells of NS patients than of controls. Cell viability in ciPTECs decreased with increasing albumin concentrations. Addition of recombinant PACAP led to a protective effect on cell viability.
Conclusions: Our observations provide new insights in the expression of PACAP and its receptors in the healthy and nephrotic kidney. PACAP prevents albumin induced damage of ciPTECs. The enhanced presence of PACAP in tubular epithelial cells in nephrotic kidneys is probably due to re-uptake of filtered PACAP and possibly plays a protective role in proteinuria related damage.

O47

Everolimus Prevents Podocyte Injury Via Stabilizing Tubb2b And Dcdc2 Expression

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Introduction: Glomerular podocytes are highly differentiated epithelial cells that are key components of the kidney filtration units. The podocyte actin cytoskeleton and associated adhesion sites to the glomerular basement membrane build the basis for the dynamic podocyte cytoarchitecture and play a key role for proper podocyte function. Recent studies implicate that immunosuppressive agents including the mTOR-inhibitor everolimus (EV) have a direct protective role on the stability of the podocyte cytoskeleton.
Material and methods: In order to elucidate mechanisms underlying this EV-mediated effect, we carried out Affymetrix microarray gene expression studies to identify target genes and corresponding pathways in response to EV. We used immortalized human podocytes (in vitro model) and analyzed the effect of EV in a puromycin (PAN) experimental model of podocyte injury. Verification of microarray data was performed with Q-PCR, Western-blot analysis, immunocyto- and immunohistochemistry on cultured podocytes and human kidney specimen.
Results: Upon treatment with PAN, Affymetrix array data analysis revealed gene clusters involving cytoskeletal-associated pathways, apoptosis, adhesion, migration and extracellular matrix composition to be among the most significantly affected by EV. Differentially regulated and EV rescued genes included tubulin beta 2B class IIb (TUBB2B) and doublecortin domain containing 2 (DCDC2), both involved in microtubule structure formation in neuronal cells. Interestingly, both genes have not been identified in podocytes so far. Confirming the gene expression data, Western-blot analysis in cultured podocytes and immunohistochemistry in healthy control kidneys showed an increase of TUBB2B and DCDC2 protein after EV treatment and a glomerular localization. Immunofluorescence co-staining with nephrin demonstrates a podocyte specific expression in-vivo, revealing a novel role of TUBB2B and DCDC2 in glomerular podocytes.
Conclusions: Taken together, our study points to non-immune mediated effects of the mTOR-inhibitor EV on the podocyte actin cytoskeleton, involving mechanisms of microtubular function via up-regulation of two novel podocyte proteins, TUBB2B and DCDC2.

O48

Dexamethasone Blocks Adriamycin-induced Podocytes' Mobility Via A Nephrin Signaling Pathway

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Introduction: Proteinuria is an essential part of nephrotic syndrome (NS). Although glucocorticoids are the primary treatment for NS, neither the target cell nor mechanism of action of glucocorticoids is known. We investigated the effect of Dexamethasone (Dex) on the motility and permeability of podocytes and on podocyte nephrin expression.
Material and methods: We examined the effect of Dex on the motility of podocytes using scrape-wound and transwell migration assays. We also investigated the effect of Dex on the permeability of a monolayer of podocytes incubated with FITC-BSA. Podocyte effacement in ADR-treated rats with or without Dex pretreatment was also evaluated. Western blot analysis was used to assess the expression of nephrin in podocytes treated with these regimens.
Results: Scrape-wound and transwell migration assays demonstrated increased motility in Adriamycin (ADR) treated podocytes. Dex pretreated cells had similar motility as the normal control group. Diffusion studies using FITC-BSA and a podocyte monolayer showed that the

changes in FITC-BSA podocyte permeability correlated with changes in motility. Animal testing showed that rat ADR-induced podocyte foot process (FP) effacement was significantly improved after Dex treatment. The up-regulation of podocyte nephrin expression induced by ADR was significantly inhibited when the podocytes were pretreated with Dex.
Conclusions: Dex had a direct impact on podocyte motility.

O49
Do C1q Or Igm Nephropathies Predict Disease Severity In Children With Minimal Change Nephrotic Syndrome?

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Introduction: C1q and IgM nephropathy are suggested as being variants of MCNS. Many believe that they signify a worse prognosis in children with minimal change nephrotic syndrome (MCNS) as compared to immunofluorescence (IF) negative MCNS. The aim of our study was to determine the prognostic significance of C1q nephropathy and IgM nephropathy in children with MCNS.
Material and methods: Fifty-five children with MCNS who had been biopsied over the course of 24 years in our institution were retrospectively categorized into three groups on the basis of IF microscopy findings: IF negative MCNS (29/55 patients), MCNS with IgM nephropathy (19/55 patients), and MCNS with C1q nephropathy (7/55 patients). Clinical characteristics at disease presentation, clinical course, and renal outcome were compared between groups during the median follow-up period of 16.9 years (minimum 1.0, maximum 31.1 years).
Results: No statistically significant differences in clinical characteristics at disease presentation, clinical course and renal outcome were demonstrated. IgM nephropathy, C1q nephropathy and IF negative MCNS were clinically indistinguishable.
Conclusions: We concluded that C1q or IgM nephropathy variants do not seem to signify a worse prognosis in children with MCNS as compared to children with IF negative MCNS.

O50
Igm Intensity Of The Surface Of T Cells: A Marker Of Disease In Pediatric-onset Systemic Lupus Erithematosus

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Introduction: Pediatric-onset systemic lupus erithematosus is characterized by a very frequent involvement of the kidney (67-82% of pSLE cases), which is often a presenting feature. At disease onset many patients have renal disease, but lack a sufficient number of American College of Rheumatology criteria to be diagnosed as SLE. These patients are referred to as having a "Full-House" nephropathy (FHN).
Material and methods: 99 patient samples from 39 patients with SLE with renal involvement, 17 patients with non-renal SLE and 21 patients with FHN were collected. Peripheral blood mononuclear cells were stained with a panel of fluorescent antibodies (anti CD-19, anti-CD27, anti-CD38, anti-CD5, anti-IgM, anti-IgG, anti-CD3, anti-CD4, anti-CD8) and different T and B cell sub-populations were quantified by flow cytometry.
Results: A sub-population of intensely IgM-positive T cells was identified in most SLE patients. The mean fluorescence intensity (MFI) of IgM on T cells of different patient populations was compared. SLE patients with or without renal involvement were found to have significantly higher IgM MFI (2316 [406-1290 IQR], $p<0.001$) compared to patients with FHN (268 [198-321 IQR]). This analysis evaluated patients based on their diagnosis, regardless of disease activity. In 31 patients with active disease (onset or relapse), including 23 SLE and 8 FHN, specificity, sensitivity and PPV were calculated for the following parameters: ANA, anti-dsDNA, low C3, low C4, malar rash, discoid rash, photosensitivity, oral ulcers, arthritis, serositis, renal disorder, neurological disorder, hematological disorder, gender, age>13 yrs and MFI of IgM on T cells. T cell IgM positivity with a cut-off of 400 MFI performed best at discriminating SLE from FHN (Sensitivity 0.96, Specificity 0.75, PPV 0.92). MFI IgM on T cells decreased significantly when patients achieved disease remission.
Conclusions: Analysis of IgM intensity on T cells of patients with lupus nephritis may be useful to diagnose children and adolescents with SLE.

O51
Vegf Protects The Glomerular Endothelium From Complement-mediated Injury By Increasing Complement Regulatory Capacity

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Introduction: Haemolytic uraemic syndrome (HUS) is characterised by glomerular thrombotic microangiopathy (TMA). Various apparently unrelated pathogenic mechanisms cause TMA. Mutations in genes encoding alternative complement pathway proteins cause HUS, whilst treatment with vascular endothelial growth factor (VEGF) inhibitors in humans and podocyte-specific knockdown of Vegfa in mice also cause TMA. Considering these mechanisms, we hypothesized that reduced podocyte VEGF-A alters the balance of complement regulation on glomerular endothelial cells thereby increasing susceptibility to complement-mediated injury and TMA development.
Material and methods: Complement factors were measured on conditionally immortalised human glomerular endothelial cells and in vivo by FACS, WB and IF. The protective complement components CFH, CD46, CD59, Factor I and CD55 were measured. Complement challenge experiments were carried out for functional analyses in vitro.
Results: In these studies, human glomerular endothelial cells expressed protective complement regulators. VEGF-A increased both the synthesis and surface expression of complement factor H (CFH), CD46 and CD59 but not factor I or CD55. Pre-treatment of cells with VEGF-A reduced the deposition of complement activation fragments following complement challenge. Inducible podocyte-specific Vegfa knockout mice with TMA showed reduced glomerular CFH and CD59a expression with intravascular complement deposition.
Conclusions: The loss of podocyte-derived VEGF-A reduces glomerular endothelial cell expression of protective complement regulators, which we propose predisposes to complement mediated glomerular injury and TMA development. This relationship provides new insights into local mechanisms which protect the endothelium from complement mediated injury and sheds light on the potential negative effects of anti-VEGF agents in the kidney.

O52
Long Term Follow-up Of Biopsy Proven Pediatric Henoch Schönlein Purpura Nephritis

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Introduction: Henoch Schönlein purpura (HSP) nephritis is responsible for progressive renal disease in 7-50% of patients. Treatment usually depends on the severity of histological lesions. We aimed to determine longterm outcome of biopsy proven HSP nephritis and to identify correlations between disease development and treatment.

Material and methods: A total of 142 patients with HSP nephritis (graded according to the ISKDC classification) were followed up from 2 to 10.5 years. Mean (±SD) age at presentation was 7.6 ±2.8 years.
Results: Nephrotic range proteinuria was present in 28% with grade II, 60% with grade III and 90% with grade IV histological lesions. Significant proteinuria (>0.5g/L) was found in 9/48 patients three years, in 8/25 patients five years and in 3/14 patients 10 years post renal biopsy. There was no correlation between risk for proteinuria at 3, 5, or 10 years with initial histological lesions or treatment modalities such as oral or pulse steroids. Treatment with angiotensin converting enzyme inhibitors/ angiotensin receptor blockers (ACEi/ARB) was related with lower proteinuria mainly if started precociously.
Conclusions: Even mild forms of HSP nephritis are at risk for significant proteinuria in the long term. Very early introduction of ACEi/ARB may improve long term outcome independent from histological lesions.

O53

Human Podocytes Secrete Active Complement Components In A Model Of Membranous Nephropathy

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Introduction: A local auto/parakrine secretion of complement components is currently highly debated. In primary membranous nephropathy (MN), antibodies against PLA2-receptor lead to local complement activation and formation of subepithelial immune-deposits. The aims of our study were to evaluate the capability of podocytes to secrete active complement components and to test their importance in a model of MN.
Material and methods: Production and secretion of complement components were analyzed on mRNA and protein levels in human podocytes. Functionality was tested in C3-convertase assays. The in-vitro relevance was analyzed in a model of MN. Cells were incubated with sheep anti-podocyte-antibodies. Normal human serum (NHS) or complement depleted serum was added as a source of complement components. The induction of the classical pathway of the complement system was indirectly stated by the measurement of mitogen activated protein kinases (MAPK) phosphorylation. Brefeldin A, which prevents the formation of transport vehicles and exocytosis, was added to inhibit the secretion of complement.
Results: Podocytes express various complement components on mRNA and protein levels. In addition, podocytes secrete some complement factors, including C2 and C3. An active C3-convertase was built by the secreted factors. Co-incubation of podocytes with anti-podocyte-antibodies and NHS lead to the phosphorylation of MAPKs (p38α, JNK, and ERK1/2). The activation of MAPKs was also enhanced, when C2 or C3-deficient sera were used. This suggests, that podocytes secrete the missing components. In contrast, the inhibition of exocytosis of complement components by brefeldin A resulted in a smaller increase of phosphorylation of MAPKs.
Conclusions: This study shows that human podocytes secrete functional active complement components. Secreted C2 and C3 participate in complement activation in a model for MN. Local podocytes complement secretion may contribute to the development of immune-mediate proteinuric nephropathies.

O54

Indoleamine 2,3-dioxygenase (ido) Activity And Regulatory T-cells In Children With Primary Iga Nephropathy And Henoch Schoenlein Purpura.

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Introduction: Indoleamine 2,3-dioxygenase (IDO) is an enzyme which catabolizes tryptophan and produces kynurenine (Kyn), a metabolite provided with immunoregulatory activity. IDO-expressing dendritic cells possess potent T cell regulatory properties. Primary IgA Nephropathy (pIgAN) and Henoch Schoenlein Purpura (HSP) are immune-mediated glomerular diseases with similarities but also differences in clinical presentation and outcome.
Material and methods: We aimed at investigating IDO metabolites and regulatory T cells (Treg) in 24 children with pIgAN and 23 with HSP (3-14 years old) with or without renal involvement; 25 healthy controls (HC) were also investigated. IDO activity was assessed in sera as change in tryptophan (Trp) and its catabolic product kynurenine (Kyn), simultaneously determinated using an isocratic RP HPLC method with UV detection. A Kyn/Trp ratio was also calculated. In mononuclear cells (PBMC) real time PCR (Taqman) was adopted to measure mRNA levels of FoxP3mRNA and TGF-β1mRNA. Results were normalized to Abl gene and expressed as fold increase.
Results: Children with pIgAN and with HSP had significantly increased levels of the Trp metabolite Kyn (pIgAN 2.61 ± 0.72; HSP 2.31 ± 0.54 vs 2.02 ± 0.32 μmol/l; for both diseases P= 0.048 vs HC), while Trp levels were similar to controls. The ratio Kyn/Trp, expression of IDO activity, was significantly increased in pIgAN only (5.74±2.27, p=0.0004). FoxP3 mRNA and TGFβ1 mRNA transcriptional levels were significantly depressed (FoxP3 mRNA: pIgAN 0.94 ± 0.19; HSP 0.85 ± 0.07; HC 1.26 ± 0.09, for both diseases p=0.042 vs HC) (TGFβ1mRNA pIgAN pIgAN 0.85 ± 0.09; HSP 0.91 ± 0.07; HC 1.44 ±0.09, for both diseases p<0.0001). There was a significant inverse correlation between Kyn levels and TGFβ1mRNA values (P= 0.023).
Conclusions: Children with pIgAN and HSP present with a similar reduced expression of regulatory T cells transcription factors, while those with pIgAN have also a selective higher activity of IDO enzyme which regulates T cells reprogramming.

O55

Could Cd4+cd25hifoxp3+tregs Frequency In Newly Diagnosed Sle Patients Predict The Activity And Outcome Of The Disease?

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Introduction: The CD4+CD25+ regulatory T cells (Tregs) are critically involved in maintaining self-tolerance and preventing organ specific autoimmunity. The fork-head family transcription factor (Foxp3) is a specific intracellular marker for Tregs necessary for their development and functions. Systemic lupus erythematosus (SLE) is an autoimmune disorder characterized by dysregulation of B and T cells and loss of

immune tolerance. Tregs have not been carefully studied in SLE. This study was conducted aiming at (i) quantification of CD4+ CD25hiFOXP3+Tregs frequency in newly diagnosed SLE patients. (ii) determination of the correlation between the percentage of Tregs and SLE disease activity and outcome.
Material and methods: This case-control observational study was conducted on 29 newly diagnosed SLE children before starting therapy and 24 matched healthy controls. Flow cytometer was used to determine the frequency of CD4+CD25hiFOXP3+ Tregs. FOXP3 expression was tested using PE-conjugated anti-FOXP3 mAb.
Results: FOXP3+ Tregs frequency was significantly lower in SLE patients when compared to controls (0.71%±0.27% vs 2.9%±0.11%, p<0.0001). Inverse correlation between percentage of these cells and serum anti-dsDNA levels was demonstrated (r =-0.91, P < 0.0001). There was no significant differences in FOXP3+ Tregs frequency between SLE patients with nephritis (n=18) and without nephritis (n=11). Furthermore, FOXP3+ Tregs percentage did not show significant correlation to activity indices at renal biopsies in lupus nephritis group. By using ROC curve, a percentage of 0.76% of FOXP3+Tregs could predict unfavorable outcome of SLE patients with 75% sensitivity and 76.5% specificity (AUC=0.792).
Conclusions: CD4+CD25hiFOXP3+Tregs play a crucial role in pathogenesis of SLE and their percentage at time of initial diagnosis can be used as a predictor of disease activity and outcome. However, further prospective studies on more patients should be performed to validate these results.

O56
The Role Of Ahr Pathway In Tissue Factor Regulation By Uremic Toxins

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Introduction: Chronic kidney disease (CKD) markedly increases cardiovascular risk. During the progression of CKD, uremic solutes accumulate in blood and tissues. The indolic uremic solutes, indoxyl sulfate (IS) and indole-3-acetic acid (IAA), have already been shown to be particularly deleterious for endothelial cells. We previously demonstrated that indolic uremic solutes modulate tissue factor (TF) production via the aryl hydrocarbon receptor (AHR) pathway, a major mediator of organism response to xenobiotics. AHR is a ligand-activated transcription factor. AHR activation commitment in cardiovascular diseases has been described recently. We aimed to study the specific regulation pathway of TF by AHR, together with the binding pathway of AHR to the TF promotor.
Material and methods: Using chromatin immune precipitation (ChIP), we studied AHR binding to TF promotor after stimulation by uremic toxins. We transfected Human umbilical veins endothelial cells (HUVEC) with different parts of TF promotor, with part of interest, coupled with a luciferase activity, and analyses TF expression after uremic toxin stimulation.
Results: IAA induces AHR binding on TF promoter. NF-kB binding site mutation on TF promotor reduces this stimulation. IS stimulation doesn't induce AHR binding on TF promotor. Mutation on NF-kB binding site on FT promotor reduces expression of FT expression induced by IS.
Conclusions: IS and IAA regulate TF by different pathways. NF-kB plays pivotal role in IS-dependant regulation pathway. IAA involves a classical genomic pathway, where IS involves a new pathway with NF-kB, not genomic.

O57
Renal Cystine Stones Linked To Fibrosis: Proteomics-based Evidence

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Introduction: We assessed (1) the differences in the function of urinary proteins between children with cystinuria and kidney stones (CYS), and healthy controls (HC), and (2) the presence of diagnostic biomarkers for CYS.
Material and methods: We compared urinary proteomes of 2 children with CYS and 2 age- and gender-matched HC, using liquid chromatography-mass spectrometry (LC-MS/MS). Relative protein abundance was estimated using spectral counting. Proteins of interest were selected using the following criteria: 1) ≥5 spectral counts; 2) ≥2-fold difference in spectral counts; and 3) ≤0.05 p-value for the Fisher's Exact Test. Protein function was analyzed using the DAVID online bioinformatics resource, and Cytoscape was used to investigate the key nodes of unique proteins.
Results: Of the 623 proteins identified by proteomic analysis, 180 exhibited at least 2-fold difference between CYS and HC. Of those, 94 proteins were up-regulated in CYS, 26 of which were involved in response to wounding, 21 in inflammatory response, 18 in immune response, and 4 in cellular response to oxidative stress. 86 proteins were down-regulated in CYS, 26 of which were involved in cell adhesion. 140 proteins were found only in children with CYS, 33 of which met the selection criteria. Protein-protein interaction modeling of CYS unique proteins identified actin, vimentin, heat shock 70 kDa protein (HSP70), inter-alpha-trypsin-inhibitor heavy chain (ITIH), and matrix metalloproteinase-9 (MMP-9) as the key nodes, proteins associated with fibrosis pathways.
Conclusions: We provide proteomic evidence of oxidative injury, inflammation, wound healing and fibrosis in children with cystinuria and kidney stones. We speculate that oxidative stress and inflammation may cause remodeling via actin and vimentin pathways, leading to fibrosis. Additionally, we identified ITIH and MMP-9 as potential diagnostic biomarkers and novel therapeutic targets in CYS. These unique proteins merit further investigation.

O58
Urine Heat Shock Protein Levels In Children With Type1 Diabetes Mellitus

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Introduction: Diabetic nephropathy is a common cause of end-stage renal disease in adults. Insidious progressive renal damage caused by type 1 diabetes mellitus (T1DM) may begin in childhood before it becomes manifest in adult ages. Heat shock proteins (HSPs) family contains several members which regulate the cell response to any hazardous factors to prevent protein structure. The aim of the study is to determine whether urine levels of HSPs increase in diabetic children with time and indicate a progressive renal injury in T1DM.
Material and methods: 33 Patients with T1DM and 24 healthy children were enrolled in the study. Renal function was normal in all patients. Urine levels of HSP27, HSP40, HSP60, HSP70 and HSP90 were measured by ELISA at two consecutive years (2012 and 2013). The results were evaluated as urine HSP/creatinine ratios (uHSP/Cr).
Results: Mean age and gender distribution of patient and control groups were not significantly different (p>0.05). Microalbuminuria was detected in 3 patients. Mean urine levels of HSP27/Cr, HSP40/Cr, HSP60/Cr, HSP70/Cr, HSP90/Cr in patient group were significantly higher than in controls in 2012 (uHSP27/Cr 460.12±217.64 vs 270.02±136.83pg/mgCr; uHSP40/Cr 180.89±118.59 vs 99.44±62.49pg/mgCr; uHSP60/Cr 114.40 ±64.91 vs 70.50±43.70pg/mgCr; uHSP70/Cr 41.17±28.42 vs 16.47 ±7.32pg/mgCr; uHSP90/Cr 175.64±102.22 vs 107.61±75.85pg/mgCr) (p<0.05). Comparing uHSPs/Cr levels in 2013 with those in 2012,

uHSP70/Cr level increased significantly in 2013 (51.08±27.72pg/mgCr; p=0.001), whereas uHSP60/Cr level decreased (99.59±77.37pg/mgCr; p=0.043) and uHSP27/Cr, uHSP40/Cr, uHSP90/Cr levels remained stable (p>0.05). Area under the curve (AUC) for uHSP70/Cr (0.957) was significantly higher than AUC for uHSP27/Cr, uHSP40/Cr, uHSP60/Cr, uHSP90/Cr (0.739, 0.740, 0.649 and 0.750, respectively). Using a cut-off 22.59pg/mgCr for uHSP70/Cr to predict diabetic damage, sensitivity and specificity were 85% and 96%, respectively.
Conclusions: Our results suggest that uHSP70/Cr levels increase over time and may indicate early phases of progressive kidney damage in diabetic children, while normal urine microalbumin levels do not exclude diabetic nephropathy.

O59
Systemic Complement Activation And Complement Mutations In Ehec Associated Pediatric Hemolytic Uremic Syndrome

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Introduction: In contrast to atypical hemolytic uremic syndrome (HUS), only few data are published on systemic activation of the complement system and mutations in complement genes in Escherichia coli (EHEC) associated pediatric HUS.
Material and methods: Complement activation (CH50, APH50, SC5b-9, C3d) was analyzed at four time points over six months in 25 children with EHEC associated HUS who were submitted to our clinic during the German epidemic 2011 and in the years 2012/13. Seven of our patients received the complement C5 inhibitor Eculizumab in case of neurologic complications. Additionally, in all patients we performed targeted Next Generation Sequencing (NGS) of in total 89 genes (1239 exons) involved in complement regulation and coagulation including all known genes described for aHUS and related disorders.
Results: Classical and alternative functions of the complement system were normal throughout the observation time. In contrast the mean concentration of the soluble terminal complement complex (SC5b-9 was significantly elevated at day 2 (median 566, range 123 -2375) ng/ml), and dropped over the time to normal values at day 180 (median 194, range 180-210). C3d concentration was slightly elevated at day 2 (46 ± 12), with normal levels from day 12 on. In the 7 patients treated with Eculizumab in the first 3 days after HUS diagnosis, a rapid decrease of CH50 reflected complete complement inhibition in vitro. SC5b-9 levels of > 320 ng/ml (n=16) at time of diagnosis of HUS were associated with the number of transfusions and an increase of LDH but not with the need and duration of dialysis. Genetic analysis showed various changes that can be hypothesized to have some impact on the clinical course.
Conclusions: In the first days after diagnosis of EHEC associated HUS a strong complement activation is observed which was clearly inhibited upon early treatment with Eculizumab. High concentrations of SC5b-9 were associated with a more severe course of the disease and might therefore be used as a prognostic marker at time of HUS diagnosis. Alterations in genes involved in complement regulation and coagulation may increase the individual susceptibility for EHEC associated HUS.

O60
Effect Of Complement Factor H Deficiency On Pneumococcal Infection In Mice

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Introduction: About 5% of the hemolytic uremic syndrome (HUS) cases is preceded by a Streptococcus pneumoniae infection. According to the current hypothesis, this is mediated by the removal of N-acetylneuraminic acid by the bacterias neuraminidase from cell-surface glycoproteins, exposing the normally hidden T antigen. The complement system plays an important role in host defense and inflammation. Mutations have been associated with 50-60% of the patients with atypical HUS and in ~30% of these cases, a mutation is identified in complement factor H (CFH), a key regulator of the alternative pathway. S.pneumoniae is able to evade the complement system by binding of human CFH. However, as the bacteria is unable to bind mouse CFH, the use of murine infection models allows the analysis of the direct effect of CFH deficiency during pneumococcal infection.
Material and methods: Wild-type (Cfh+/+), heterozygous (Cfh+/-), and homozygous CFH deficient (Cfh-/-) C57Bl/6J mice, intravenous inoculated with wildtype (WT) S.pneumoniae TIGR4 bacteria and three mutants (lacking the CFH binding pneumococcal surface protein C [ΔPspC], neuraminidase A [ΔNanA], or the pneumococcal toxin pneumolysin [ΔPly]), were studied during 19 hrs for clinical, laboratory, and pathological parameters reflecting bacterial and/or renal injury.
Results: The Cfh-/- mice had more severe disease course, significantly higher serum IL-6 levels, and a significantly higher bacterial load in blood and kidney compared to Cfh+/- mice, independently of which bacteria were used. Deletion of pneumolysin resulted in a less virulent S.pneumoniae, while the virulence of ΔPspC and ΔNanA bacteria did not differ significantly from WT TIGR4. The acute kidney injury markers NGAL and KIM-1 were increased tremendously post-infectiously in all mice, except for KIM-1 levels in mice infected with ΔPly. Histological examination is currently being performed.
Conclusions: We observe in CFH deficient mice, displaying secondary C3 deficiency, a more severe invasive pneumococcal disease in combination with kidney injury.

O61
Complement Activation Patterns In Atypical Hemolytic Uremic Syndrome During Acute Phase And In Remission

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Introduction: Atypical hemolytic uremic syndrome (aHUS) is a serious renal disease with poor prognosis. It is associated with (genetic) alterations in alternative complement pathway. Nevertheless, comprehensive evidence that the complement system in aHUS patients is more prone to activation than in healthy individuals is still lacking. Therefore, we performed a thorough analysis of complement activation in this disease.
Material and methods: Complement activation patterns of the aHUS patients in acute phase (n=6) and in remission (n=11) were compared to those of healthy controls (n=20). Background levels of complement activation products C3b/c, C3bBbP and TCC were measured using ELISA in EDTA plasma. In vitro triggered complement activation in serum samples was studied using zymosan-coating (C3b and TCC as readout) and pathway-specific assay (Wieslab® Complement system Screen, TCC as readout). Furthermore, efficiencies of the C3b/c, C3bBbP and TCC generation in fluid phase during spontaneous activation were analyzed. Genetic analysis of alternative complement pathway in patients was performed using Sanger sequencing and presence of autoantibodies to complement factor H was analyzed by ELISA.

Results: Patients with acute aHUS showed significantly elevated levels of C3b/c (P<0.01), C3bBbP (P<0.0001) and TCC (P<0.0001) in EDTA plasma, while values of patients in remission were normal, compared to those of healthy controls. Moreover, serum samples from patients in remission showed normal in vitro patterns of complement activation on the surface (zymosan activation and pathways-specific assay) and demonstrated normal kinetics of complement activation in the fluid phase.
Conclusions: Altogether, our data indicate that while aHUS patients have clearly activated complement in acute phase of the disease, this is not the case in remission of aHUS. This knowledge gives important insight into complement regulation in aHUS and may have an impact on monitoring of these patients, particularly when using complement inhibition therapy.

O62

Voiding Urosonography With A Second Generation Ultrasound Contrast-agent In Vesicoureteral Reflux Detection And Grading In Children: How Reliable Is It?

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Introduction: The diagnostic accuracy of contrast-enhanced voiding urosonography (ce-VUS) in diagnosing vesicoureteral reflux (VUR) is high compared with voiding cystourethrography. However, its reliability has not been yet adequately evaluated. The purpose of this study is to assess the reliability of ce-VUS in VUR detection and grading by estimating the inter- and intra- observer agreement of two radiologists.
Material and methods: Two hundred ten children (86 boys/124 girls, mean-age 2.7y) with 421 pelvi-ureteral-units underwent ce-VUS examination with a second-generation contrast-agent to detect possible (180) or follow-up known (30) VUR. The video-clips of all ce-VUS examinations were twice independently assessed by two pediatric radiologists 4-6 weeks apart. The inter- and intra-observer agreement was estimated by kappa statistic.
Results: The inter- and intra-observer agreement of both radiologists regarding the presence or grading of VUR was perfect (k=0.90-0.94). There were only two disagreements regarding the presence of VUR (grade I and II false-negative and false-positive respectively). There were 5 cases of disagreement in VUR grading: three cases of VUR grade II-III and two cases grade III-IV. VUR was detected in 123(29%) pelvi-ureteral-units of 87(41.4%) children and it was more common in completely duplicated ureters (6/7) than in single ones (p=0.03). The rate of VUR was independent of sex/age/presence of hydronephrosis (p>0.05).
Conclusions: The reliability of ce-VUS in VUR detection and grading is high. VUS with a second generation ultrasound contrast-agent could be used as a radiation-free alternative.

O63

Contrast-enhanced Voiding Urosonography With A Second-generation Ultrasound Contrast Agent For The Diagnosis Of Vesicoureteric Reflux In 1350 Children: The Experience Of A Single Center

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Introduction: To evaluate the diagnostic performance and safety of intravesical administration of a-second-generation ultrasound contrast-agent (UCA) for the diagnosis of vesicoureteric reflux (VUR) in children.
Material and methods: 1350 children (587boys/763girls, mean-age 2.6y, range 15d-17y) with 2720 pelvi-ureter-units, underwent contrast-enhanced voiding urosonography (ceVUS) to rule out VUR and urethral pathology. A second-generation UCA (SonoVue®, Bracco, Milan) was administered intravesically through 5-8F feeding-tube at a dose of 0.5 ml/bladder filling. Possible adverse-events were monitored during the examination and followed-up for 7 days after the ceVUS by phone-calls. Urine analysis and culture were performed 3-5d before ceVUS in all children and 24-48h in any patient reported with adverse-events.
Results: Minor adverse-events were reported in 45(3.3%) children. These included dysuria (n=39), abdominal pain (n=2), increased frequency of micturition (n=1), vomiting (n=1), perineal irritation (n=1), and urinary-tract-infection after ceVUS (n=1). The onset of adverse-events were subacute in 92% and delayed in 8% and were self-limited non-requiring hospitalization. VUR was detected in 450/1350(33%) patients (162boys/288girls). This was in 653 pelvi-ureter-units (reflux-grade distribution: grade I=1, grade II=276, grade III=266, grade IV=100, grade V=10). The urethra was normal in all children. Mean duration of examination was 14±7 min, including urethral imaging.
Conclusions: There were no serious adverse-events with intravesical use of SonoVue®. Only a few minor adverse-events were reported during ceVUS most likely due to catheterization process. Thus, ceVUS with intravesical administration of a second-generation ultrasound contrast-agent for the diagnosis of vesicoureteral reflux had a favorable safety profile in our study.

O64

Association Of Angiotensin Type 2 Receptor Gene Polymorphisms With Ureteropelvic Junction Obstruction In Brazilian Patients

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Introduction: The angiotensin type 2 (AT2) receptor takes part in the process of ureteric bud during kidney development. Therefore, the gene encoding AT2 receptor, the AGTR2 gene located in the X chromosome, is a potential candidate for genetic association with Congenital Anomalies of the Kidney and Urinary Tract (CAKUT). This study aimed to investigate if AGTR2 gene polymorphisms are associated with CAKUT in general or even with common phenotypes of CAKUT in a Brazilian sample of pediatric patients.
Material and methods: We analyzed 290 pediatric patients with CAKUT and 262 healthy controls from the same geographic area. Hapmap database and literature were used to select tag and functional (rs35474657, MAF = 0.002 in Caucasians) SNPs covering the AGTR2 gene. A sample of 50ng of DNA was used for TaqMan SNP genotyping assays (rs1403543, rs3736556, rs35474657, rs5193 and rs5194), according to standard protocol. Genotyping was performed by real-time polymerase chain reaction using the allelic discrimination mode. Retypes of 20% of the whole sample were performed for quality control. The sample was in Hardy Weinberg Equilibrium for all five SNPs.
Results: The major phenotypes detected in CAKUT group were: idiophatic hydronephrosis (n=70, 24.1%), vesicoureteral reflux (n=62, 21.4%), Ureteropelvic Junction Obstruction (UPJO, n=55, 19%), multicystic dysplastic kidney (n=49, 16.9%). The presence of CAKUT in general was not significantly associated with the SNPs included in this study. However, when patients were segregated according to major phenotypes, the diagnosis of UPJO was significantly associated with AGTR2 gene polymorphisms at rs3736556 and at rs5194.

Conclusions: Our results support that the AGTR2 gene may contribute to the pathogenesis of UPJO and the genetic origin of CAKUT could vary according to phenotype expression.

O65
Need Of Long Follow-up In Children With Congenital And/or Acquired Solitary Kidney

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Introduction: The long-term prognosis in children with congenital solitary kidney and the role of therapy for renal protection are controversial. The aim of this study was to evaluate renal function and blood pressure in children with a solitary kidney from birth (ANA), in children with a solitary kidney after nephrectomy (NX) and the effects of therapy with inhibitors of the SRAA.
Material and methods: We evaluated 30 children (18 M and 12 F) with a solitary kidney, of which 20 (mean age 10.4 ± 6.6aa) with ANA and a mean follow-up 5.5 ± 3.1 and10 children with NX (mean age 12.8 ± 5.1 aa) and mean follow-up 4.8 ± 2.8 aa. In the Group I n.12 patients (UNA2) and in Group II n.8 patients (NX2) were treated with ARB for pathological microalbuminuria. Both renal ultrasonography and renal DMSA scintigraphy had confirmed the diagnosis of congenital solitary kidney. Blood pressure and creatinine of all patients were extrapolated from data recorded during follow-up. The eGFR was calculated using the Schwartz formula corrected for age and sex. The temporal variations of the parameters were compared between the two groups with the Students test.
Results: During follow-up the analysis of the data showed a significant increase of microalbuminuria in both groups. (ANA r 0.747, p <0.01; NX r 0.429, p <0.01). After starting the ARB only the subgroup UNA2 showed a 30% reduction of microalbuminuria. High blood pressure (SBP or DBP ≥ 95th percentile according to the National High Blood Pressure Education Program Working Group) was more frequent in patients who had nephrectomy (NX) although not reaching statistical significance (ns; 13.5% vs. 30.6%). The eGFR during the follow-up did not show significant changes in the 2 groups (UNA r0.254, p <0:10; NX r0.163, p = ns) and did not change even in the subgroups treated with the ARB.
Conclusions: Microalbuminuria is the only factor that has changed in the follow-up examined in both groups regardless of therapy. The use of Sartano allowed the 30% reduction of microalbuminuria only in the group of congenital solitary kidney, while is not effective in patients with solitary kidney after nephrectomy. Our data, as noted in the literature, confirm that renal agenesis should be considered a chronic progressive disease and these patients should be followed with a careful long-term follow-up and appropriate therapy. However, further prospective studies are needed to clarify the long-term prognosis of children with solitary kidney, renal agenesis or after nephrectomy.

O66
Validity Of Postnatal Ultrasound In Predicting Outcomes Of Antenatal Hydronephrosis

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Introduction: The aim of the study was to validate parameters of postnatal kidney ultrasound (PKUS) in evaluating the outcomes of isolated antenatal hydronephrosis (IAH)
Material and methods: Results of PKUS performed at 3 – 30 days of age, voiding cystourethrography and diuretic renography, of patients with IAH from January 2007 to September 2012, were analyzed. Outcomes of interest were uropathy and surgery. The diagnostic performance of PKUS parameters, namely the Society for Fetal Urology (SFU) grading and anteroposterior pelvis diameter (APD), for uropathy and surgery was assessed by receiver-operating characteristic (ROC) curves.
Results: Of 95 patients (75 males, 79%), 47 (49%) had uropathy and 26 patients (27%) underwent surgery. The median (IQR) APD of patients with uropathy, no uropathy, with surgery and no surgery were 13.8 (6.2 – 22.0), 7.7 (5.0 – 11.9), 21.0 (12.7 – 30.1) and 8.0 (4.1 – 12.0), respectively (p = 0.001). In multivariate analysis, the APD of ≥ 15 mm was a predictive factor for uropathy (odds ratio [OR] 4.10; 95% confidence interval [CI] 1.03 – 16.26, p = 0.045) and SFU grade 4 was a predictive factor for surgery (OR 13.81; 95% CI 3.22 – 59.28, p < 0.001). Areas under the ROC (AROC) of SFU grading and APD for uropathy were 0.69 (95% CI 0.57 – 0.79; p = 0.002) and 0.70 (95% CI 0.59 – 0.81; p = 0.001), respectively. AROC of SFU grading and APD for surgery were 0.84 (95% CI 0.75 – 0.94; p <0.001) and 0.80 (95% CI, 0.69 – 0.91; p < 0.001), respectively, with the best cut-offs at SFU grade 4 and APD of ≥ 20 mm.
Conclusions: Watchful observation is recommended for patients with SFU grade 1 – 3 and APD < 15 mm. Additional urologic studies should be recommended in patients with SFU grade 4 or APD ≥ 20 mm as they are at risk for surgical intervention.

O67
Derivation Of A Decision Algorithm To Predict Acute Pyelonephritis In Febrile Children Without Source

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Introduction: The identification of acute pyelonephritis (APN) in children with fever without source (FWS) would be of interest as APN represent half of bacterial infection among those children. Procalcitonin was demonstrated to be significantly associated to APN, and urinary dipstick, a specific screening test for urinary tract infection, could be helpful. We aimed to derive a decision algorithm to predict APN among febrile children without source using simple examinations immediately available (procalcitonin and urine dipstick) at the Emergency Department.
Material and methods: Data from bi-centre cohort studies of children with FWS were analysed using multilevel regression modelling.
Results: 582 children (15% APN) were included. Procalcitonin, leucocytes and nitrites on dipstick urine were associated with APN in univariate and multivariate analysis. A model was derived based on the logistic regression equation, and yielded an AUC ROC of 0.94 [0.91-0.97] significantly higher than procalcitonin and CRP alone (p <0.0001). According to a decision curve analysis, the model also offered a better strategy than those based on biomarkers considered alone. Dichotomizing the model on an interesting threshold, the model achieved 97% [93-99] sensitivity, 54% [49-59] specificity, 40% [35-45] positive predictive value, and 98% [96-100] negative predictive value.
Conclusions: The derived decision algorithm predicted APN with high sensitivity and negative predictive value, meaning that very few patients were misdiagnosed. Specificity reflected the number of more invasive diagnostic procedures, such as reference techniques for urine collection or early DMSA scan, avoided. These results need further abroad validation.

O68
Procalcitonin Compared With Early Dmsa Scan To Predict Acute Pyelonephritis In Children With Urinary Tract Infection: Support Of Bayesian Inference Methods

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Introduction: Urinary tract infections are common pediatric bacterial infections, and may involve renal parenchyma (acute pyelonephritis,

APN) followed by late scarring. Prompt high-quality diagnosis of APN is important to prevent future complications. DMSA scan is considered as the gold standard, however small renal involvement can be missed. Thus, comparing all new tests to this reference test considered as perfect can lead to incorrect conclusion on the new test accuracies. Procalcitonin has been demonstrated as promising biomarkers to predict APN when compared to DMSA as perfect. We aimed to estimate DMSA and procalcitonin diagnostic accuracy using Bayesian statistics that place both tests at the same level of evidence with no a priori gold standard test.
Material and methods: We used a Bayesian approach to explore disease prevalence and tests properties. Two levels of prior distribution were defined: one informative obtained from a published meta-analysis of individual patient data (1011 patients, 61% APN) and pediatrician beliefs for DMSA, and one non-informative.
Results: The fixed model yielded for procalcitonin: Sensitivity 74% [71-77], Specificity 70% [66-74], and for DMSA: Sensitivity 94% [87-98], Specificity 90% [80-97] with informative prior; whereas, with the non-informative prior, it achieved: Sensitivity 72% [59-90], Specificity 75% [53-94] for procalcitonin, and for DMSA: Sensitivity 77% [64-92], Specificity 74% [50-94]. Given the important amount of the additional information contained in prior samples, the non-informative prior seemed sounder. The same discordance between the priors was similarly observed with the independent model.
Conclusions: The Bayesian approach showed that early DMSA was not a perfect gold standard test for APN, despite the clinical beliefs. Moreover, a high PCT could demonstrate a similar diagnostic ability for APN compared to early DMSA when applying no a priori assumption in the Bayesian modelling. PCT may be more than a promising biomarker, and could find a place in the diagnostic work-flow for pediatric UTI.

O69

Spectrum Of Pathogens Causing Urinary Tract Infections In Infants And E. Coli Antibiotic Resistance: A European Overview By The Escape Study Group

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Introduction: Urinary tract infections (UTIs) are common in children with dilating vesicoureteral reflux. These children are often prescribed antibiotic prophylaxis for long periods. For this reason, an online survey of European pediatric nephrologists was conducted with the aim of ascertaining the best antibiotic for the acute treatment and for prophylaxis.
Material and methods: Pediatric nephrologists from the ESCAPE study group completed an online questionnaire, focusing on positive urine cultures (UC) (07/10-06/12) from both hospitalized and non hospitalized infants, under the age of 24 months. Data regarding the spectrum of uropathogens isolated from UC and Escherichia coli patterns of resistance to 9 antibiotics were collected.
Results: We collected 4745 UC at 18 units in 10 European countries. E. coli was the most frequent bacterium isolated from UC, both for IN- and OUT-patients; however in 10/16 hospitals and in 6/15 community settings E. coli was isolated in less than 50% of the total positive UC. Other bacterial strains (Klebsiella, Enterococcus, Proteus, Pseudomonas) were frequently isolated from UC, not only from hospital settings. E. coli showed a very high resistance to Amoxicillin and Trimethoprim and variable to cephalosporin. Nitrofurantoin had a good rate of efficacy, with 11/16 hospitals and 11/14 community settings reporting a resistance lower than 5%.
Conclusions: In order to prescribe an antibiotic prophylaxis to a child younger than 2 year-old, it is important to consider antibiotics efficacious toward a large range of bacteria, as E. Coli is no longer the most dominant bacterium. In choosing the best antibiotic for prophylaxis, we cannot take for granted the diverse antibiotic sensitivity we found. As a result, antibiotic prophylaxis should be more elastic and adaptable over time in order to guarantee maximum efficacy; fixed schemes are no longer acceptable.

O70

Childhood Uti Caused By Esbl- Producing Bacteria: There Is No Risk Factor Anymore!

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Introduction: Urinary tract infection (UTI) caused by extended-spectrum beta-lactamase (ESBL) producing bacteria is a real challenge for clinicians. This study was conducted to understand the risk factors and characteristics of UTI caused by ESBL-producing bacteria in children.
Material and methods: A total of 462 patients aged <18 years, diagnosed with UTI between January 2008 to December 2012 were evaluated retrospectively. Patients with a positive urine culture for ESBL-producing bacteria were defined as case group and a positive urine culture for non-ESBL-producing bacteria were defined as control group. Each case patient was matched with two control patients with priority to age, gender and admission date. Demographical, clinical, laboratory and imaging data were obtained from medical records.
Results: There were a total of 154 case and 308 control patients in the study. Patients with underlying renal abnormalities, had infection and used antibiotics in the last three months were significantly more frequent in case group ($p<0,001$). Age, gender, use of prophylaxis, hospital stay, infections and use of antibiotics in the last 3 months, having an underlying disease, clean intermittent catheterization, having renal scar, recurrent UTI, urinary stone disease, having invasive procedures affecting the urinary tract, and hospital acquired urinary tract infections were chosen as potential risk factors and evaluated by backward logistic regression analysis. None of them were identified to be risk factors for UTI caused by ESBL- producing bacteria.
Conclusions: Some independent risk factors for childhood UTI caused by ESBL- producing bacteria have been reported in past studies. In this particular study, any independent risk factor other than those of the UTI caused by non-ESBL- producing bacteria could not be identified. Accordingly, it was concluded that childhood UTI caused by ESBL- producing bacteria should be viewed as an expected natural infection, just as UTI caused by non-ESBL- producing bacteria.

O71

Diagnostic Accuracy Of Urinary Heparin Binding Protein For Acute Pyelonephritis In Children

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Introduction: We investigated whether urinary HBP (UHBP), released from activated neutrophils, was a useful early diagnostic marker for acute pyelonephritis in children as timely antibiotic initiation successfully prevents renal complications.
Material and methods: Children with suspected acute pyelonephritis were prospectively enrolled between January and September 2013.

UHBP levels were measured at enrollment in all children and one month after antibiotic treatment in children with acute pyelonephritis. Test performance characteristics were calculated against a gold standard of positive urine cultures, and compared with leukocyte esterase (LE) and nitrite measured by dipsticks, and pyuria by microscopy.
Results: 32 patients (median age 2.5 (IQR 0.3– 6.4) years; 65% male) were categorized into two groups based on urine cultures (17 and 15 with positive and negative cultures, respectively). Mean (±SD) UHBP levels (ng/mL) were higher in children with acute pyelonephritis versus controls (46.98 ± 8.39 vs. 14.97 ± 2.98, $p < 0.001$) and declined after antibiotic treatment (46.98 ± 8.39 vs. 16.64 ± 3.75, $p < 0.001$). To detect acute pyelonephritis, the sensitivity, specificity, negative and positive predictive values (NPV and PPV) for UHBP levels ≥ 34 ng/mL were 100, 100, 100 and 100%; for positive LE were 100, 73, 81 and 100%; for positive nitrite were 77, 83, 93 and 78%; for > 10 WBC/HPF were 88, 87, 88 and 87%, respectively. Area under the receiver-operating characteristic curve for UHBP was 1.0 (95% CI 1.0 – 1.0), which was significantly higher versus other tests ($p < 0.05$ for all). Pyuria grade, neutrophil and platelet counts were significantly related to UHBP in a multivariate linear regression model, together accounting for 60% of the variability in UHBP levels.
Conclusions: UHBP level is a rapid, highly sensitive and specific screening test for diagnosing acute pyelonephritis in febrile children. Routine UHBP measurement in suspected cases of pyelonephritis could prevent unnecessary antibiotic treatment.

O72
The Clinical Spectrum Of De Novo Donor Specific Antibodies In Paediatric Renal Transplant Recipients

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Introduction: The development of donor specific human leukocyte antigen (HLA) antibodies (DSA) is associated with worse renal allograft survival in adult patients. This study assessed the natural history of de novo DSA and its impact on renal function in paediatric renal transplant recipients (RTR).
Material and methods: HLA-specific antibodies were measured prospectively using single antigen bead Luminex based assay at 1, 3, 6 and 12 months after renal transplantation followed by 12 monthly intervals and during allograft dysfunction.
Results: Of 215 patients with HLA antibody monitoring, 75 (35%) developed DSA at a median of 0.25 years post-transplant with a high prevalence of Class II (70%) and specifically HLA-DQ (45%) DSA. DSA resolved in 35 (47%) patients and was associated with earlier detection post-transplant (median, inter-quartile range 0.14, 0.09-0.33 years vs. 0.84, 0.15-2.37 years) and lower median fluorescence intensity (MFI) (2658, 1573-3819 vs. 7820, 5166-11990). Overall, DSA positive patients had more rapid GFR decline with a 50% reduction in GFR at mean 5.3 (4.7-5.8) years versus 6.1 (5.7-6.4) years in DSA negative patients ($p=0.02$, Kaplan-Meier). Estimated glomerular filtration rate (eGFR) decreased by a magnitude of 1mls/min/1.73m2 per log10 increase in Class II DSA MFI ($p<0.01$, multilevel linear model). Using Cox regression, independent factors predicting worse renal allograft outcome were older age at transplant (hazard ratio 1.1, CI:1.0-1.2 per year), number of tubulitis episodes on biopsy (1.5, CI:1.3-1.8) and presence of microvasculature inflammation (2.9, CI:1.4-5.7).
Conclusions: In conclusion, paediatric RTR with positive de novo DSA and consequently microvasculature inflammation were at risk of allograft failure. Future studies are required to assess DSA levels as a biomarker for intervention with increased immunosuppression.

O73
Angiotensin Ii Type 1 Receptor Antibodies In Childhood Kidney Transplantation

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Introduction: Angiotensin II type 1 receptor antibodies (AT1RAb) have emerged as non-HLA ab present in patients with acute antibody mediated rejection with risk of graft loss. Furthermore, AT1RAb have been shown to increase angiotensin II sensitivity which may play a role in development of cardiovascular disease (CVD). Data on AT1RAb is lacking on stable transplant recipients, with elevated risk for rejection and future CVD. The aim of this study was to analyze the levels of AT1RAb in a cohort of stable tx patients transplanted in childhood and correlate these to previous rejection and hypertension.
Material and methods: Cross sectional study of 30 children (median age 14, range 3-19 years, median time since tx 5 yrs) and 20 adults (median age 26, range 20-40 years, median time since tx 18 yrs.) transplanted between 1983-2006. Healthy controls, 51 healthy children (5-8 years) and 199 healthy donors (median age: 56.5years). AT1Rab were analyzed with CellTrend imunoassay (http://www.celltrend.de/general-information.html)
Results: Median AT1RAb IgG concentration was significantly higher in the pediatric tx group as compared to the adult txgroup (median total IgG 40 and 10.95 resp, $p<0.0001$). The pediatric control group had lower median IgG concentration than the pediatric tx group (13.3 and 40, $p=0.0006$) but similar to the adult tx group (13.3 and 10.95, $p= 0.3$). The adult transplanted group had a significantly higher AT1RAb IgG levels than the adult control group (median 10.95 and 6.5, resp, $p<0.0001$). No correlation was seen in the use of antihypertensives ($p=0.762$), but a tendency for previous rejections was noted ($p=0.098$).
Conclusions: AT1RAb total IgG levels are significantly higher in a stable pediatric cohort as compared to adult tx patients and healthy controls. There was an association to previous rejections, but not to hypertension. The relevance of our findings in relation to age, time since tx, rejection and future CVD merits future studies.

O74
Long-term Data On The Use Of Everolimus And Low-dose Cyclosporine A In Children After Kidney Transplantation

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Introduction: Only short-term trials of pediatric everolimus use after transplantation have been published.
Material and methods: 35 children (mean age: 10.7±5.6 years) received basiliximab, CsA, and prednisolone after KTx. Everolimus (1.6 mg/m2/d) was added 2 weeks post-KTx. Prednisolone was withdrawn 8–10 months post-KTx. Clinical outcomes and side effects were evaluated prospectively.
Results: All patients and all grafts survived the entire observation period. Median glomerular filtration rates at years 1, 2, 3, and 4 post-KTx were 62, 60, 56 and 56 mL/min/1.73 m2. Acute rejection (Banff score ≥Ia) was diagnosed from indication biopsies in 2 children in year 1, and in one single child in years 2 and 4. Donor-specific antibodies were found in 4/35 patients. Chronic humoral rejection was diagnosed in one patient. One child developed Epstein-Barr virus-associated posttransplant lymphoproliferative disease, which was successfully treated with rituximab. Two patients developed wound-healing problems, 6 aphthous stomatitis. No significant albuminuria was found. SDS for height at 2 and 4 years were -0.73 and -0.74. Sex hormone levels were within the normal range at yearly checkups in all patients except one girl.

Conclusions: De novo immunosuppression with low-dose CsA, everolimus, and prednisolone withdrawal is associated with a good clinical course after pediatric KTx.

O75

Escort Trial - Effects Of Strict Control Of Blood Pressure In Pediatric Renal Transplant Recipients – 1 Year Results From A Randomized Controlled Trial

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Introduction: Arterial hypertension is a known risk factor for impaired graft survival in patients after renal transplantation (RTx). Strict control of blood pressure (BP <50th percentile) delays progression of chronic kidney diseases in children (ESCAPE trial). It is not known whether strict BP control has renoprotective effect also in children after RTx. The aim of this 3-year randomized controlled trial was to investigate whether strict BP control can protect kidney graft in children after RTx. We present 1-year data on blood pressure and proteinuria.
Material and methods: All 23 children from our paediatric renal transplantation centre who fulfilled the inclusion criteria (3-16 years, ≥1 year after RTx, no acute rejection in the last 3 months, eGFR >15 ml/min/1.73m2, 24hr mean BP ≥50th percentile using ambulatory blood pressure monitoring ABPM) were included to the study. They were randomized to standard BP group (STAND, target 24hr MAP 50-95th percentile, n=11) or intensified BP group (INTENS, target 24hr MAP <50th percentile, n=12). All antihypertensive drugs were allowed to reach the target BP. The primary endpoint is the yearly change in eGFR (Schwartz formula, ml/min/1.73m2/year), the secondary endpoints are graft failure, change in proteinuria, blood pressure, left ventricular mass and safety of strict control of BP.
Results: A total of 22 children (median age at baseline 11.2 years, range 6.2-16.8, time after RTx 4.7 years, range 1.0-13.1) completed 1 year of treatment (1 child withdrawn due to steroid-resistant acute rejection). In all children the median 24hr MAP index (mean BP of the patient divided by the 95th percentile) decreased from 0.93 (range 0.85-1.11) at baseline to 0.89 (range 0.80-1.07) after 1 year ($p<0.01$). In STAND group the median 24hr MAP index did not change significantly (0.93, range 0.85-1.07 at baseline, 0.90, range 0.88-1.07 after 1 year). In INTENS group the median 24hr MAP index decreased significantly from 0.94 (0.86-1.11) at baseline to 0.89 (0.80-0.91) after 1 year ($p<0.01$). There was no significant difference between the 24hr MAP index in STAND and INTENS group at baseline but after 1 year 24hr MAP index in INTENS group was significantly lower than in STAND group ($p<0.05$). In all children the median proteinuria did not change after 1 year from baseline values (24.3 vs. 13.9 mg/mmol creatinine, NS). Proteinuria did not change either in STAND or in INTENS group.
Conclusions: This is the first randomized controlled trial on BP control and its effects on graft function in children after renal transplantation. 1 year data demonstrate that reduction of BP <50th percentile is possible in the majority of children. Supported by grant IGA of the MZ Czech Republic Nr. NT11457.

O76

Corticosteroid Free Immunosuppression Is Associated With Continuing Improved Growth In Young Children Following Kidney Transplantation; Long Term Follow-up Results From The Twist Randomised Controlled Trial

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Introduction: Corticosteroid withdrawal (CW) following paediatric kidney transplantation has the potential to improve growth whilst avoiding metabolic and other adverse effects. We recently reported a 196 subject RCT comparing early CW (tacrolimus, MMF, daclizumab and corticosteroids until day 4) with tacrolimus, MMF and corticosteroid continuation (CC). At six months, CW subjects showed better growth with no adverse impact on acute rejection or graft survival (Am J Transplant 2010; 10: 828-836). This two-year follow-up study aimed to determine whether improved growth persisted in the longer term.
Material and methods: Data regarding growth, graft outcomes and adverse events (AEs) were collected at one-year (113 patients) and two-years (106 patients) post-transplant. The primary end point, longitudinal growth calculated as delta height SDS, was analysed using a mixed model repeated measures model.
Results: CW subjects grew better at one-year (difference in adjusted mean change 0.25, 95% CI 0.10, 0.40, $p=0.001$). At two-years, growth remained numerically better in CW subjects (0.20 (-0.01, 0.41, $p=0.06$), and significantly better in pre-pubertal subjects ($p=0.004$). Kaplan Meier estimates of freedom from biopsy-proven acute rejection at two years post-transplant were CW 82.3% and CC 88.1% ($p=0.3$). There was no significant difference between the two groups in patient or graft survival, rejection rate, eGFR, blood pressure, lipid profile, BMI, malignancy or other adverse events.
Conclusions: Early CW effectively and safely improves growth up to two years post-transplant, particularly in pre-pubertal children.

O77

X-linked Alport syndrome patients caused by atypical splicing mutations in COL4A5

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Introduction: X-linked Alport syndrome is caused by mutations in the COL4A5 gene encoding type IV collagen α5 chain (α5(IV)). Although many mutations have been detected in the COL4A5 gene, genetic diagnostic failure of X-linked Alport syndrome cases is common, even if all exons and exon-intron boundaries are directly sequenced. Furthermore, some of male X-linked Alport syndrome patients show a relatively mild phenotype, but few molecular investigations have been conducted to clarify the mechanism of this phenotype.
Material and methods: We retrospectively analyzed 11 patients with atypical splicing mutations. The mutation detection strategy had two steps: (1) genomic DNA analysis using PCR and direct sequencing; (2) mRNA analysis using RT-PCR to detect RNA processing abnormalities.
Results: We identified four splicing site mutations resulting in atypical splicing pattern, one exonic mutation resulting in one whole exon skipping and six intronic mutations that produced cryptic splice-site activation including four deep intronic mutations. Interestingly, one case produced cryptic splice-site with single nucleotide substitution in the deep intron that led to intronic exonization containing stop codon; however, he showed clearly mild phenotype for the male X-linked Alport syndrome patient with a truncating mutation. The mRNA extracted from kidney showed both normal and abnormal transcripts and the normal transcript led to his phenotype milder. This is the novel mechanism in Alport syndrome leading to mild clinical character.
Conclusions: This report highlights the importance of analyzing transcripts in enhancing mutation detection rate in X-linked Alport syndrome and providing insight into genotype-phenotype correlations. This approach can also clarify the cause of the atypically mild phenotype in X-linked Alport syndrome.

O78

Cinacalcet Allows Reduction of Oral phosphate Dose & Pth Control in Xlhr. Preliminary Data

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Introduction: Large Phosphate (P) doses and Calcitriol treatment in X-linked hypophosphatemic rickets (XLHR) further stimulate FGF-23, leading to increased phosphaturia and calciuria, which are risk factors for nephrocalcinosis (NC). Hypothesis: Cinacalcet may improve phosphatemia and hyperparathyroidism in XLHR patients, allowing oral P dose reduction, and diminish the risk of NC. Aim: To report our experience about the use of cinacalcet in a small series of 6 patients (4 children) with genetically confirmed XLHR during one year.
Material and methods: 6 patients (2 male) with confirmed PHEX mutations, were switched from high dose of oral P (mean 78.8 mg/kg/d) and Calcitriol treatment to Cinacalcet (30 mg/day in <30 Kg; 60 mg/day in ≥30 Kg) plus lower oral P (40mg/kg/d). Vit D2 was supplied if required to maintain normal plasma levels. Patients were studied at baseline, 3 and 12 months. One case had NC at baseline.
Results: Total and ionized plasma Calcium (iCa) decreased from 9.36 (5.0) to 8.53 (4.5) & 8.02 (4.0) mg/dL at baseline, 3 and 12 months ($p<0.01$) respectively, but without clinical relevance. Despite half oral P dose, phosphatemia remained stable (2.48 vs 2.5 vs 2.35 mg/dL), as well as 1,25OH2D levels (35.3 vs 39.2 vs 31.4 pg/mL), at the same time points. Initial data showed significant decreased of FGF23 level (255.62 vs 165.92 RU/ml), $p<0.03$). PTH diminished too (78.7 vs 51.2 vs 40 pg/mL; $p<0.05$), and those effects were sustained over time. No impact on bone age, linear growth, or NC was observed.
Conclusions: Cinacalcet allows sustained and significant oral P reduction while improves hyperparathyroidism in patients with XLHR. Prospective randomized control studies in larger cohorts are needed to establish the role of Cinacalcet in XLHR treatment.

O79

Epidemiological and clinical data from Spanish pediatric pre-dialysis chronic kidney disease Registry (REPIR II)

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Introduction: The aim of this work is to analyze the epidemiology and clinical status of children with predialysis chronic kidney disease (CKD) 2-5 stages in Spain.
Material and methods: Data were obtained from REPIR II -an Internet-based data collection system that records annually since 2007, demographic, clinical, laboratory and treatment data of children and youth under 18 years with non-dialysis CKD 2-5 living in Spain.
Results: 1262 prevalent patients (63,3% males) have been included. Mean age was 4,22 ± 4,78 years (51% < 2 years old). The incidence was 5,79 per million of pediatric population (pmpp) and the prevalence was 143,3 pmpp. Structural anomalies were the primary cause of CKD (57% of the cases) while the percentage of glomerular diseases was very low (5%). 41,2% had associated extrarenal anomalies. The average time of evolution of CKD was 5,58 ± 4,91 years. Mean GFR was 41 ± 17 ml/min/1.73 m2 (59% of population in stage 3 CKD). The prevalence of anaemia was 22%, hypertension 20%, proteinuria 51% and hyperparathyroidism 64% according to K/DOQI Guidelines criteria (higher % in 4 and 5 stages). Mean height Z-Score was -1,01 ± 1,48 (-2,71 in infants) and 24% had a mean height Z-Score < -1.88. Malnutrition (BMI Z-Score < 1.88) was present in 4,7%, reaching 29% in < 2 years old group. Variation in GFR could be calculated in 810 patients with an average of 0,59 ± 6,58 ml/min/1,73m2/year but no statistically significant differences were observed when analyzed by sex, CKD stage or proteinuria. Older children and those with a glomerular disease showed a greater progression of CKD ($p<0,05$). Mortality since the Registry was created was 4,71%.
Conclusions: Few data are available in CKD in children, mostly in early stages. REPIR II provides relevant epidemiological data and may be a useful quality clinical tool to analyze risk factors allowing in the future appropriated interventions to slow the progression of renal disease.

O80

Antibiotic Prophylaxis In High Degree Vesicoureteral Reflux Clinical Trial And Prospective, Observational And Multicentric Study

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Introduction: We try to demonstrate that in high degree vesicoureteral reflux (VU) (grade III to V according International VU Classification) the incidence of new scars and pyelonephritis (PN) with nocturnal antibiotic prophylaxis (AP) is not lower than with a closer clinic follow-up and early treatment of each PN episode.
Material and methods: Design: prospective, randomized and multicentric study. We include patients with primary VU grade III to V. Diagnosis was made in study of congenital hydronephrosis (HN) or in the study of the urinary tract after first episode of PN. Informed parental consent is required. Patients are recruited in Hospitals with Pediatric nephrology Units and they will be randomized to treatment or not. We record patients that will not be randomized (observational study). Patients with the second episode of PN exit of the study. We analysed new scars, pyelonephritis, germen, antibiotics sensibility, and VU evolution. Economical support: Institute Carlos III. Spanish Health Ministry-EC07/90847. Nº EUDRACT:2007-006253-60.
Results: We included 42 patients in the clinical trial and 99 patients in observational study in 14 pediatric nephrology units. In 72% patients the diagnosis was made after PN, 28 were diagnosed after HN. 50% patients had grade III VU and 50% had a grade IV-V, with bilateral involvement in 60%. The average follow-up time was 29 months, 21 % patients had new episodes of pyelonephritis. We compared the presence of pyelonephritis and there are not significant differences (20% without PA vs 22% with PA). The mean follow-up time until the first episode of pyelonephritis was lower in patients with PA (5 versus 7 months) but these differences were not significant. During the observation period, only 1 new scar was detected.
Conclusions: The prognosis of VU is good. The incidence of new scar is scarce and the episodes of pyelonephritis are low. In our study, there is no evidence of the efficacy of antibiotic prophylaxis in preventing new episodes of infection.

O81

The comprehensive genetic analysis of CAKUT in Japan

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Introduction: Congenital anomalies of kidney and urinary tract (CAKUT) are the most common cause of pediatric end-stage renal disease over the world. The detailed mechanisms of development of CAKUT were still unclear; however genetic mutations in various genes may play pivotal roles. We have conducted the comprehensive genetic analyses of CAKUT in Japan.
Material and methods: This study was approved by the Institutional Review Board of Kobe University Graduate School of Medicine. Genomic DNA samples of patients were provided from peripheral blood mononuclear cells. We performed direct sequencing, multiplex ligation-dependent probe amplification (MLPA) analysis, array comparative genome hybridization (aCGH) analysis and/or next-generation sequencing (NGS).
Results: We examined 206 patients from 187 families. Ninety-one patients out of 82 families were nonsyndromic CAKUT (NSC) and 115 patients out of 105 families were syndromic CAKUT (SC). We identified the responsible genes in 62 patients from 44 families. The detection rates in NSC and SC families were 14.6% and 30.5%, respectively. The most common responsible gene found in this cohort was PAX2 (11 families). Other responsible genes were EYA1 (9), HNF1B (7), UMOD (1), OFD1 (1), SALL1 (1), CHD7 (1). MLPA analysis enabled us to identify TSC2-PKD1 contiguous gene deletions in a patient in our cohort. aCGH is useful to reveal the responsible chromosomal lesion in CAKUT with intellectual disability (ID), and we have identified copy number variations in 9 patients with CAKUT and ID such as 16q microdeletion, 17q.1 duplication and 1q21.1 microdeletion. We identified UPK3A, FRAS1, EP300 mutations in 3 patients by NGS.
Conclusions: This is the first nation-wide study for the genetic approach of CAKUT in Japan.

O82
The inhibitory effect of IVIG and Leflunomide on BK virus replication in vitro

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Introduction: BK virus nephropathy leads to renal transplant dysfunction and affects approximately 5% of kidney transplant recipients, including adults and children. The KDIGO guidelines suggest screening for BK virus DNA in plasma, at least every month during the first 3-6 months after transplantation; and reduction of immunosuppressive medication when the BK virus load exceeds 10.000 copies/mL. Treatment options for BK virus nephropathy include intravenous immunoglobulin (IVIG), leflunomide, cidofovir and ciprofloxacin. However, there is little evidence to support the efficacy of these treatments. In this study the inhibitory effect of IVIG and leflunomide on BK virus replication were measured in vitro.
Material and methods: Susceptibility of BK virus for IVIG and leflunomide was tested in vitro by a virus culture neutralisation assay, using serial dilutions of IVIG provided by Sanquin Blood Supply Foundation); of the serum of a patient who experienced BK virus infection; and of leflunomide.
Results: Immunoglobulin but not leflunomide showed clear-cut inhibition of BK virus replication in vitro. At least 80% BK virus neutralisation occurred for antibody dilutions below 1:1024 for IVIG and below 1:8192 for the patient serum. No neutralisation of BK virus replication was observed for dilutions of IVIG higher than 1:2048. Leflunomide showed no BK virus neutralising effect in vitro.
Conclusions: This study showed that intravenous immunoglobulin neutralised BK virus in vitro whereas leflunomide did not, thus supporting the use of IVIG as a treatment option for BK virus nephropathy. It might be that leflunomide has no direct inhibitory effect on BK virus replication, but an indirect effect, for example via immune modulation.

O83
Effect Of Free Creatine Therapy On Cisplatin Induced Renal Damage

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Introduction: The aim of this study is to investigate the possible protective effect of creatine supplementation on cisplatin induced nephrotoxicity.
Material and methods: Sixty male Sprague-Dawley rats were divided into three groups: Group I: Cisplatin (n=20) (7 mg/kg Cisplatin intraperitoneal (i.p.) single dose), group II: Cisplatin + creatine monohydrate (n=20) (7mg/kg cisplatin i.p. single dose and 300 mg/kg creatine p.o. daily for 30 days), group III: Control group (n=20) (Serum physiologic, 2.5 mg/kg i.p.). Sacrifications were performed at first week and 30th day. Blood urea nitrogen (BUN) and serum creatinine levels, histopathological evaluation, mitochondrial deoxyribonucleic acid (mtDNA) common deletion rates and body weights of rats were evaluated.
Results: A significant decrease in body weight, highest values of kidney function tests, histopathological scores and mtDNA deletion ratios were observed in group I compared to control group at days 7 and 30 ($p<0.05$). In group II, there was a slight decrease in body weight at same those days and it was close to control groups ($p=0.931$ and 0.084 respectively). Kidney function tests, histopathological scores and mtDNA common deletion ratio were statistically better in group II than group I at 7th day and 30th day ($p<0.05$). Although creatine significantly attenuated kidney functions and pathological findings, this improvement was not sufficient to reach normal control groups results at days 7 and 30.
Conclusions: In conclusion, administration of creatine seems to have a beneficial effect on cisplatin-induced nephrotoxicity. Further studies are warranted to evaluate combination therapies with different doses of creatine or drugs that cover different pathways.

POSTER PRESENTATIONS

P1
Accelerated Progression Of Vascular Calcification In Children With Ckd Is Associated With Baseline Fetuin-a And Vessel Characteristics

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Introduction: Vascular calcification is thought to begin early in CKD and progress rapidly on dialysis. We examined vascular changes as seen on vessel imaging with a quantitative and histological assessment of the vascular Ca load on arterial biopsy samples to study progression of

vascular changes through pre-dialysis CKD, dialysis and after transplantation.
Material and methods: 48 children (16 pre-dialysis CKD 4-5 and 32 on dialysis) had vascular imaging (carotid intima-media thickness [cIMT], pulse wave velocity [PWV] and coronary artery calcification [CAC] on CT scan), biomarker analyses and an arterial biopsy (at the time of renal transplantation or PD catheter insertion). The Ca load in the vessel wall was quantitated and detailed histology performed to study hydroxyapatite deposition, vascular smooth muscle cell apoptosis and osteogenic differentiation. 43 children (22 dialysis and 21 transplants) had a second set of imaging after 14.2 ±3.9 months.
Results: The baseline vessel Ca load strongly correlated with cIMT in dialysis patients ($p=0.005$) whereas 11 of 16 pre-dialysis patients had normal cIMT. Dialysis patients had a significant annualised increase in cIMT and PWV ($p<0.005$ and $p=0.03$). CAC increased in 5 children with baseline CAC and was found in 3 others. cIMT progression showed a close correlation with the vessel Ca load ($r=0.59$; Figure). Patients with cIMT progression had the highest apoptotic index implying vascular smooth muscle cell loss and greater osteogenic differentiation. The baseline cIMT ($r=0.31$) and Fetuin-A levels ($r=0.41$), but not FGF-23, soluble klotho, 25-hydroxyvitamin D or osteopontin associated with cIMT progression. Changes in PWV and CAC did not correlate with vessel Ca load.
Conclusions: In children on dialysis vascular calcification is rapidly progressive and strongly correlates with baseline vessel wall characteristics and Fetuin-A levels. No association was found between vascular measures and FGF-23 or soluble klotho levels. Fetuin-A may be a useful biomarker to predict rapid progression of vascular calcification in CKD.

P2

Matrix Metalloproteinase (mmp)-12 In Renal Fibrosis: Its Effect On Renal Fibroblasts And Regulation By Interleukin (il-17)

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Introduction: Chronic kidney diseases (CKDs) affect millions and are leading cause of morbidity and mortality in the western world. Despite of the increasing number of patients and the continuously growing costs of renal replacement therapy there is no generally accepted medication to prevent or inhibit renal fibrosis. CKDs are characterized by excessive deposition of collagen-rich extracellular matrix (ECM) leading to impaired renal function. Matrix metalloproteinases (MMPs) were demonstrated to play a crucial role in ECM remodeling. However the involvement of MMP-12 and its regulation in CKD is still partly controversial and undiscovered.
Material and methods: Unilateral ureteral obstruction (UUO) was performed on C57Bl/6 (WT) and IL-17 gene knockout (IL-17 KO) mice to induce renal fibrosis. Proximal tubular epithelial cells (PTECs) and renal fibroblasts were used. Treatments with either selective MMP-12 inhibitor or recombinant MMP-12 were performed. To investigate the amount of collagen fibers Masson's staining was applied. mRNA expression of MMP-12 and ECM components were measured by real time RT-PCR. Cell proliferation was determined by MTT assay.
Results: Expression of MMP-12 was increased in the PTECs of WT mice after the onset of UUO and was significantly decreased in the PTECs of IL-17 KO animals. Treatment of WT animals with selective MMP-12 inhibitor significantly decreased the UUO-induced renal expression of collagen-I and -III. Recombinant MMP-12 treatment of renal fibroblasts enhanced their proliferation and collagen production.
Conclusions: In the present study we have demonstrated that PTECs produce a remarkable amount of MMP-12 in the injured kidney, which is affected by the presence of IL-17. MMP-12 can directly influence the proliferation and ECM production of renal fibroblasts. Our data in accordance with other studies strongly suggest that selective inhibition of MMPs especially that of MMP-12 may have a therapeutic potential to treat patients with fibroproliferative renal diseases. Acknowledgements: OTKA-NK84087, K100909, SE-MTA Lendulet LP2001-008/2011, KMR12-1-2012-0074.

P3

The Effect Of Plasma Nox Values On Cardiac Functions In Obese Hypertensive And Obese Normotensive Pediatric Patients

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Introduction: The aim of our study is to evaluate the cardiac functions in obese and hypertensive (OHT) and in obese and normotensive (ONT) pediatric patients and to reveal the effect of plasma NOx values on cardiac functions.
Material and methods: The study group consisted of 62 obese patients who have completed their puberty and 21 healthy controls (15.4 ±1.7 yrs). Obese patients were divided into two groups as OHT (n=35, 14.9±1.4 yrs) and ONT (n=27, 14.7±1.5 yrs) according to ABPM. Fasting blood samples, hematologic and biochemical variables, plasma NOx values and echocardiographic findings were examined.
Results: 23 patients (88.5%) in OHT group, 3 patients (11.5%) in ONT group had metabolic syndrome. 16 patients in OHT group (45.7%), 7 patients in ONT group (25.9%) had insulin resistance. The patients having insulin resistance had significantly higher BMI, systolic blood pressure (BP), diastolic BP and night systolic BP load. In patient group white blood cell (WBC), neutrophil counts (NC), platelet counts, fibrinogen, uric acid values were significantly higher than controls. Urine microalbumin levels were significantly higher in OHT group than ONT group and controls. Non-dipper patients had significantly higher fibrinogen levels than dipper patients. In echocardiographic evaluation patient group had significantly higher left ventricle (LV) mass index, LV systolic wall stress(WS), LV mean WS and significantly lower isovolemic relaxation time and myocard performance index. Interventricular septum diastolic thickness, LW systolic wall thickness (WT) and diastolic WT were significantly higher in OHT group than in controls. Plasma NOx values were significantly lower in OHT group than those in ONT and controls. A negative correlation between plasma NOx, WBC and uric acid was found.
Conclusions: Uric acid levels and fibrinogen are the major parameters related to cardiovascular risks in OHT patients. Higher NC and WBC might be associated adverse cardiovascular outcome. Additionally, echocardiographic findings were correlated with their metabolic status.

P4

Endovascular Intervention For Renovascular Hypertension In Children: The Experience Of A Portuguese Tertiary Centre

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Introduction: Renovascular disease represents 10% of all cases of secondary hypertension in children. Its relevance relies on the fact that it is potentially amenable to curative treatment. Objectives: Our aim was to evaluate both the clinical outcome of children submitted to endovascular treatment of renovascular hypertension (RVH) in our centre and the effectiveness and safety of the procedure.
Material and methods: We retrospectively reviewed the clinical data of patients followed in our centre, between 2008 and March 2014, who underwent endovascular intervention as part of the treatment of RVH.
Results: Seven children, aged at diagnosis 1.5 to 10 years (median 6y), underwent renal angioplasty in our centre, in this period. Two of them have diagnosis of Alagille syndrome and one has Takayasu arteritis. Before the procedure patients had a median systolic blood pressure (SBP) of 148 (130-170) mmHg and they were being treated with an average of 2.7 anti-hypertensive drugs. On angioNMR, 6 children had bilateral renal artery stenosis and 4 had aortic and mesenteric stenosis. Secondary left ventricular hypertrophy (LVH) was diagnosed in 4children. Fifteen percutaneous transluminal angioplasty (PCTA) procedures were performed (1-5/patient). On follow-up (median 2.9y) the outcomes were: cure (normal BP without treatment) for 2 patients, improved BP with the same or reduced treatment for 4 patients and no change in BP despite initial technical success in one. After the intervention BP values improved: median SBP of 122 (80-140) mmHg and patients were treated with an average of 1.8 anti-hypertensive drugs. Two patients objectively improved LVH. Intra-operative complications occurred in one patient submitted to bilateral cutting-balloon angioplasty: renal haematoma and aneurysm of the left renal artery. There were no procedure related deaths.
Conclusions: Angioplasty is a fundamental part of the treatment of RVH. Unfortunately RVH is occasionally a progressive disease mandating multiple interventions. PCTA should be undertaken in an experienced reference centre to improve outcomes and decrease the risk of complications.

P5

Impacts Of O-linked ß-n-acetylglucosamine Glycosylation On Endothelial Nitric Oxide Synthase In Diabetic Nephropathy

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Introduction: O-linked ß-N-acetylglucosamine (O-GlcNAc) glycosylation is a posttranslational modification on the serine and treonine residues of proteins which is in competition with phosphorylation due to the identical sites of modification. It is already accepted that O-GlcNAcylation plays an important role in the development of diabetic cardiomyopathy, but little is known about its role in diabetic nephropathy (DNP). We examined O-GlcNAcylation, O-GlcNAc transferase (OGT) and O-GlcNAcase (OGA), which are responsible for the addition and removal of the single O-GlcNAc moiety, and the effect of renin-angiotensin-aldosterone system (RAAS) inhibitors. Since decreased expression of endothelial nitric oxide synthase (eNOS) plays a pivotal role in the progression of DNP, we also measured phosphorylated eNOS levels.
Material and methods: Five weeks after streptozotocin induced diabetes (DM) male Wistar rats were treated for two weeks p.o. with enalapril, losartane, spironolactone or eplerenone. Vehicle-treated healthy or DM animals served as controls. Renal functional and structural damage was evaluated, O-GlcNAcylation, OGT, OGA and phospho-eNOS protein levels were measured. Human proximal tubular cells (HK2) were cultured in high glucose medium for 24 (HG24) or 48 (HG48) hours and then treated with the drugs mentioned above. Untreated and mannitol treated cells were used as controls.
Results: Renal functional and structural damage represented the development of DNP that was ameliorated by all RAAS-blockers. Renal O-GlcNAcylation was elevated in HG48 and in DM, which was decreased by RAAS-blockers. Glucose induced rapid elevation of OGT in HG24, while both HG48 and kidney OGT was decreased. HG24 and kidney OGA was also decreased. While no alterations were found in HG24, peNOS levels decreased in HG48 and in DM. This decrease was mitigated by RAAS-blockers.
Conclusions: The time-dependent increase of renal O-GlcNAcylation by inhibiting eNOS phosphorylation may contribute to the progression of nephropathy in DM. The reduction of O-GlcNAcylation suggests a new effect of RAAS-blockers.

P6

Arterial Ambulatory Stiffness Index And Blood Pressure Variability In Healthy Children And Adolescents

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Introduction: Arterial ambulatory stiffness index (AASI) and blood pressure variability (BPV) are associated with arterial stiffness and cardiovascular events in adults. Data on the clinical relevance of AASI and BPV in children is limited and reference values are lacking. Here, we aimed to evaluate the distribution of AASI and BPV in healthy children and adolescents.
Material and methods: From 909 ambulatory BP monitoring (ABPM) profiles obtained in healthy controls (449 boys) aged 5-20 years (Soergel, J.Pediatr 1997; Wühl, J.Hypertens 2002), AASI [1-regression slope of diastolic (DBP) over systolic BP (SBP)], SD (standard deviation of ABPM), and CV (100xSD/mean) values were calculated for 24h, daytime (8am–8pm), and nighttime (midnight-6am) periods.
Results: Median AASI (IQR) values were significantly different for 24h [0.20 (0.24)], day [0.36 (0.34)], and night [0.42 (0.51)]($p<0.001$), without gender differences. Height and age had a significant effect on day- and nighttime AASI in boys ($p<0.001$), but not in girls. Compared to AASI data previously published in young adults, 24h-AASI in children were lower, but in continuum. CVs (IQR) for SBP [8.99 (3.74) vs. 6.98 (2.95)] and DBP [15.68 (7.30) vs. 13.72 (6.11)] were significantly higher during daytime than at night ($p<0.001$). CVs of DBP were significantly higher than those of SBP for 24h, day, and night (all $p<0.001$). Among boys, CVs for nighttime SBP increased with age ($p<0.005$) and height ($p<0.05$); and CV for nighttime DBP with age ($p<0.05$). CVs of daytime DBP were positively correlated with BMI-SDS ($p<0.05$). There were negative correlations between AASI and CV for day- and nighttime DBP in boys and girls.
Conclusions: AASI and CV differed significantly between day and night. Age and height affected AASI and CV values in boys. Our study provides reference data for AASI and CV from a large cohort of healthy controls

for future studies focusing on cardiovascular co-morbidities in children at risk.

P7

The Effect Of Raas Inhibition On The Arterial Stiffness In Diabetic Rats

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Introduction: The renin-angiotensin-aldosterone system (RAAS) plays a major role in the development of cardiovascular and renal diseases. Pulse wave velocity (PWV) is considered as the gold standard to measure central arterial stiffness. A new device (PulsePenLab) was developed to measure PWV in rodents. Aim: to determine PWV in healthy and type 1 diabetic rats and to examine the effect of RAAS inhibition on arterial stiffness.
Material and methods: We induced diabetes in male Wistar rats with streptozotocin. Five weeks after the onset of diabetes the animals were randomized to different treatment and control groups (healthy and untreated diabetic rats and animals treated with oral enalapril, losartan, eplerenone, spironolactone (n = 6-8 per group). After two weeks of treatment PWV and blood pressure (BP) were measured under isoflurane anesthesia. The animals were sacrificed, laboratory tests and histological analysis were performed.
Results: We found no difference in BP and blood glucose levels between the control diabetic and the RAAS inhibitor treated groups. Lower GFR was associated with higher blood sugar levels ($r=-0.83$, $p<0.00001$). PWV correlated with the animals body weight, systolic, diastolic BP and HR ($r=0.28$, $p<0.03$). PWV was lower in rats treated with enalapril and losartan ($p<0.02$). Aortic intima media thickness was lower in eplerenone treated group. Aldosterone antagonists reduced the collagen content of aortic media layer ($p<0.03$).
Conclusions: Non-invasive measurement of PWV could be achieved in rats and may allow longitudinal studies. ACE inhibitors, ARBs and aldosterone antagonists exert a beneficial effect on arterial stiffness and structure in diabetic rats already before the onset of hypertension. Supported by the OTKA 100909 grant, MTA (HAS) postdoctoral fellowship and LP2011-008/2011 Lendulet Research Grant

P8

Left Ventricular Hypertrophy In Obese Adolescents

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Introduction: To assess the prevalence of left ventricular hypertrophy (LVH) in obese adolescents stratified according to blood pressure status and to investigate independent predictors of the left ventricular mass (LVM) index.
Material and methods: A total of 100 consecutive obese patients aged 10 to 18.1 years referred for ambulatory blood pressure monitoring (ABPM) were enrolled in the cross-sectional study. Exclusion criteria included: secondary hypertension, secondary obesity and use of medications. The average of three office blood pressure (BP) measurements was used for analysis. BP index was calculated as mean office BP divided with 95th percentile for age, gender and height. ABPM measurements were obtained on outpatient basis (SpaceLabs 90217). BP index was calculated for 24-hour, daytime and night-time BP using the data from the European multicenter study. Ambulatory hypertension was defined as mean BP index ≥ 1 or daytime BP load $\geq 25\%$. Echocardiography exams were performed by a single cardiologist. Left ventricular hypertrophy (LVH) was defined as a LVM index >95th percentile for age and gender (Khoury PR). Treadmill exercise test was performed using modified Bruce protocol.
Results: According to casual and ABPM 100 obese patients (70 males) aged 14.2±2 years were split in four groups: 41 hypertensive, 25 white coat hypertension (WCH), 8 with masked hypertension (MH) and 26 with normal blood pressure. LVH was found in 17.1% hypertensive, 12.5% MH, 7.7% normotensive and 4% patients with WCH. Variables included in stepwise regression analysis to investigate the independent predictors of LVM index were age, body mass index z score, waist circumference, 24h heart rate and peak systolic blood pressure on exercise test. Peak systolic blood pressure ($R2=0.056$, $\beta=0.257$, $p=0.012$) remained as the independent determinant of LVM index.
Conclusions: LVH is relatively common in hypertensive obese adolescents. Peak systolic blood pressure on treadmill exercise test was the independent predictor of LVM index in obese adolescents.

P9

Umod Genotype, Renal Diagnosis, Gfr, And Gender Determine Uromodulin Excretion In Children With Chronic Kidney Disease (ckd)

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Introduction: Uromodulin (Tamm-Horsfall protein) has recently received renewed attention as a potential biomarker of CKD progression. A common UMOD gene variant is linked to GFR/CKD and salt sensitive hypertension in the general population. Uromodulin excretion correlates with renal survival. Here, we sought to explore the determinants of uromodulin excretion in children with CKD.
Material and methods: Uromodulin concentration was measured in spot urine samples of 512 4C Study and 258 ESCAPE Trial participants (mean age 12.4 (4 - 20) years, mean eGFR 32.8 (10 - 75) ml/min/1.73 m**2) and normalized to urine creatinine. The single nucleotide polymorphism rs4293393 was assessed as part of a genome-wide SNP screening (Illumina Omni 2.5M chips). Mixed linear modeling was performed to identify independent predictors of uromodulin levels.
Results: Uromodulin/creatinine levels were significantly higher in girls ($p<0.0001$), and decreased with declining eGFR ($p<0.0001$) and with each copy of the minor UMOD allele (median (IQR) TT: 6.9 (6.1); CT: 6.1 (5.6), CC: 5.0 (6.2) mg/g creatinine; $p=0.0004$). In addition, uromodulin excretion differed significantly among renal diagnosis groups ($p<0.005$), with highest levels observed in children with tubulointerstitial nephropathies (nephronophthisis, oxalosis, cystinosis; median 8.5 (IQR

8.8) mg/g creatinine) followed by postnatal nephron loss (7.6 (7.0)), (refluxive or obstructive) uropathies (7.0 (5.8)), and lowest levels in glomerulopathies (4.7 (4.3)).
Conclusions: In children with CKD uromodulin excretion is independently affected by genotype, gender, renal disease type and renal function.

P10
Hyperuricemia Is An Independent Risk Factor For Progression Of Steroid-resistant Nephrotic Syndrome In Children
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Introduction: Recent studies have suggested an association between hyperuricemia and adverse renal outcomes in CKD in adults. Data on the relationship between hyperuricemia and steroid-resistant nephrotic syndrome (SRNS) progression in children are lacking. We determined whether serum uric acid levels at the time of biopsy predict of SRNS progression in children.
Material and methods: Long-term outcome of SRNS was studied in 120 children (52M/68F) with SRNS during 30.0 (IQR: 18.0; 48.0) months. Renal biopsy revealed: FSGS in 44%, mesangial proliferative GN in 23%, membranoproliferative GN in 16%, MCD in 12%, membranous nephropathy in 5% patients. SRNS progression was defined as eGFR <60 mL/min/1.73m2. Hyperuricemia was defined as a serum uric acid level >0.4 mmol/L.
Results: SRNS children with hyperuricemia (n=22) in comparison with those without hyperuricemia (n=98) had a significantly higher rate of glomerulosclerosis >10%: 59.1% vs. 29.6% (p=0.01), tubular atrophy: 36.4% vs. 12.3% (p=0.011), diffuse interstitial fibrosis: 27.3% vs. 11.2% (p=0.059), and CRF at the last follow up: 34.6% vs. 13.8% (p=0.02); OR=3.3 (95%CI: 1.2-9.0). The renal survival analysis showed that the hyperuricemia group of children compare with the non-hyperuricemia group had a higher rate of SRNS progression: the 5-year renal survival was 69.6% vs. 86.9%, 10-year – 34.8% vs. 65.8%, respectively (p=0.013). In univariate logistic regression analysis the presence of hyperuricemia doubled the risk of adverse outcome of SRNS: HR=2.8 (95%CI: 1.2-6.3), (p=0.016). Detection of hyperuricemia at the time of biopsy can predict of SRNS progression in children with sensitivity 41% (95%CI: 20.7-63.7%) and specificity 82.7% (95%CI: 73.7-89.6%).
Conclusions: In children with SRNS hyperuricemia at the time of biopsy might be considered as an independent risk factor for the disease progression. This association can be explained by significant correlations between serum uric acid and glomerulosclerosis, tubular atrophy and interstitial fibrosis.

P11
Studying Cytokines Of T Helper Cells In The Kidney Disease Of Iga Vasculitis (henoch-schönlein Purpura)
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Introduction: Henoch-Schönlein purpura (HSP)/IgA Vasculitis (IgA-V) is the most common pediatric small vessel vasculitis. Recent studies highlight the possible role of T cells in the pathogenesis of HSP/IgA-V. The aim was to analyse the role of Th cells in the kidney disease of HSP/IgA-V and to investigate clinicopathological correlations with interferon-γ (IFN-γ), interleukin (IL)-4, IL-17 and forkhead box P3 (FOXP3) in HSP/IgA-V patients.
Material and methods: Twenty-two patients diagnosed as IgA-V/HSP nephritis with renal biopsy were included in the study. All renal biopsy specimens were graded according to both ISKDC and Oxford classification systems. The control group consisted of nephrectomy materials of 20 patients diagnosed as Wilms tumor. Immunohistochemical staining were carried out for IFN-gamma, IL-4, IL-17 and FOXP3.
Results: Glomerular and tubular expressions of IFN-γ, IL-4 and IL-17 in the disease group were greater than the control group. The IFN-γ, IL-4 and IL-17 positive cells in the glomeruli were CD3(-) CD4(-), whereas they were positive in the interstitium. Glomerular IFN-γ staining grades correlated with urinary protein/creatinine ratio (UPr/UCr) (r=0.459, p=0.04). Glomerular grades of IL-17 correlated positively with the UPr/UCr ratio (r=0.51, p=0.002) and with the percentage of crescents (r=0.526, p=0.02) and negatively with serum albumin level at the time of biopsy (r=-0.493, p=0.04). Glomerular IL-4 grades correlated negatively with serum albumin level (r=-0.804, p<0.001), positively with the percentage of crescentic glomeruli (r=0.647, p=0.003). Interstitial areas had more FOXP3+ cells/μm2 when compared to the control group (p<0.001). Glomerular and tubular FOXP3+ cells/μm2 between the two groups were not statistically different. Endocapillary hypercellularity correlated with IFN-γ expression (r=0.510, p=0.018). No other parameter of the Oxford Classification system nor of ISKDC had any correlations with other clinical or histopathological features.
Conclusions: The significant expressions and the correlation with clinical parameters suggest that IFN-γ, IL-4 and IL-17 contribute to the kidney disease of HSP/IgA-V.

P12
A Short Course Of Prednisolone During An Upper Respiratory Tract Infection Reduces The Risk Of Relapse In Childhood Nephrotic Syndrome
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Introduction: Relapse of childhood nephrotic syndrome (NS) is often precipitated by viral upper respiratory tract infections (URTI). The cytokines released during an URTI may play a critical role in triggering a relapse. Corticosteroids are known to reduce the cytokine release. A placebo-controlled crossover trial was conducted to ascertain the effect of a short course of corticosteroids on relapse frequency.
Material and methods: 48 patients with steroid sensitive NS who had been off corticosteroids for a minimum of three months were randomized into two groups. Group A received 5 days of daily prednisolone at 0.5mg/kg at the onset of an URTI while group B received 5 days of placebo. Both groups were followed up for one year and the URTI induced relapse frequency was noted. A cross over was performed for the next year with group A receiving placebo and group B receiving prednisolone.The student t-test was used to compare continuous variables. The Fishers exact test was used to compare categorical variables.
Results: Of the 48 patients recruited, 33 completed the study. In the treatment group 113 episodes of URTI triggered 11 relapses while in the control group 101 episodes of URTI triggered 25 relapses. There was no significant difference between the mean number of URTIs between the treatment and control groups (3.5± 1.5 and 3.2 ±1.4, p=0.31). The treatment group had a significantly lesser number of relapses compared to the control group (p=0.014). The majority (65.6%) within the treatment group did not relapse whilst the remaining subjects had a single relapse. In contrast only 40.6% of the control group remained in remission whilst 40.6% suffered from a single relapse and 18.8% had two relapses.
Conclusions: Administration of a short course of daily corticosteroids during a presumed URTI significantly reduces the frequency of URTI induced relapses in patients with steroid sensitive NS who are off corticosteroids.

P13

Short Vs. Longer Steroid Regimen For The Initial Treatment Of Children With Steroid Sensitive Nephrotic Syndrome (ssns). A Retrospective Analysis.

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Introduction: optimal steroid regimen for treating the first episode of SSNS is still debated. Several studies suggest that longer treatments are beneficial in reducing early relapse rate. The aim of this study was to analyze changes in outcome at 24 months in patients admitted to our unit for a first episode of SSNS after having switched from a short to a longer steroid regimen 6 years ago.

Material and methods: patients were treated from 1992 to 2007 with prednisone (PDN) 60 mg/m2/day for 4 weeks followed by 40 mg/m2/48h for 4 weeks and from 2008 with PDN 60 mg/m2/day for 6 weeks followed by 40 mg/m2/48h for 6 weeks. Medical charts were reviewed, relevant data were retrospectively collected for 24 months after onset.

Results: 113 patients were analyzed; of these, 70 received a short PDN course and 43 a long PDN course. Age and gender distribution were similar between the two groups. The average time to the first relapse was 5.1±2.8 months in the short regimen group vs 6.1 ± 3.2 months in the long regimen group (p=0.153). The cumulative PDN dose at 12 and 24 months was not statistically different; patients treated with a longer PDN regimen required less PDN during the second year of follow-up (1500±1746 vs 2104±1479 mg/m2; p=0.042). At 24 months, patients treated with a short regimen had experienced more relapses (1.94±1.28 vs 1.35±1.53; p=0.012). The cumulative PDN dose / relapse was not different in the two groups. Overall, 49 (70%) of patients in the short arm received low dose maintenance PDN, as opposed to 18 (42%) in long arm (p=0.003). Differences in the prescription of steroid sparing agents at 24 months did not reach statistical significance (p=0.067).

Conclusions: switching patients with a first episode of SSNS to a longer initial PDN regimen resulted in fewer relapse episodes at 24 months; however, the cumulative PDN dose was not significantly decreased.

P14

Corticosteroid Therapy For Steroid Sensitive Nephrotic Syndrome (ssns): An Updated Systematic Review

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Introduction: AIM: To evaluate corticosteroid regimens to reduce the risk of frequently relapsing NS (FRNS). BACKGROUND: Syntheses of randomised controlled trials (RCT) demonstrated that prolonged therapy in the initial episode of nephrotic syndrome reduced the risk of FRNS, but reports of four new trials are available.

Material and methods: We updated our systematic review, stratified by risk of bias, using a random effects model and expressed results as risk ratio (RR) with 95% confidence intervals.

Results: Three months or more compared with 2 significantly reduced the risk of FRNS (6 studies; RR 0.63; 95% CI 0.46-0.84). Six months therapy compared with 3 significantly reduced the risk of FRNS (5 studies; RR 0.66; 95% CI 0.45-0.97); included were data from 2 trials (255 participants), which found no significant difference in the risk for FRNS. A third trial (unable to be combined in a meta-analysis) did not demonstrate significant difference in the risk of FRNS-free survival after treatment for 6 compared with 2 months (hazard ratio 0.86; 95% CI 0.64-1.16). After excluding studies with inadeqaute allocation concealment, there was no significant difference in the risk of FRNS between 3 or more and 2 months therapy (2 studies; RR 0.71; 95% CI 0.39-1.30) or between 6 and 3 months (3 studies; RR 0.63; 95% CI 0.33-1.20). One new study (126 participants found no significant difference in the risk of FRNS between 3 and 6 months of therapy when both groups received the same total dose of steroids (RR 1.19; 95% CI 0.86-1.64).

Conclusions: Trials of long versus short duration steroids have heterogeneous treatment effects.The older higher risk of bias studies tend to over-estimate the effect of longer course therapy compared with recently published, low risk of bias studies. After adjusting for risk of bias, shorter duration appear as effective as longer course regimens.

P15

Undifferentiated Kidney Cells From Amniotic Fluid And Urine As Sources Of Podocytes

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Introduction: Podocytes are terminally differentiated and highly specialized epithelial cells. Loss of podocytes is the main cause of many glomerular diseases. Subpopulations of cells found in amniotic fluid (AF) and urine have been shown to express progenitor cell features and may have the potential to differentiate into several cell lineages. We aimed to obtain podocytes derived from kidney stem/progenitor cells (KSPC) isolated from (AF), principally composed of fetal urine, and freshly voided urine from neonates and adult donors.

Material and methods: Fetal progenitor cells (fPC) were isolated from AF of the second trimester of pregnancy and urine progenitor cells were isolated from neonates (nPC) at day 1 and healthy adult donors (29 ± 7 y.o). Clonal cell lines were characterized as KSPC and KSPC-derived podocytes by gene expression analyses using quantitative PCR and protein expression by flow cytometry and immunofluorescence. Podocytes differentiation was induced by incubation of progenitor cells in culture medium supplemented with retinoic acid and vitamin D.

Results: KSPCs expressed the mesenchymal stem cell markers CD24, CD90, CD105, CD73, CD166, CD13 and were negative for hematopoietic markers CD34, CD45 and CD14. While fPCs and nPCs were positive for the fetal renal markers SIX2, PAX2 and CITED1, aPCs expressed the adult renal epithelial markers CD133 and CD24. KSPC-derived podocytes presented MTE transition and many of the cells became bi- or multi-nucleated with arborized cytoplasm comparable to conditionally immortalized podocytes. Cells presented up-regulation of podocyte-specific genes such as Lmx1b, podocalyxin, synaptopodin, CD2AP and nephrin.

Conclusions: Amniotic fluid contains cell subpopulations committed to renal cell fates. Stem/progenitor cells can be isolated from neonatal and adult urine and are committed to the renal linage. These cells presenting renal phenotype can be differentiated into podocytes and may provide a novel and non-invasive source of cells for regenerative medicine aiming kidney repair.

P16

Serum Adipokines And Vascular Phenotype In Juvenile-onset Systemic Lupus Erythematosus

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Introduction: Systemic Lupus Erythematosus (SLE) is an autoimmune disease, affecting multiple organ systems and leading to a relapsing and remitting chronic inflammatory state. Recent adult studies have suggested that an abnormal adipokine profile in SLE may predispose individuals to cardiovascular disease (CVD).

Material and methods: Data was collected to establish disease duration, disease activity, medication use and activity levels as well as demographic data including family history of CVD. Vascular phenotype was established using well-validated measures of carotid intima media thickness (cIMT) and pulse wave velocity (PWV).Serum leptin and adiponectin levels were determined by commercial quantitative sandwich ELISA kits from R&D systems.
Results: 25 children and young adults with JSLE were recruited to the study. Leptin levels were 16.52 (8.27 – 27.27) ng/ml in the JSLE group and 7.56(0.99-16.7) ng/ml in the control group, the difference between the medians was significant (p=0.0238). Significant correlations were found between leptin levels and systolic BP (r2=0.482, p=0.0172), PWV (r2=0.433, p=0.039), serum LDL (r2=0.585, p=0.0137) and BMI centiles (r2=0.540, p=0.0078) in the JSLE group. The cIMT increased with increasing leptin levels when analysed by quartiles. The lower leptin quartile group had a cIMT of 0.44±0.03mm increasing to 0.47±0.06mm in the higher quartile group, p=0.0004. Adiponectin levels were 14.2 ±9.5ug/ml in the JSLE group and 12.4±4.4ug/ml in the control group. The difference between the means was not significant (p=0.49) and there was no increase with renal BILAG score. When divided into quartiles by adiponectin level, there was an increase in cIMT and PWV across the centiles (from 0.45±0.05 to 0.43±0.04 and 5.02±0.58 to 5.45±0.97 respectively), although this was not statistically significant for PWV.
Conclusions: Our findings are in agreement with adult and paediatric studies and the relationship between serum adipokines and cIMT suggests that leptin could be used as a novel biomarker for CV risk in JSLE.

P17

Is Iga/c3 Serum Ratio The Marker Of Poor Prognosis Of Iga Nephropathy Childhood Based On Oxford Classification (oc)?

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Introduction: The aim was to assess the markers of poor prognosis of IgAN in children based on OC.
Material and methods: We performed a retrospective analysis of 55 IgAN polish children, mean age 11.15± 4.02 years, diagnosed based on renal biopsy in mean time 0.42 (0.08-7.0) years after the first symptoms of the disease. We analysed: age, proteinuria (mg/kg/day), GFR (ac. to Schwartz formula) and IgA/C3 serum ratio at the onset of disease (OOD) and at the follow up (FU) The histological features were scored ac. to OC: (M-mesangial hypercellularity, E-endocapillary hypercellularity, S-segmental sclerosis, T-tubular atrophy/interstitial fibrosis; absent =0, present=1). MEST score was a sum of M+E+S+T. The patients were treated with steroids, immunosuppressive drugs and/or ACEI. Follow up was 3.9± 2.89 (median 2.73) years. We divided two groups: GFR< and ≥90ml/min at FU. In statistical analysis of risk factors of poor prognosis we used ROC curve, (area under curve AUC>0.5, p<0.05) and logistic regression (p<0.05)
Results: In the groups GFR< and ≥90ml/min at FU, proteinuria, MESTscore, IgA/C3 were different NS at OOD (20.2±32.4vs51.1 ±155.18; 1.75±1.06vs1.4±1.09;2.69±1.4vs2.33±1.19 respectively) We found significantly relationship between reduction of GFR at OOD and at FU (AUC=0.66, p<0.05). The patients with nephrotic proteinuria and MEST score≥3 presented significantly frequent proteinuria at FU than another patients (AUC=0.76, p<0.05; AUC=0.608, p<0.05). W IgA/C3 ratio was higher at FU in children with nephrotic proteinuria at OOD (p<0.05). There was no significant relationship between IgA/C3, age at OOD, and the value of GFR and proteinuria at FU (AUC=0.565, AUC=0.265).
Conclusions: Factors of poor prognosis of childhood IgAN are: reduction of GFR, nephrotic proteinuria and MESTscore≥3 in renal biopsy at OOD No relationship between IgA/C3 ratio at OOD and GFR reduction and proteinuria in FU, can be result of used treatment or to short follow up.

P18

Complement Activation On Vascular Endothelial Cells Results In Polymorphonuclear Leukocyte Adhesion

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Introduction: Thrombotic microangiopathy (TMA) is a devastating disease caused by vascular endothelial cell (EC) injury via defective complement (C) regulation. The major surface-bound C regulators include CD46, CD55 and CD59. Clinical observation of infections often preceeding TMA events has identified a key role for the inflammatory system in TMA pathogenesis. Combining these two aspects we aimed to demonstrate enhanced polymorphonuclear leukocyte (PMN) adhesion to ECs challenged via complement.
Material and methods: 1. Calcein-labeled neutrophils were introduced at 0.5 dyne/cm2 into a microfluidic system (Bioflux), seeded with blood outgrowth endothelial cells (BOECs). ECs were pretreated with a) 50% normal human serum (NHS, negative control), b) TNFα 20ng/ml (positive control), c) GB24 (blocking antibody of CD46) or d) GB24 & BRIC216 (blocking antibody of CD55) & BRIC229 (blocking antibody of CD59) followed by 50% NHS for 30min. 2. PMN adhesion was quantified in static conditions after a) single, b) double and c) triple block of C regulators CD46, CD55, CD59 and 50% NHS for 1 hour using a fluorescent plate reader assay.
Results: In fluidic conditions significant PMN adhesion was observed when CD46, CD55 and CD59 were blocked (p<0.05). Blocking CD46 alone was not associated with increased PMN adhesion in fluidic conditions. Complement-induced EC activation upon blockade of all three C-regulators was confirmed by immunofluorescence for C5b-9. In static conditions, significant (p=0.025 – p= 0.004) increased PMN adhesion was observed upon blockade of CD59 alone (1.6x of NC), CD59 in combination with CD46 (2.1x) or CD55 (2.1x), and all three blocked (2.3x). TNFα-induced activation of EC led to a 2.3 fold increase of PMN adhesion.
Conclusions: Complement-challenge of ECs results in significant increase of PMN adhesion in static and fluidic conditions indicating an active role of PMNs in TMA pathogenesis and highlighting C5a as possible treatment target.

P19

Pubertal Development After Pediatric Kidney Transplantation: Comparison Between Everolimus-based And Conventional Immunosuppression

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Introduction: mTOR inhibitors (mTORi) have been discussed to eventually influence pubertal development after pediatric kidney transplantation (Tx).
Material and methods: This is the first trial to compare pubertal development in children with and without mTORi-treatment. The data of 108 children (66m), mean age at Tx 7 (SD 3) years have been evaluated with a mean observation time of 7 (SD 4) years. 67 patients were treated with an mTORi (40m). 41 patients were treated with CNI and Mycophenolate Mofetil without mTORi (26m). Steroid therapy was administered a mean

of 5 (SD 4) years after Tx and then stopped. Data on the clinical signs of puberty (Tanner stages), serum levels of reproductive hormones, medication, and graft function were analyzed.
Results: The mean age at the onset of puberty was 12 years (SD 2) as compared to 13 (SD 2) years in males with and without mTORi. Mean age at menarche was 12 years (SD 2) in both groups and of spermarche 13 (SD 2) vs. 14 (SD 2) in children with and without mTORi. A delayed onset of puberty (>2 SD) compared to healthy population data was recognized in 0/1 male and 0/0 female with and without mTORi. Elevated LH and/or FSH levels were found in 0/3 girls (age of first diagnosis 10 yrs.) and 8/4 boys (with mTORi: 7, 9, 10, 13, 14, 17 (n=3) yrs.// without mTORi: 10, 15, 15, 18 yrs.). Androstendion levels were decreased in 6/4 girls (age 13, 13, 14 (n=3), 17 // 12, 12, 13, 17 yrs.) and 4/4 boys (age 16, 17, 17, 18 // 13, 13, 16, 17 yrs.) with and without mTORi. DHEAS levels were decreased in 10/7 girls (age 10, 11 (n=4), 13, 14, 15, 16, 18 // 10, 10, 11 (n=4), 16 yrs.) and 14/7 boys (10, 11 (n=5), 12, 14, 15, 16, 16, 17, 17 // 11, 12 (n=5), 18 yrs) with and without mTORi. Testosterone was decreased in 9/6 boys (age 12 (n=4), 14 (n=5) / 12 (n=3), 13 (n=3) yrs.) with and without mTORi and Oestradiol in 3/2 girls (age 13, 17, 18 // 16, 18 yrs.). In the Fischer-exact test no differences were found between mTORi- and non-mTORi-group ($p>0.05$).
Conclusions: There were no differences in pubertal development and reproductive hormones between children treated with and without an mTORi after Tx resulting in a normal pubertal and sex hormone status in most of the patients.

P20
Early Relapse Of Atypical Hus Following Abo Incompatible Living Related Paediatric Renal Re-transplant Successfully Treated With Eculizumab

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Introduction: We present a paediatric case of successful treatment of an early relapse of atypical haemolytic uraemic (aHUS) syndrome following ABO incompatible (ABOi) living related renal transplant using eculizumab. The female patient presented at 3.8 years of age with clinical aHUS confirmed genetically as complement factor I mutation (heterozygous for CFI c.1216C>T,p.(Arg406Cys) in patient (with Factor H antibodies) and asymptomatic mother. Initially treated with forty plasma exchange sessions. Four months after presentation, she commenced dialysis. At 8.8 years of age, en bloc renal transplant failed to perfuse and was removed at time of transplantation.
Material and methods: Prospective case study of paper and electronic records.
Results: Patient received an ABOi living related kidney transplant from father at 9.3 years using quadruple immunosuppression (basiliximab, mycophenolate mofetil, tacrolimus, corticosteroids) with B lymphocyte depletion (rituximab 375mg/m2 one month pre-transplantation; 0% calculated reaction frequency). Recipient and donor blood groups were O and A respectively with anti-A titres of 1:128. Four sessions of immunoadsorption reduced anti-A titres to 1:4 at time of transplant. Six hours post-transplant, she received the first dose of intravenous eculizumab 600mg as she showed signs of recurrence of aHUS:allograft dysfunction, LDH 1291U/l, haemoglobin 83g/l and thrombocytopenia 109x109/l. LDH rose to maximum value of 3334U/l on day 2 post transplant with ongoing anaemia and thrombocytopenia (49g/l and 82x109/l respectively) with second dose of eculizumab administered with good clinical and biochemical response. Allograft function improved 8 days post-transplant and patient continues on regular eculizumab with histopathological evidence of thrombotic microangiopathy. Five months later, allograft function is stable with eGFR of 60mls/min/1.73m2, EBV and BK viraemia, normalisation of LDH 486U/l, Hb 120g/l and platelets 353x109/l; negative anti-A titres and HLA antibodies.
Conclusions: This is the first report of a paediatric ABOi living related renal transplantation in whom early relapse of aHUS was successfully treated with eculizumab.

P21
Anemia And Inflammatory Markers As Predictors Of Graft Function After Pediatric Kidney Transplantation

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Introduction: Development of post-transplant anemia (PTA) is a common and untreated problem among renal transplant recipients. We aimed to describe the prevalence of PTA, and its association with low-grade inflammation and graft function after renal transplantation (RTx) in children.
Material and methods: Hemoglobin (Hb) and plasma inflammatory markers, high-sensitivity C-reactive protein (hsCRP) and erythrocyte sedimentation rate (ESR), were assessed in 128 pediatric RTx recipients over the 3 years follow-up. Immunoassay was used to evaluate the plasma hsCRP levels. Anemia was defined as Hb value below the age and gender adjusted reference values, and inflammatory activity as ESR >15 mm/hr or hsCRP >3 mg/L. These findings were correlated with the glomerular filtration rate (GFR) measured by 51Cr-EDTA clearance.
Results: The prevalence of anemia was 89% at 1 month, declining to 54% and 44% at 1 and 3 years, respectively. During the first 3 post-RTx years, the proportion of markedly anemic (Hb <100 g/L) patients decreased from 50% to 20% and the median Hb value increased from 101 to 117 g/L. Hb values correlated inversely with ESR ($r=-0.478$, $p<0.001$), hsCRP ($r=-0.121$, $p=0.026$), and concomitant GFR levels from 3 months ($r=0.388$, $p=0.003$) to 3 years ($r=0.361$, $p<0.001$). Twenty-seven percent of the patients maintained the normal Hb levels after the first year, and 23% remained continually anemic. Patients with persistent anemia showed elevated ESR levels and more marked annual GFR decline rate (median -3.3 vs. -0.1 ml/min1.73m2/year, $p=0.026$) from 1 to 6 years post-RTx. In the multivariate regression analysis, PTA at 3 years predicted independently GFR at 6 years post-RTx ($\beta=-0.477$, $p<0.001$).
Conclusions: Post-transplantation anemia is common in children after RTx. Anemia is closely related to chronic inflammatory activity, and post-RTx hemoglobin levels significantly associate with concomitant and long-term graft function.

P22
Pediatric Renal Transplantation In The Nordic Countries - A Registry Study On Behalf Of The Nordic Pediatric Renal Transplant Study Group

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Introduction: The Nordic Pediatric Renal Transplant Study Group (NPRTSG) has collected data on pediatric kidney transplant recipients since 1994. The registry comprises of all centers performing pediatric kidney transplantation in Denmark, Finland, Norway, and Sweden. The first NTRSG-report was published by Tyden & Berg in 1998 including 430 transplantations performed in-between 1982 and 1996. We now have analysed the registry data from 1997-2012 in order to compare graft and

patient survival and changes of immunosuppression strategy between the two time periods.
Material and methods: We collected the information about the number and age distribution of pediatric kidney transplant recipients from 1997-2012. Also the use induction therapy, type of maintenance immunosuppression, one-year graft and patients survival rates were analysed.
Results: A total of 602 kidney transplantations were performed in 569 patients. The annual mean number of transplantations had increased by approximately 30% since 1996 (30/year versus 40/year). The age distribution was unchanged. Recipients under two years of age constituted 17% (n=104), two to five years 16% (n=99), and six to 16 years 66% (n=399) of all transplantations. During 1982-1996 the proportions were 12%, 20%, and 68%, respectively. The number of living donors (LD) has increased slightly from 54% to 60%. Twenty-eight percent of the patients (n=169) received induction therapy (basiliximab or anti-thymocyte globulin). Cyclosporin A was used in 40% of the patients and tacrolimus in 60% of the kidney recipients. Steroid-free immunosuppression protocol was used in 10% of the patients. Comparison between the two periods showed that the one-year graft survival has increased from 88% to 97.9% in LD recipients and from 78% to 92.2% in the deceased donor recipients.
Conclusions: The patient and graft survivals have improved significantly during the last 15 years while the general patient demographics has remained unchanged. This improvement may be at least partly due to changes in immunosuppression strategies but other factors such as increased experience may also be of importance.

P23
Donation After Cardiac Death Renal Transplantation In Children In The United Kingdom

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Introduction: Renal transplantation using donations after cardiac death (DCD) donor kidneys account for around 42% of all deceased donor kidney transplants in the UK. National data shows that outcomes in adult patients following DCD renal transplantation were similar to those in adults receiving a kidney from a donation after brain death (DBD) donor, despite a higher incidence of delayed graft function. Although children listed for kidney transplantation should be considered as part of the new DCD donor kidney sharing scheme, there are limited data available on DCD kidneys transplanted into paediatric patients in the UK.
Material and methods: Data were obtained from the UK Transplant Registry on 28 paediatric kidney transplants performed in the UK using kidneys from DCD donor kidneys. Data were analysed in two cohorts; those performed before the year 2000 (n=15) and those performed between 2000 and 2012, inclusive (n=13). Paediatric recipients were defined as those aged less than 18 years at the time of transplant.
Results: In both eras, children that received a kidney from a DCD donor were predominately aged 10 to 18 years at the time of their transplant (73% and 62%, respectively), had waited in excess of one (46%) and two years (31%), were most commonly level 3 (53% and 54%) or level 4 (40% and 23%) HLA-mismatched, had a cold ischaemia time of less than 20 hours and experienced delayed graft function in 2 of 12 (17%) cases where the initial graft function had been reported. The time to asystole was 6 to 35 (median 15) minutes and the functional warm ischaemia time (WIT) was 14 to 50 (median 24) minutes and the standard WIT was 8 to 22 (median 14) minutes. The donor serum creatinine in all 13 cases post-2000 was 22 to 103 (median 49) μmol/l. The recipient serum creatinine at three months post-transplant was 61 to 183 (median 90) μmol/l.
Conclusions: In the post-2000 era, the limited evidence suggests that paediatric kidney transplants that utilise kidneys from DCD donors have excellent post-transplant graft survival with encouraging renal allograft function. The presented evidence suggests that kidneys from DCD donors should be used in paediatrics.

P24
Bk Virus Nephropathy In Pedıatrıc Renal Transplantatıon

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Introduction: BK virus nephropaty is one of the most important causes of graft failure in pediatric renal transplant recipients. The aim of this study was to analyze the prevalance and risk factors of BK viruria, viremia and nephropathy in children who underwent renal transplantation.
Material and methods: The records of children who were transplanted at Akdeniz University Medical Hospital between January 2004 and December 2013 were evaluated retrospectively. Plasma and urine BKV levels were measured using PCR technique biweekly for the first three months post-transplant, monthly between 3-6 months and trimonthly thereafter. BK viruria and viremia was defined as urine BKV >107 copies/ml and plasma BKV >104 copies/ml, respectively. BKV nephropathy was defined as persistent viremia longer than three weeks (probable) or biopsy-proven nephropathy.
Results: 232 children, 131 boys and 101 girls, were enrolled in the study. Mean age at the time of transplantation was 11.8 (1,5-18) years. 180 of 232 transplants (77%) were from living-related donors. 185 children (80%) were receiving tacrolimus, 45 cyclosporine (CsA) and one sirolimus. Also, all children used mycophenolate mofetil (MMF) and glucocorticoids. Sixty-eight patients (29%) developed viruria; 47 (20%) had viremia within a median period of 2,3 month (1-14) post-transplantation. BKV nephropathy occurred in 37 patients (16%), 14 of whom were biopsy-proven. Patients from deceased donors had both more viremia (41% vs 14%, p= 0.001) and BKV nephropathy (31% vs 11%, p=0.015) compared to living donors. BK viremia and nephropathy was similar in patients receiving tacrolimus and CsA (%21 vs %15, p=0.48 and %8 vs %17, p=0.21). As treatment, immunosuppressive drug dose reduction was performed in 26 patients; MMF was switched to leflunamide in three. Twenty-eight patients received ciprofloxacin. In resistant 16 cases, cidofovir was given. Graft loss occurred in three patients.
Conclusions: BKV nephropathy seems to be more frequent in patients from deceased donors in pediatric renal transplantation.

P25
Single Nucleotide Polymorphism Of Cyp3a5 Influences The Exposure To Tacrolimus In Pediatric Renal Transplant Recipients: A Pharmacogenetic Substudy Of The Twist Trial

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Introduction: The pharmacokinetics (PK) of tacrolimus (TAC) and mycophenolic acid (MPA) are highly variable. An impact of single nucleotide polymorphisms (SNPs) of the genes coding for enzymes and transporters involved in the PK of TAC and/or MPA is intuitively conceivable, but data in pediatric patients are scarce. We therefore examined this hypothesis within a well-controlled prospective randomized study on early steroid withdrawal, the TWIST trial.
Material and methods: In a subpopulation of 37 patients (aged 12.8 (2.2 - 18.3) years) of the TWIST trial SNPs of CYP3A5, ABCB1 (MDR1), SLCO1B3 (coding for OATP2), and ABCC2 (coding for cMOAT) were

analyzed by real-time, rapid-cycle polymerase chain reaction (PCR) methods. TAC trough concentrations and abbreviated area under the concentration-time curves (AUC) of MPA were measured on day 7, 28, 91, and 183 post-transplant. Both of these were adjusted to the respective dose the patient received.

Results: The allele frequencies were comparable to those reported previously for Caucasian populations. The mean dose-adjusted (da) trough concentration of TAC was 63% higher in patients with the CYP3A5*3/*3 allele as compared to CYP3A5*1/*3 allele (p = 0.004). CYP3A5*3/*3 carriers off steroids (11 patients, 45 samples) had a 67% higher daTAC trough concentration than patients on steroids. CYP3A5*1/*3 carrier off steroids (4 patients, 10 sam-ples) had a 53% higher daTAC trough concentration (two-way ANOVA, p = 0.14). The ge-netic variability of transporters or enzymes had no impact on daMPA-AUC. Patients off ster-oids had a significantly higher daMPA-AUC (0.18 (0.012-0.27) mg*h/L) than patients on steroids (daMPA-AUC, 0.13 (0.09-0.19) mg*h/L; p = 0.04).

Conclusions: Genetic variability of CYP3A5 contributes to the variability of TAC exposure. Steroid withdrawal increases the exposure both of TAC (by 60%) and of MPA (by 38%). Therefore, adjusting initial TAC dosing to the genotype of CYP3A5 and accounting for the PK interaction between steroids and TAC and MMF, respectively, might contribute to the optimization of immunosuppressive therapy in pediatric renal transplant recipients.

P26

Successful Deceased Donor Renal Transplant In Four Sensitized Children After Immunoadsorption And Rituximab.

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Introduction: Sensitization following renal graft failure is a significant barrier to repeat transplantation in children. Sensitized patients awaiting a deceased donor (DD) kidney transplant (KT) often face unacceptably long waiting times and are more prone to rejection, even in the absence of a positive crossmatch (CM). The aim is to report our experience in antibody reduction using Immunoadsorption (IA).

Material and methods: We treated 4 highly sensitized children (Donor specific antibodies -DSA- MFI > 6000) on hemodialysis for 18 months (mean) who were waiting for the third or second KT. 3 lost their graft within 1 week after transplantation, and the remaining one due to humoral chronic rejection after 19 months. Our protocol treatment included 10 IA sessions (Therasorb-Myltheni), low IV IgG dose (100 mg/Kg) and a single dose of Rituximab (375 mg/m2) in conjunction with high resolution HLA allele typing.

Results: All patients achieved desensitization, and DD KT was performed in a mean time of 4 months. Induction treatment given was ATG-Fresenius, methylprednisolone, tacrolimus and MMF plus 1 plasma exchange (PEX) , followed by 5 PEX every other day after KT. DSA titers were assessed closely (0,1,3,6,12 months). Demographics, immunologic characteristics of patients, allograft function, acute rejection, viral infections and adverse events were evaluated. After an average follow-up of 13 months after transplantation, our patients have manteined low DSA titers, without acute rejection and with excellent graft function. BK viremia with normal creatinine has been found in one of them.

Conclusions: Despite the short time of follow-up, our experience shows that desensitization treatment coupled with advanced laboratory monitoring, open new opportunities for sensitized children on the waiting list.

P27

Thrombophilic Risk Factors And The Efficiency Of Prophylactic Anticoagulation Therapy In Children Who Underwent Renal Transplantation

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Introduction: In pediatric renal transplantation, graft loss due to thrombosis is a major problem. The aim of this study is to evaluate inherited and acquired risk factors for thrombosis and the efficiency of anticoagulation treatment protocol used in our center.

Material and methods: Medical records of renal transplant patients were investigated, retrospectively. All children screened for inherited and acquired risk factors for thrombosis. For patients with thrombophilia, prophylactic anticoagulation therapy protocol includes intravenous heparin administration at a dosage of 10 U/kg/h for approximately 2 weeks start after the renal transplant and continue during hospitalization and switch to low-molecular-weight heparin (LMWH) at a dosage of 1 mg/kg after discharged from the hospital for at least 3 months.

Results: 29 patients were included in the study. Postoperative heparin infusion was given to 22 patients (11 girls,11 boys) (76%). Mean age of these patients was 15.3±3.5 years (range; 8.08-20 years). Median follow-up period was 34 months (range; 7-60 months). High factor VIII levels was detected in 13/20, decreased protein C level in 3/16, decreased antithrombin III level in 2/16, high homocystein levels in 5/15, high lipoprotein a level in 3/9, high triglyceride levels in 8/18, high cholesterol levels in 4/18, factor V Leiden heterozygote mutation in 2/20, MTHFR 677 homozygote mutation in 2/19, MTHFR 1298 homozygote mutation in 2/10, PAI 4G/5G polymorphism in 2/10, and PAI 4G/4G polymorphism in 2/10 children. Delayed graft function, acute rejection episode in three months, graft loss were not observed in any children. Three rejection episodes were observed in three patients in the first year after renal transplantation. Two patients experienced rejection episodes after first year of the transplantation.

Conclusions: Prophylactic anticoagulation therapy prevents transplant artery thrombosis in patients with thrombophilia.

P28

Evaluation Of Plasma And Urine Ngal Levels As A Marker Of Renal Scar Development In Children With Febrile Urinary Tract Infection

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Introduction: Tc-99mDMSAscintigraphy is the gold standard for demonstration of pyelonephritis associated renal scarring. Neutrophil gelatinase associated lipocalin (NGAL) is a biomarker that recently has gained importance in predicting the presence of acute/chronic renal injury. In this study urine/plasma NGAL levels were evaluated as a marker of renal scarring in children with a history of febrile urinary tract infection (UTI).

Material and methods: Children with febrile UTI who had DMSA scanning at least 6 months following the infection were enrolled in this study. Patients were grouped as those who have no renal scarring (Group 1) and those with renal scarring (Group 2). Furthermore, according to the presence of vesicoureteral reflux (VUR), each group was divided into VUR (-) and VUR (+) subgroups. Plasma and urine NGAL levels were measured by fluorescence and chemiluminescence immune assays, respectively. Groups 1 and 2 were compared for urine/plasma NGAL levels. Same analyses were performed for VUR (-) and VUR (+) patients in each group.

Results: Creatinine clearance was similar and normal in Groups 1 and 2 (126±20 vs 133±25 mL/dk/1.73 m2, respectively). Plasma/urine NGAL levels (ng(mL) were also similar in Groups 1 and 2 (plasma 73.5±27.0 vs 81.9±56.9, p=0.366; urine 25.6±28.6 vs 39.7±70.1, p=0.299). Moreover, plasma/urine NGAL levels were similar in VUR (-) and (+) patients in

each group. On the other hand, urine NGAL levels were higher in girls compared to boys in Group 2 (46.4±75.2 vs 2.7±1.2, p<0.05).
Conclusions: Plasma/urine NGAL levels were not reliable in prediciting renal scarring in children with febrile UTI. This may be associated with normal and similar renal functions in both groups. On the other hand, higher urine NGAL levels in girls compared to boys in Group 2 may be due to inflammatory (acquired) nature of scarring in girls while boys had non-inflammatory (congenital dysplasia) renal injury.

P29

Vitamin D Status Assessed By Serum 25-hydroxyvitamin D Levels In Spanish Children

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Introduction: To examine the relationship of serum 25-hydroxyvitamin D (25OHD) concentrations with serum parathyroid hormone (PTH) levels, body mass index (BMI) and environmental factors in a population of healthy Caucasian children living in a community of Spain (latitude 43ºN).
Material and methods: Cross-sectional study on 288 children (166 boys) aged 1 month to 13 years who presented to a hospital's pediatric emergency unit during a 21-month period.
Results: Mean (SD) serum 25OHD concentrations were 40.6 (17.6), 30.9 (12.0) and 26.43 (9.9) ng/ml in children aged 0-1, 2-5 and 6 or more years, respectively. Serum PTH levels were 26.6 (13.6), 24.3 (11.9) and 32.7 (12.1) pg/ml in the same groups. Infants had 25OHD concentrations higher (P<0.001) than the other two groups, likely due to a greater proportion on vitamin D prophylaxis. Circulating PTH levels were higher in children aged 6 years or older (P<0.001). There was no correlation between serum 25OHD and PTH concentrations. Forty five (15.6%) and 6 (2.1%) children had 25OHD values less than 20 and 10 ng/ml, respectively; these children did not have either clinical manifestations related with vitamin D deficiency or elevated serum PTH concentrations. Age (inverse correlation) and season (higher values in summer) (p<0.001), but not BMI, sex, and time spent outdoors, influenced on serum 25OHD concentrations
Conclusions: The finding that a significant proportion of children has low serum 25OHD concentrations without apparent clinical effects or secondary hyperparathyroidism raises doubt on the assumption of only a serum 25OHD threshold as indicative of vitamin D deficiency in pediatric population.

P30

Pediatric Risk Factors For Permanent Renal Scars In Acute Pyelonephritis

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Introduction: Urinary tract infection (UTI) is one of the most common lifelong bacterial infections in children, and can lead to severe complications such as renal scar, hypertension and chronic renal failure. Delay in treatment, fever, age, gender, recurrence of infection, anomalies of the urinary tract, are the risk factors of occurrence and progression of renal scar. The aim of this study was to determine the association between the risk factors with the incidence of renal scarring after acute pyelonephritis.
Material and methods: We studied 250 children (180 girls and 70 boys) with acute pyelonephritis followed in the Pediatric Nephrology Unit at the Dr. Sheikh hospital since 2010. All the patients were assessed for vesicoureteral reflux (VUR) by voiding cystoureterography after the acute phase of infection, and dimercaptosuccinic acid (DMSA) scintigraphy for presence of renal scarring, which obtained 6 months after the acute episode of pyelonephritis.
Results: The mean age of the study group was 4.51 ± 2.36 years, and most of them were girls (72%). For 38% of patients one or more renal scars were detected. Most of the scars occurred in boys (69.8% vs. 30.2%, p=0.001). Prevalence of Dilated reflux (VUR grade III, IV and V) was significantly higher in the positive scar group compare to the negative scar group (22.3 % vs. 7.1%, p <0.001). The incidence of none E-coli pathogens were higher in the scare positive group (24% vs. 9.1 %, p=0.001). The distribution of fever, leukocytosis and age did not differ significantly in two groups (p > 0.05).
Conclusions: According to our study presence of dilated VUR and non E-coli pathogens and male sex are independently associated with a higher incidence of permanent renal scarring in children.

P31

The Hidden Message Of Urine: In-depth Characterization Of The Healthy Urinary Proteome

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Introduction: Urinary is a biological fluid resulting from the blood filtration, is in close proximity to several organ, their collection is non invasive and readily obtainable. In this context, this body fluid is particularly interesting material source to search kidney diseases biomarkers. However, as in the case of other biological fluids, one of the main analytical challenges in proteomic characterization of the urinary is the very wide concentration range of proteins, largely exceeding the dynamic range of current analytical approaches.
Material and methods: Here, we described an extensive subfractionation method to investigate the characterization of the healthy urinary proteome. After the collection an initial centrifugation for cells and debris removal, urines are ultracentrifuged in order to pellet the micro-vesicles. The supernatant is treated with a mixture of organic solvents to highlight the highly hydrophobic proteins and remove the interference of pigments. Then, the supernatant, after dialysis, is loaded on Combinatorial Peptides Ligand Library (CPLL) , to reduce the dynamic range of protein concentration in urinary and at the same time unmask previously undetected proteins. Finally, each urinary fraction is processed using two-dimensional electrophoresis and mass spectrometry techniques and the results thus obtained are analyzed using the hierarchical clustering analysis.
Results: The combined use of this proteomic approach has allowed us to create a "complete" virtual map of the healthy urinary proteome, identifying a total of 3429 proteins. In addition, the particular chemical and physical characteristics of the sub-fractionation allowed to highlight: 744 proteins in micro-vesicles, 85 proteins in the extraction with organic solvents and 695 proteins in CPLL, all unique to each fraction.
Conclusions: These proteins may represent new potential biomarkers of organ function. The next step of this work will consist in applying this subfractionation method to the characterization of urinary proteome of several kidney disease and to identify new disease and prognosis biomarkers.

P32

Effects Of Active Vitamin D And Fgf23 On Human Osteoclast Physiology

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Introduction: Fibroblast Growth Factor 23 (FGF23) is secreted by osteocytes. No data have been published on a potential effect of FGF23

on bone-resorbing osteoclasts. Keeping in mind that 1-25 vitamin D (1-25D) inhibits osteoclast differentiation and activity, we hypothesized that FGF23 could have inverse effects on osteoclasts in vitro.
Material and methods: Multinucleated osteoclasts (MNC), differentiated from human monocytes, were treated at the early stage of differentiation with recombinant human FGF23 (1 and 10 ng/mL), 1,25D (5nM) or vehicle. Osteoclastogenesis was assessed by staining cells with the specific tartrate-resistant acid phosphatase (TRAP) enzyme before counting the MNC. To assess the effects of FGF23 and 1-25D on osteoclast activity, normal MNC were replated on mineralized plates and then treated with FGF23, 1-25D or vehicle during 48 hours. Slices were stained in silver nitrate to quantify the total resorbed areas and in TRAP to obtain the resorbed area per osteoclasts. Western blots for Akt and Erk phosphorylation were performed.
Results: Both 1-25D and FGF23 significantly inhibited osteoclastogenesis at early stages. Adding a pan fibroblast growth factor receptor inhibitor (FGFRi) restored osteoclast formation: for one batch (4 wells per condition), the mean±SD number of MNC at the end of the differentiation process was 920±146, 798±122 and 774±96 with PBS, FGF23 (1 ng/mL) and FGF23 (10 ng/mL), respectively; it was 696±63, 737±83 and 739±75 with FGFRi in addition to PBS, FGF23 (1 ng/mL) and FGF23 (10 ng/mL), respectively. Western blots demonstrated an activation of the Akt and Erk pathways with FGF23. 1-25D had no effect on resorption whereas FGF23 slightly but significantly increased bone resorption.
Conclusions: Our data show that 1-25D inhibits osteoclastogenesis without regulating osteoclast-mediated bone resorption; in contrast, FGF23 has biphasic effects on osteoclast physiology, inhibiting osteoclast formation whilst stimulating slightly osteoclast activity. These results may be of importance when therapies modulating FGF23 are available.

P33
Does Iugr Have An Effect On Nephrogenesis In The Developing Human Kidney?

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Introduction: It is well established in animal models that intrauterine growth restriction (IUGR) leads to a reduced nephron endowment at birth. There is limited information relating to how IUGR affects nephrogenesis in the developing human kidney. The specific aims were to examine the effect of IUGR on the timing of nephrogenesis, width of the nephrogenic zone and on the number of glomerular generations formed within the cortex in the developing human kidney.
Material and methods: Kidneys were collected at autopsy from fetuses ranging in age from 20-40 weeks of gestation and further grouped into IUGR (n=17) and Non-IUGR (n=24). Portions of the kidneys were embedded in paraffin, sectioned at 5 μm, and stained with haematoxylin and eosin. The number of glomerular generations formed within the kidneys was assessed using a medullary ray glomerular counting method. In kidneys where nephrogenesis was ongoing, the width of the nephrogenic zone was measured using image analysis.
Results: As expected, IUGR led to markedly reduced body weights (p=0.037) and kidney weights (P=0.0019) compared to the non-IUGR group, however, when kidney weight was adjusted for body weight, there was no significant difference. The number of glomerular generations formed within the cortex was markedly reduced in IUGR kidneys compared to age-matched non-IUGR kidneys (P=0.049). The width of the nephrogenic zone during the gestational period was not different between IUGR and non-IUGR kidneys. The timing of the cessation of nephrogenesis was variable in IUGR and non-IUGR kidneys; for example, nephrogenesis was observed to be complete as early as 33 weeks gestation in some kidneys and was still ongoing at 37 weeks gestation in other kidneys.
Conclusions: In accordance with previous findings, the findings of this study in autopsied human kidneys demonstrate that IUGR impacts adversely on the number of glomerular generations formed within the kidney which implies a reduced nephron endowment.

P34
Increasing Knowledge Of Atypical Haemolytic Uraemic Syndrome Through A Global Registry: Characteristics Of Recruited Patients

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Introduction: Atypical haemolytic uraemic syndrome (aHUS) is a rare genetic disorder, in the majority of cases caused by uncontrolled complement activation. Disease progression is characterized by thrombotic microangiopathy frequently leading to serious renal damage. The aHUS Registry (NCT01522183) has been established to increase knowledge of the progression and management of aHUS and to provide long-term safety and efficacy data for the terminal complement inhibitor, eculizumab. The baseline demographics and characteristics of patients recruited in the first 1.5 years of the registry are described.
Material and methods: The aHUS registry is an observational, non-interventional, multicentre, global study. A clinical diagnosis of aHUS is required for inclusion. Enrolment is irrespective of age, management or identification of a complement mutation or antibodies. Demographic, general medical history and management data are collected on enrolment and prospectively every 6 months thereafter. The data cut-off for this analysis was September, 2013.
Results: Patients recruited to the registry through March 2014 (n=416) come from 14 countries in Europe, the USA, Canada and Australia. As of the September 2013 cutoff analysis there were a similar proportion of males and females. The mean (SD) age at diagnosis was 20.9 (19.8) years. 17.1% of patients had a family history of aHUS and mutations or autoantibodies were detected in 92 of 157 screened patients (59%). Many individuals had prior renal damage and dialysis was common (43.1% of patients). 42.7% of patients had received prior plasma infusion or plasma exchange. 49% of the patients had received eculizumab.
Conclusions: The global aHUS Registry will provide data to help increase our knowledge of the history and progression of aHUS. Long-term safety and efficacy data will be collected for eculizumab use allowing comparison with other management strategies.

P35
Blood Outgrowth Endothelial Cells (boecs) As A Model To Study Atypical Hemolytic Uremic Syndrome

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Introduction: Atypical hemolytic uremic syndrome (aHUS) is due to defective regulation of the alternative complement pathway, which is constitutively active and requires a multi-layered defense system. It

remains unclear how this multilayered system functions as a whole to protect injured cells and why loss or diminished function of one of these regulators results in disease. We aimed to establish the technique of BOEC culture, endothelial cell precursors that can be grown from patients, and use them ex vivo, to study cellular and humoral elements involved in aHUS.
Material and methods: BOECs were cultured from control subjects by a standard protocol. Endothelial phenotype and presence of endothelial cell (EC) complement regulators was confirmed by immunofluorescence (IF), western blot (WB), qPCR and flow cytometry (FACS). Cells were challenged with complement, in both static and microfluidic conditions with or without functional blockade of complement regulators.
Results: BOECs cultured from healthy donors were positive on IF and WB for relevant EC markers. BOECs were characterized by FACS (positive for CD31/PECAM-1 and CD144/VE-cadherin; negative for the haemangioblast marker CD45 and immature endothelial progenitor cell marker CD14). Surface expression of EC complement regulators was confirmed by IF, flow and PCR. Complement deposition is enhanced by blocking complement regulators sequentially and results in a prothrombotic phenotype of the cells with platelet adhesion.
Conclusions: We have established an ex vivo method to model aHUS pathogenesis that can now be expanded to use patient-derived BOECs.

P36
Plasmatherapy - Still First Line Treatment In Atypical Hemolytic Uremic Syndrome? Long-term Follow-up Of Four Patients

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Introduction: Therapy strategies for atypical HUS (aHUS): • plasma infusion (PI) or exchange (PE). First line therapy by European Paediatric Study Group for HUS. • Complement blockade with anti-C5 antibody eculizumab. First line therapy by FDA and the Spanish Nephrology Society.
Material and methods: We report on 4 patients with aHUS.
Results: Patient 1: *2003, homozygous mutation CFH gene (complete factor H quantitative deficiency), TMA with ARF (acute renal failure) at age of 8 months, start with PI → complete remission. PI for 10 years, normal kidney function, residual microhematuria, no side effects of therapy. Recently switch to eculizumab therapy after a series of macrohematuria, followed by persistent high proteinuria. Proteinuria stopped after 2 doses of eculizumab, occasionally slight microhematuria. Kidney function normal. Patient 2: *2001, heterozygous CFHR1 deficiency, TMA with ARF in 2007 and start of PI. Single antihypertensive medication. Normal renal function, no signs of TMA. Patient 3: *2010, heterozygous C3- and CFHR1+3-mutations, compound heterozygous mutation of DGKE gene. TMA with nephrotic syndrome at age of 8 months, treated with RAS blockade. Start of PI at age of 21 months. Switch to eculizumab therapy after 15 months after progredient nephrotic syndrome. Clinical improvement but recurrent temporary proteinuria in nephrotic range triggered by infections. Patient 4: *2011, heterozygous CFH mutation, TMA with ARF in 2011 (age of 5 months), start with PI at age of 6 months. Triple antihypertensive medication, marginal renal insufficiency. Recently switch to eculizumab due to persistent renal insufficiency (CKD II°).
Conclusions: Our results confirm plasma therapy to be effective in aHUS. However, it may not guarantee long-term success and bears significant risks. Eculizumab turns out to be an effective and safe alternative. Long-term results of eculizumab are outstanding. The question arises, whether it is time to generally recommend eculizumab as first-line therapy or to position it equivalent to plasma therapy?

P37
A New Gel Formulation Of Topical Cysteamine For The Treatment Of Corneal Cystine Crystals In Cystinosis: The Oct-1 Study.

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Introduction: Objective: To establish the safety and efficacy of a new gel formulation of cysteamine hydrochloride (CH) eye drops, for the treatment of corneal complications of nephropathic cystinosis.
Material and methods: Design: Open label dose response clinical trial. Participants: Eight patients with infantile nephropathic cystinosis including 4 children, 3 adolescents, and 1 adult (mean age at inclusion, 12.1±4.6 years) treated with CH0.1% eye drops. Intervention: Patients were treated, in both eyes, with the control CH0.1% eye drop formulation on average 4 times daily for one month and then switched to CH0.55% gel formulation at the same dose frequency. Based on clinical ocular findings, the dose regimen was adapted at D30 and D90 in order to decrease the frequency of instillation. After D90, this dose frequency was maintained, except in cases of crystal density worsening. Patients had a follow-up visit every 6 months during 48 months. Main outcome measures: The primary endpoint was the corneal cystine crystal density measured with an in vivo confocal microscopy (IVCM) score.
Results: Results: All patients completed the study. During the 4-year study period, neither serious adverse events nor significant adverse events related to the study drug were reported. After switching to CH0.55% gel, the IVCM total score decreased from baseline to D90 by a mean of 28.6±17.5% ($p<0.001$). From D90 to M48, the IVCM total score remained stable and significantly decreased as compared to that at D1 despite a reduced dose regimen from D90. At M48, the mean IVCM total score was 8.13±4.15, decreased by a mean 29.9±26.29% from D1 ($p=0.001$), with a reduced number of instillations compared to that at D1. The IVCM total score and photophobia were significantly correlated ($p=0.04$).
Conclusions: Conclusion: This study provides evidence that CH0.55% gel is superior to the CH0.1% formulation in terms of efficacy and has a good safety profile over a long follow-up period.

P38
Two Novel Mutations In The Chloride/proton Clc-5 Exchanger Gene Of Patients With Dent´s Disease

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Introduction: Dent's disease is an X-linked renal tubulopathy characterized by low-molecular-weight proteinuria (LMWP), hypercalciuria, nephrocalcinosis, nephrolithiasis and progressive renal failure. The clinical presentation is frequently subtle with the majority of patients remaining asymptomatic through childhood. Inactivating mutations in the CLCN5 gene encoding the electrogenic chloride/proton exchanger ClC-5 frequently causes this disorder. Fifteen percent of cases present mutations in the OCRL1 gene. Both genes encode proteins involved in the endocytic pathway for reabsorption of low-molecular-weight proteins in the proximal tubule. In this study, we describe three unrelated cases with the clinical diagnosis of Dent's disease and the identification of disease-causing mutations.
Material and methods: The three patients investigated were boys of 6 (P1), 8 (P2) and 12 (P3) years old that presented with nephrotic range

proteinuria. Patient P1 presented with acute renal failure in the context of pneumonia with dehydration, and the other two were asymptomatic. The CLCN5 gene of the patients and their relatives was analysed by PCR amplification of the coding exons and their intronic flanking regions and DNA sequencing.
Results: The three children had LMWP. P1 showed nephrocalcinosis and a family history of lithiasis, P2 showed hipercalciuria and nephrocalcinosis, and P3 showed hipercalciuria. We detected CLCN5 mutations in the three patients. Two of these mutations were novel; one frameshift mutation caused by a deletion of two nucleotides in exon 10 (c.1560_1561delTC), leading to a premature stop codon, and a nonsense mutation, p.W489X, located in exon 9. A previously reported missense, p.Y272C, was also found.
Conclusions: The results of the genetic analysis confirmed the clinical diagnosis in the three cases. The two novel mutations identified predict important structural and functional changes in the ClC-5 protein. This work was supported by RenalTube, a project (grant PI11/00342) co-financed by Fondo de Investigación Sanitaria (Spain) and the European Regional Development Fund "A way to build Europe".

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Analysis Of Hpse2 Gene Mutations In Children With Non-neurogenic Neurogenic Bladder And Urofacial (ochoa) Syndrome

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Introduction: Urofacial syndrome (UFS) is characterised by congenital bladder dysfunction accompanied by a characteristic abnormal grimace upon smiling and crying. In recent years biallelic mutations of HPSE2 and LRIG2 have been reported in UFS patients. Non-neurogenic neurogenic bladder (NNNB) also called as Hinman-Allen syndrome has a bladder identical to UFS without typical facial features. The aim of this study is to analyse HPSE2 mutations in UFS patients and patients who have NNNB or severe lower urinary tract dysfunction (LUTD) without abnormal facial expression in our country.
Material and methods: The patients with UFS, NNNB and severe LUTD (primary vesicoureteric reflux (VUR) with bladder dysfunction) were enrolled to the study. Exclusion criteria were the presence of neurological or anatomical defect in the LUT. We examined a total of 35 patients from 33 families. There were seven UFS patients from five different families, 21 patients with NNNB and seven with LUTD. HPSE2 gene mutation analysis was performed using the polymerase chain reaction protocol followed by direct sequencing in these patients.
Results: Homozygous c.457C>T (p.R153X) (exon 3) nonsense mutations were detected in two UFS patients from the same family. Besides, homozygous and heterozygous c.631T>C (p.Y211H) (exon 4) and c.1736A>T (p.Y579F) (exon 12) variants which were classified as benign SNPs (single nucleotid polymorphism) were detected in 21 (64%) of 33 families; two (29%) of seven patients with UFS, 14 (67%) of 21 patients with NNNB and five (71%) of seven patients with LUTD.
Conclusions: HPSE2 mutations were found in two UFS patients but not detected in patients with NNNB and severe LUTD. Genetic factors seems to be responsible from these various bladder anomalies and cases of NNNB that were diagnosed in early childhood period were increasingly recognized. Thus, further genetic studies are needed in order to discover new genes responsible from these bladder anomalies.

P40

Modern Diagnostic Approach To Hereditary Xanthinuria

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Introduction: Hereditary xanthinuria (HX) is a rare autosomal recessive disorder of purine metabolism caused by a deficiency of xanthine dehydrogenase (XDH), which catalyses the conversion of hypoxanthine and xanthine to uric acid. Missing XHD activity leads to undetectable levels of uric acid excessively replaced by xanthine in serum/urine. The typical finding of radiolucent renal stones is present in 40% of cases. Two types of HX have been described – simple XDH deficiency (type I) and dual XDH and aldehyde oxidase (AO) deficiency (type II). Although both types of HX have characteristic biochemical profile, the allopurinol loading test has been traditionally used to differentiate between them. Moreover, final confirmation of HX has been based on the biopsy finding of the absent XDH activity in the small intestine or liver.
Material and methods: We present the clinical, biochemical, ultrasound and molecular genetic findings in three new patients with HX type I.
Results: Urinary metabolomics revealed the presence of the nicotinamide degradation pathway products (N1-methyl-2-pyridone-5-carboxamide and N1-methyl-4-pyridone-5-carboxamide) in all studied individuals with hypouricaemia/hypouricosuria and xanthinuria, thus suggesting HX type I. Analysis of XDH gene confirmed homozygous one nucleotide insertion c.140dupG in exon 3 in two studied siblings with HX type I. Heterozygous deletion c.641delC in exon 8 (p.P214QfsX4) and heterozygous mutation in exon 23 c.2473C>T (p.R825X) was identified in the third studied proband.
Conclusions: We suggest a simple three-step laboratory approach to be used for diagnosis, typing and confirmation of HX. In the first step, the diagnosis of HX is determined by extremely low serum and urinary uric acid excessively replaced by xanthine. Secondly, HX is typed using urinary metabolomics. Finally, the results are confirmed by molecular genetics. We advocate for this safe and non-invasive diagnostic algorithm instead of the traditional allopurinol loading test and intestinal or liver biopsy. Hence, their side effects and complications may be avoided nowadays.

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Mutations Of Cyp24a1 Gene In A Cohort Of Pediatric Patients With Nephrocalcinosis

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Introduction: Loss-of-function mutations of vitamin D-24 hydroxylase (gene CYP24A1) have recently been recognized as a cause of hypercalcaemia and nephrocalcinosis/nephrolithiasis in infants and adults. True prevalence and natural history of this condition are still to be defined also in pediatric patients. We investigated the prevalence of CYP24A1 mutations in a cohort of pediatric patients with

nephrocalcinosis referred to our outpatient service from January 2012 to December 2013.
Material and methods: Nineteen pediatric patients with nephrocalcinosis were investigated, by measuring calcium, phosphate, and vitamin D, and by performing CYP24A1 mutation analysis.
Results: All patients were diagnosed with nephrocalcinosis after ultrasonographic assessment at a mean age of 3,5 years and were analyzed with the diagnostic flowchart proposed by Ammenti (Acta Pædiatrica 2009) for detecting causes of nephrocalcinosis. Sequence analysis of CYP24A1, which encodes 25-hydroxyvitamin D 24-hydroxylase, the key enzyme of 1,25-dihydroxyvitamin D(3) degradation, revealed mutations in three affected children, two were compound heterozygous for their specific mutations and one presented only one mutation in a single allele. All the affected patients showed hypercalciuria, while only compound heterozygous patients showed chronic hypercalcaemia with depressed parathyroid hormone (PTH). All the patients had normal renal function, despite high-grade nephrocalcinosis, and were treated with potassium citrate to restore normal citraturia. Of note all patients suffered of recurrent urinary tract infections, which disappeared after normalization of calciuria due to potassium citrate supplementation.
Conclusions: The results of this study suggest a close relationship between CYP24A1 mutations, and onset of nephrocalcinosis in pediatric patients. However further studies are needed to determine the prevalence of CYP24A1 mutation in nephrocalcinosis patients, to define natural history and to develop novel therapeutic approaches.

P42
When Kids Teach Their Parents: Novel Pkd1 E Pkd2 Gene Sequence Variants In Children With Autosomal Dominant Polycystic Kidney Disease

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Introduction: Autosomal dominant polycystic kidney disease (ADPKD) is caused by mutations in two genes: PKD1 (85%) and PKD2 (15%). Despite many mutations have already been reported, molecular data are still limited, especially about genotype-phenotype correlations. Furthermore, limited data on ADPKD in children are available. We describe our series of children with clinical diagnosis of ADPKD confirmed by genetic analysis of PKD1 and PKD2 gene, according to clinical and molecular characteristics.
Material and methods: In 20 patients (F:M 5:15; mean age 12 years) with ultrasonographic diagnosis of ADPKD, PKD1 and PKD2 genes were analysed by direct sequencing. Initial nephrological assessment was requested for incidental finding of renal cysts (6 children) or positive family history (10 children) or prenatal diagnosis (4 children). Molecular analysis were extended to parents.
Results: In a 6.5 years (range 1-19 years) follow up, all patients presented normal growth, psychomotor development and renal function (except for a boy with chronic kidney disease and intellectual disability due to perinatal asphyxia). Urinalysis was negative in 17/20 children, 2 have non nephrotic proteinuria and 1 nephrotic proteinuria. Blood pressure was normal in 18/20 children, while 2 had hypertension. Family history was positive in 19/20 cases, but 3 parents were unaware to be affected and were diagnosed only after their children. None of the families had previously undergone genetic analysis, despite multiple affected members. 20 sequence variations in PKD1 gene (18/20 novel) and 3 in PKD2 gene (2/3 novel) were identified. Two concurrent sequence variations in PKD1 were identified in 7 probands.
Conclusions: The use of genetic tests in children with suspect ADPKD may not only lead to an early diagnosis in the child, enabling to plan a patient-tailored follow up program and prevent long-term complications of the disease, but also allows to diagnose the entire pedigree and to offer a complete genetic counselling.

P43
Nonhypoplastic Glomerulocystic Kidney Disease Associated With A Novel Hnf1b Mutation

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Introduction: Hereditary Glomerulocystic kidney (type II GCK) or Glomerulocystic kidney disease (GCKD) is an autosomal dominant rare entity. It has been associated to UMOD mutations while HNF1b mutations are associated with a highly variable renal disease phenotypic spectrum.
Material and methods: CASE REPORT. Girl born with hyperechogenic kidneys detected on prenatal ultrasound and few 1-2 mm cysts on neonatal echography (3 in right kidney and 1 in left kidney) with normal kidney size. She had normal renal function and arterial tension. Her father was diagnosed with gout and a solitary kidney without cysts at 18-years old, with no further follow-up. Repeated echography in father and mother revealed no cysts. No other renal pathology in the family. Until 5-years old a cortical hyperechogenicity with one 2-3mm cyst is sometimes seen. At that time her father (40y) was diagnosed of end stage renal disease of unknown etiology and received a kidney transplant. His kidney size was normal, no cysts were seen on his solitary kidney and he did not have diabetes. The girl is currently 10-years old, has hyperechogenic normal sized kidneys with few corticomedulary 2-3 mm cysts, normal renal function, no hypertension and normal serum uric acid and magnesium levels. METHODS. Mutation screening of HNF1b was undertaken in the proband by HRM and MLPA analysis of HNF1b coding sequences and intron/exon boundaries.
Results: A novel heterozygous HNF1b missense mutation, c.400A>T (p.Ile134Phe) was identified in the proband. The mutation affects a highly conserved amino acid localized in the DNA binding domain and has been classified as deleterious by the pathogenicity prediction tools SIFT, MutationTaster and PolyPhen2.2.
Conclusions: A new HNF1b mutation has been identified in a patient with GCKD without hypoplastic kidneys. Molecular genetic testing for HNF1b mutations may contribute to differential diagnosis of GCKD.

P44
Characterization Of The Total Ciliopathy Variant Load Dissolves The Enigma Of Oligogenic Inheritance In Bardet-biedl Syndrome

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Introduction: Bardet-Biedl syndrome (BBS) is a clinically and genetically heterogeneous ciliopathy. Primary features are retinal dystrophy, obesity, polydactyly, renal abnormalities, hypogonadism and learning difficulties. Further phenotypic traits out of the ciliopathy spectrum (e.g. cardiac abnormalities, ataxia, hearing defects) are common. Mutations in 19 BBS genes have been described so far without convincing genotype-

phenotype correlations. Clinical and genetic overlap exists with other cilia-related disorders. BBS was among the first Mendelian genetic disorders for which triallelic inheritance as a bridge between Mendelian and multifactorial traits has been proposed (Katsanis et al., Science 2001). As a consequence, BBS was postulated to be not a single-gene recessive disease but a complex trait requiring three mutant alleles at more than one locus to manifest the phenotype. These data still causes some uncertainty for genetic counselling, clinical management and prenatal diagnostics.
Material and methods: We performed genetic testing in a cohort of 145 unrelated patients with BBS which represents the most comprehensive sequencing-based study to date. In all patients, we initially tested for the two known hotspot mutations in BBS1 and BBS10. In 81 patients we performed NGS (next-generation sequencing) using our ciliopathies-panel for BBS and other cilia-related diseases. Currently, this panel targets 306 genes (5546 exons, > 1.2 Mb). To uncover "hidden mutations" such as copy number variations (CNVs) we extended the use of NGS data by quantitative readout of the targeted exons.
Results: In all but three families analysed by NGS who fulfilled the diagnostic criteria for BBS, we were able to identify homozygous or compound heterozygous mutations in a single BBS gene or ALMS1, what we call the major disease locus. The overwhelming majority of mutations was private. In total, we were able to identify 50 novel mutations that were not described in the literature before. High-coverage NGS data enabled the detection of causative CNVs which were key to the diagnosis in hitherto unsolved constellations. Notably, no MLPA kit is available for any of the BBS genes, i. e. deletions detected in our cohort would most probably have been missed by conventional techniques. In most patients, we detected additional mutations at other loci that may well exert a modifying effect on the disease phenotype. However, in contrast to published data, our findings are in accordance with a recessive disease model for BBS and do not support a model in which an additional allele is urgently needed for disease manifestation.
Conclusions: While there is little doubt that modifiers play a role for variable expressivity, our study widely resolves the long-standing enigma of triallelic or oligogenic inheritance in Bardet-Biedl syndrome. We also conclude that further genetic heterogeneity in BBS is limited. More than 95% of typical BBS patients harbour pathogenic mutations in one of the known disease genes. Our data is of major importance for genetic counselling, prenatal diagnostic testing, and the clinical management of patients and their families.

P45
Hnf1b Region Deletions As A Prevalent Cause Of Cystic Kidney Diseases In Children

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Introduction: Hepatocyte nuclear factor 1 beta (gene HNF1B) is an essential transcription factor for kidney, liver and pancreas development. Mutations in HNF1B are known to cause broad spectrum of kidney pathology including cystic kidney diseases. The aim of our study was to analyze the prevalence of HNF1B gene anomalies in a large cohort of children with clinical phenotypes of autosomal dominant polycystic kidney diseases (ADPKD), autosomal recessive polycystic kidney disease (ARPKD) and patients with other cysts in kidney.
Material and methods: We have used direct sequencing and MLPA to diagnose mutations in HNF1B gene in cohort of 152 children with clinical phenotype of ADPKD (n=74), ARPKD (n=30) and other cystic or structural changes of kidney (n=48). Microarray deletion assay was used to identify larger deletions in the region of the HNF1B gene in the patients with HNF1B deletion.
Results: We have identified HNF1B mutation in 15 patients (10% of the whole cohort. 5% in ADPKD, 10% in ARPKD and 15% in cyst of unknown etiology). Heterozygous point mutations were identified in three patients. Twelve patients are having heterozygous whole gene deletion. We have expanded the deletion search and identified seven patients with deletion ranging from 1,39Mb to 2,137Mb surrounding the HNF1B gene
Conclusions: We have identified mutations in 10% of the screened children with different types of cystic kidney diseases. Majority of the patients had a heterozygous whole gene deletion. Interestingly, in a substantial number of the cases we had found that the deletion was not limited to HNF1B, but was part of a larger deletion in region 17q12. The study was supported by grants NT11402 and MZ NT11457

P46
Hnf1b Mutations In Patients With Congenital Abnormalities Of Kidney And Urinary Tract (cakut): Are We Screening Too Much?

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Introduction: Hepatocyte nuclear factor 1 beta (HNF1B) is involved in the development of kidneys, liver, pancreas and urogenital tract. Disorders are autosomal dominant inherited with extremely high heterogeneity in phenotype. We aim to define accurate criteria for HNF1B screening in a prospective cohort of patients.
Material and methods: Based on the phenotypic characteristics described in literature, we defined major, minor and extra-renal selection criteria. Major criteria were defined as fetal bilateral hyperechogenic kidneys; multicystic dysplastic kidney or renal agenesis; hypoplastic or dysplastic kidneys or cysts from unknown origin. Minor criteria were defined as ectopic kidney; vesico-ureteral reflux; hydronephrosis and extrarenal criteria as diabetes; hypomagnesemia; hyperuricemia; hypokalemia; liver function abnormalities or positive familial history (abnormalities in kidney, urogenital tract, liver, and/or pancreas). We included all patients from our pediatric and adult nephrology department from January 2010 till April 2013 presenting with at least one major criterion or minor with extra-renal manifestations in the personal or familial history. Multiplex ligation-dependent probe amplification (MLPA) for the search of deletions and duplications, and sequencing for the detection of point mutations were performed.
Results: We screened a prospective cohort of 252 patients fitting the criteria mentioned above and detected HNF1B mutations in 10.7% (n=22), with a complete deletion being the most common (n=10), besides deletion or sequence abnormalities. In our cohort the best predictors for finding HNF1B mutations were bilateral renal abnormalities ($p < .001$) and cysts from unknown origin ($p = .03$).
Conclusions: Based on a prospective single center cohort, we demonstrated that HNF1B-mutations are responsible for approximately 10% of CAKUT cases. This incidence is lower compared to retrospective cohorts. Nonetheless, bilateral renal anomalies or cysts from unknown origin were the best predictors of finding HNF1B abnormalities. These criteria might be useful for a more restricted screening protocol, but should be reaffirmed in a larger multicenter cohort.

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Acute Kidney Injury In A Single Pediatric Intensive Care Unit In Poland: A Retrospective Study

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Introduction: Commonly employed, effective, but at the same time increasingly more aggressive therapeutic methods have resulted in an increasing number of patients hospitalized in pediatric intensive care units (PICU) developing acute kidney injury (AKI).
Material and methods: The report presents a retrospective analysis of 25 cases (8 newborns, 8 infants, 9 older children) of AKI (assessed based on the pRIFLE criteria) in PICU in the years 2006-2012.
Results: AKI was diagnosed in 1.24% of all hospitalized children. The mean hospitalization duration of a child with AKI in PICU was 35 days, and the mean duration of AKI – 12.2 days. AKI percentage duration (as compared to the total hospitalization time) in the children who died vs. the survivors was 79.55% vs. 46.19%, respectively ($p<0.05$). The mortality rate of AKI patients was 40% which was 4.4-times higher as compared to the total mortality rate in PICU. The final cumulative survival ratio (FCSR) of patients meeting the oliguria criterion (which was met in 48% of AKI patients) was 37% vs. 49% in non-oliguric children. Averaged urine output values in the first week of hospitalization in the deceased vs. surviving children were 1.49 vs. 2.57 ml/kg/h, respectively ($p<0.05$). The AUROC value for the curve plotted for the number of deaths depending on the mean values of hourly urine output in the first week of hospitalization in PICU was 75% (for the cut-off value of 1.4 ml/kg/h: likelihood ratio – 3.75, specificity - 87%).
Conclusions: Oliguria was not a sufficiently sensitive parameter for AKI diagnosing in children below 1 year of life. The risk of death in children, in whom the mean urine output in the first week of PICU hospitalization did not exceed 1.4 ml/kg/h was almost two times higher as compared to the entire AKI population. AKI in PICU was diagnosed too rarely and too late.

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Urinary Ngal, Kim-1 And L-fabp Levels In Antenatal Hydronephrosis

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Introduction: The management of antenatal hydronephrosis is still controversial. In the study we aimed to evaluate possible clinical application of urinary neutrophil gelatinase-associated lipocalin (uNGAL), kidney injury molecule-1(uKIM-1) and liver type fatty acid-binding proteins (uL-FABP) as useful noninvasive markers to distinguish the requiring surgery in children with congenital hydronephrosis.
Material and methods: Urine samples from 62 children with hydronephrosis and 20 healthy children were collected. Patients were divided 2 groups according anteroposterior diameter of renal pelvis and obstruction. The group 1 was included 26 children with severe hydronephrosis (with obstruction), group 2 was included 36 children with mild hydronephrosis (without obstruction), uNGAL, uKIM-1 and uL-FABP in the first morning urine samples were measured by a commercially available micro enzyme-linked immunosorbent assay.
Results: Compared with controls and group 2 children uNGAL levels and rates of uNGAL to creatinine were significantly higher in group 1 children ($p<0.05$). We found that uNGAL/Cr showed quite good diagnostic profile, describing an area under the curve 0.68 [95% confidence interval 0.6-0.7] with a best cut–off value of 0.16 ng/mg Cr (sensitivity 58%, specificity 75%) ($p<0.05$). The uNGAL/Cr ratio was found to be positively corelated with the uKIM-1/Cr ratio ($r=0.582$, $p<0.05$) and uL-FABP/Cr ratio ($r=0675$, $p<0.05$) in group 1 children.
Conclusions: The results of our study have clearly demonstrated that the children with hydronephrosis with obstruction had increased uNGAL to creatinine levels compared to controls.

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Urinary Ngal, Kim-1 And L-fabp Levels In Patients With Vesicoureteral Reflux

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Introduction: The aim of this study is to assess availability of urinary levels of neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1) and liver-type fatty acid binding protein (L-FABP), as a non-invasive marker, in early diagnosis of reflux nephropathy and follow-up in patients with vesicoureteral reflux.
Material and methods: In this study, 123 (36 M, 87 F; mean age 9.4 ± 2.9 years) patients with primary vesicoureteral reflux and 30 (10 M, 20 F; mean age 9.5 ± 2.9 years) healthy children as a control group were included. Children were divided into 5 groups; Group A: patients with reflux and scar, Group B: patients with reflux and without scar, Group C: patients with scar and resolved reflux, Group D: patients with resolved reflux and without scar, and Group E: healthy control group. Urinary levels of NGAL, KIM-1 and L-FABP measured with micro ELISA method.
Results: Urinary level of NGAL was significantly higher in patients with scar (Group A and C) than patients without scar (Group B and D) and healthy control group ($p=0.0001$). Urinary level of KIM-1 was similar in all groups ($p=0.417$). Urinary level of L-FABP was significantly higher in Group A, Group B and Group C than Group D and healthy control group ($p=0.014$). After the exclusion of healthy controls, we analysed our data again and found that urinary level of NGAL was significantly higher only in patients with scar (Group A and C) than patients without scar (Group B and D) ($p=0.020$).
Conclusions: In conclusion, urinary level of NGAL indicates the presence of scarring in patients with vesicoureteral reflux. We also concluded that urinary level of NGAL can be used as a non-invasive diagnostic and prognostic marker for reflux nephropathy.

P50
Spontaneous Resolution Of Primary Vesicoureteral Reflux Diagnosed In The First Year Of Life And Renal Outcome Evaluted With Tubular Scintigraphy

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Introduction: A retrospective study was performed to study spontaneous resolution of primary vesicoureteral reflux (VUR) in infants and renal outcome analysed with tubular scintigraphy. Medical records of 161 infants, presenting at our institution in 3 year period were reviewed.
Material and methods: There were 68 males and 93 females, with mean age at diagnosis of 4.47±4.0 months. The majority of infants with VUR, 155/161, presented with one or more episodes of urinary tract infection. Diagnosis was established using radiographic voiding cystourethrogram.

At diagnosis, a renal ultrasound and renal scintigraphy with Tc-99m-DMSA were performed in all children and data of scintigraphy were determined as normal, equivocal or pathologic findings. The follow-up included serial urine cultures, haematological and biochemical tests, radiographic cystography, renal ultrasound and renal tubular scintigraphy.
Results: Out of 161 children with 260 refluxing units (RU), VUR resolved spontaneously in 122 children (75.77%) with 203 RU, 4 children with 6 RU underwent endoscopic correction. Spontaneous resolution after uroprophylaxis was more frequent in boys ($p < 0.001$), in VUR grade I or II ($p < 0.0001$) and bilateral VUR at diagnosis ($p< 0,001$). Mean age of VUR resolution was 23.2 ± 9.47 months. The first renal scintigraphy was normal in 97 (37.5%), equivocal in 137 (52.5%) and pathologic in 26 (10.0 %). In comparison with the first scans more normal findings (139 kidneys; 53.5%) and less equivocal findings (91 kidneys; 34.9%) were found on the final scintigrams ($p<0,01$). The percentages of pathologic findings were similar on the first and the last scans (26 kidneys; 10.0 % vs 30 kidneys; 11.6 %).
Conclusions: The data of the study indicate that spontaneous VUR resolution rate is high in infants. Similar percentages of pathologic findings on the first and the last scintigraphy points to the beneficial influence of uroprophylaxis in preventing further renal damage.

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Primary Vesicoureteral Reflux Associated With Mild Antenatal Hydronephrosis-usefulness Of Voiding Urosonography In The Diagnosis

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Introduction: The traditional management for the evaluation of prenatal hydronephrosis is to perform a voiding cystourethrography (VCUG) in the first months of the infants life. Contrast-enhanced-harmonic-voiding-urosonography (VUS) has been reported as a sensitive method in the diagnosis of vesicoureteral reflux (VUR).
Material and methods: Sixty one infants [121 kidney-ureter units (KUU)] with anterior-posterior pelvic diameter of 5-9 mm and no other abnormalities shown on ultrasound during 21th-30th gestational week were enrolled in the study. Postnatal ultrasound was performed within the first month of life. VCUG and VUS, at same session, were performed at 1.5-2.5 months of age.
Results: Postnatal ultrasound verified mild hydronephrosis in all infants. VUR was found on either method in 27/121 KUU (22.3%) (grade I: 1, II: 12, III: 12, IV: 2). VUR was detected by both VCUG and VUS in 12/27 KUU (44.4%), only by VCUG in 1 KUU (3.7%) and only by VUS in 14/27 KUU (51.9%). VUR that was missed by VCUG was more severe (9 KUU grade II and 5 grade III), compared with that one missed by VUS (1 grade I). When regarded VCUG as the gold standard, the sensitivity of VUS was 91.7% (CI 61-99%), the specificity 87% (CI 77-93%), the positive predictive value 41% (CI 24-65%), and the negative predictive value 99% (CI 94.0-99.8). The McNemar's test [p=0.0019 (OR=14 CI: 1.8-106] and Cohens K-test (0.53) showed poor-moderate agreement between VUS and VCUG.
Conclusions: Mild prenatal hydronephrosis is associated with an important occurrence of VUR although of mild/moderate severity. Comparison between the two methods showed that VUR missed by VUS was of no clinical significance, whereas VUR missed by VCUG was more severe. So, VUS as a more sensitive method in depicting VUR could be an alternative way of imaging infants with a mild prenatal hydronephrosis, thus avoiding the radiation exposure.

P52

Angiotensinogen As A Novel Marker Of Obstructive Nephropathy In Children.

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Introduction: Obstructive nephropathy due to congenital or acquired urinary tract obstruction is one of the most important causes of chronic renal failure (CRF) in children. Rapid diagnosis and initiation of the treatment are vital to preserve renal function. In this situation there is a need for identification of new non-invasive urinary biomarkers to provide the clinician with fast, specific and reliable diagnostic and prognostic tool. The aim of the study was to determine whether urinary angiotensinogen (uAGT) may be a useful, non-invasive marker of obstruction in children with hydronephrosis (HN) caused by ureteropelvic junction obstruction (UPJO).
Material and methods: The study cohort consisted of surgical group (SG): 31 children with severe HN who required surgery; non-surgical group (NSG): 20 patients with mild HN, and reference group (RG): 19 healthy children. Urinary concentrations of AGT were measured using immunoenzymatic ELISA commercial kit and were expressed in ng/ mg Cre (uAGT/ uCre).
Results: UAGT/ uCre level was significantly higher in SG when compared to NSG children ($p<0.01$) and healthy participants (SG vs. RG: $p<0.01$). The difference between the uAGT/ uCre in NSG children and RG was not statistically significant ($p>0.05$). Urinary AGT/ uCre, was correlated negatively with differential renal function ($r= -0.46$; $p<0.01$).
Conclusions: The present pilot study has clearly demonstrated that children with ureteropelvic junction obstruction showed increased urinary AGT levels, which correlated negatively with DRF in radionuclide scan.

P53

Continuous Renal Replacement Therapy In Newborns: Single Center Experience

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Introduction: Continuous renal replacement therapy (CRRT) in newborns is a method of choice for the treatment of isolated acute kidney injury (AKI) or AKI as a part of the multiorgan dysfunction syndrome (MODS) and congenital metabolic diseases.
Material and methods: We analyzed medical records of newborns that underwent CRRT from October 2005. until March 2014. regarding their sex, gestational age, body weight (BW), diagnosis, severity of illness, indications for the CRRT, vascular access, length of CRRT and outcome.
Results: 31 newborns, 15 females and 16 males, 34th to 41st week of gestational age, BW between 1600 and 5600g. Thirty five percent had BW less than 3 kg. Forty eight femoral and 14 jugular veins were cannulated. Sixteen patients were on CVVHD, 15 on CVVHDF. Six patients had isolated AKI. In 4 was caused by congenital renal anomalies and in 2 by perinatal asphyxia. Seventeen patients had MODS with AKI, in 5 MODS developed after meconial aspiration, in another 5 it was associated with severe perinatal asphyxia and disseminated intravascular coagulation, in 4 with sepsis, 2 with congenital nephrotic syndrome and in 1 patient with fetal hydrops. Urea cycle disorder had 3, maple syrup urine disease 3, and 2 methylmalonic aciduria and tyrosinaemia. Eighty three percent had MODS. Mean PRISM score decrement was statistically significant after 24h of CRRT ($p<0,05$). Eight patients were volume overloaded. CRRT lasted 1 to 32 days. Twenty two patients (71%) survived. In the group of 9 patients who died, 8 (89%) had MODS. Survival of patients with MODS was 58%. Ninety two percent without

MODS survived. Survival of volume overloaded patients with MODS was 33%.
Conclusions: Results of our study showed overall survival rate of newborns on CRRT of 71% and of patients with MODS of 58%, which is comparable with the similar studies in the literature.

P54
Evaluation Of Subclinical Renal Damage Indicators In Children Born With Low Birth Weight.

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Introduction: Children born with low birth weight (LBW) are exposed to a number of nephrological problems. On the one hand kidneys are immature, and what is more, they are exposed to multiple nephrotoxic factors appearing before and after birth. Well-known indicators of renal tubular damage, that are eliminated in the urine, are: liver - type fatty acid binding protein (L-FABP), kidney injury molecule-1 (KIM-1) and neutrophil gelatinase-associated lipocalin (NGAL). The aim of this study was to evaluate whether children with LBW have subclinical renal damage and whether above markers may be of practical importance in determining its extent.
Material and methods: The study included 60 children with LBW and the reference group consisting of 28 children born with normal birth weight. Three age groups were distinguished: 0-3 months, 4-12 months and >12 months. Urinary excretion of three parameters, L-FABP, KIM-1 and NGAL, was determined using ELISA kits.
Results: LBW children aged 0-3 months had higher urinary excretion of L-FABP (5.45 ± 2.91 vs 0.9 ± 0.55, p <0.05), KIM-1 (534 06 ± 427.73 ± 140.23 ± 420.2, p <0.05) and NGAL (0.44 ± 0.17 vs 0.31 ± 0.19, p <0.05) as compared with the reference group. Children aged 3-12 months had higher excretion of L-FABP (10.83 ± 3.97 vs 4.86 ± 2.82, p <0.05), whereas in the group of children over one year of age, there was no difference in the excretion of L-FABP, KIM-1 and NGAL.
Conclusions: Increased urinary excretion of L-FABP, KIM-1 and NGAL in the youngest subjects can reflect the fact that in children with LBW comes to subclinical renal injury. In contrast, no differences observed in older children, points to the transient nature of the damage.

P55
The Prevalence Of Pre-hypertension In Children With Type 1 Diabetes Mellitus.

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Introduction: Background and aim: Hypertension is more common in adults with type 1 diabetes mellitus(T1D) than general population. The aim of this study was to detect pre-hypertensive stage in children withT1D and evaluate its correlation with diabetic nephropathy compared to non-diabetic children.
Material and methods: This was a prospective cross-sectional study in an outpatient clinic of a university hospital. Sixty-two (36 males, 26 females) patients with stable T1D with median age of 13 years and 42 age- sex-matched healthy children were entered in the study between September 2008 and February 2011. Three readings of blood pressure were recorded. Fasting blood sample was drawn for HbA1C, creatinine, and a 24 hour urine aliquot was collected to measure microalbumin, creatinine, and volume to estimate glomerular filtration rate (eGFR). Chi-square, ANOVA, and Student's T test, and General Linear Model of Variance were used to analyze data. P<0.05 was considered significant.
Results: From sixty-two children with T1DM, 25.8% were in pre-hypertensive stage, 4.8%% stage 1, and 1.6% stage 2. In controls, one (2.4%) out of 42 children was in pre-hypertensive stage (p-value<0.0001). Mean (SD) systolic blood pressure was 111(12.4) in T1D vs. 100.7(11.3) in controls (p-value <0.001). Mean (SD) diastolic blood pressure was not statistically different in two groups. Abnormal blood pressure was correlated with eGFR and plasma Cystatin C (p-value<0.05).
Conclusions: There was higher rate of early stage of high normal blood pressure in children with T1DM compared to healthy controls and this abnormality was only correlated with puberty stage and glomerular filtration rate.

P56
Effect Of Hyperparathyroidism On Response To Erythropoietin In Children With Crf

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Introduction: response to recombinant human erythropoietin (rHuEPO),50 unit/kg twice weekly was studied in 35 children and adolescents with end- stage renal failure who were either transfusion dependent or had hematocrits (HCT) <25%.
Material and methods: rHuEPO was given to 22 haemodialysis (HD) patients and 13 patients on conservative treatment, with mean age (10.84 ± 4.08) years, 25 males and 10 females with mean HCT (26.75±4.70) Blood pressure, haematocrit, iron-indices, serum potassium, calcium, phosphorus, alkaline phosphatase, urea nitrogen and intact parathyroid hormone (iPTH) were monitored serially.
Results: aluminum was measured randomly in 6 patients, results were normal ranging from 12-22 ug/l .When serum ferritin was <100ng/ml during therapy, they received iron supplementation. According to the response, patients were divided into 2 groups, the non –responders group with HCT<27, mean age (9.97± 3.55) years, 13 males and 6 females with mean iPTH (669.9± 461.77) pg/ml and group of responders with HCT > 27 with mean age (11.66± 4.32) years, 12 males and 4 females with mean iPTH (261.19±233.17) pg/ml, 15 HD patients never reached target HCT at this dose versus 2 patients on conservative treatment; By comparison between both groups as regards laboratory values, it shows reticulocytic count, iPTH and serum ferritin were significantly higher in the non-responders (NR) versus the responders (R) with p values (p= 0.04, p=0.006, p=0.04) respectively, while serum calcium, albumin were significantly lower between NR versus R with p values (p=0.007, p= 0.003) respectively. Inspite that iron, TIBC,% transferin saturation and KT/V shows non significant difference between NR and R group, also caloric intake as % of recommended daily allowance shows non significant difference between both groups. However intact parathormone levels were significantly higher before and after 16 weeks of erythropoetin (EPO) therapy in the NR versus R groups, P< 0.05 versus p= 0/006 respectively
Conclusions: So we conclude that in the absence of other well-known response–limiting factors, the erythropoetic response to erythropoetin therapy depends largely on the extent of secondary hyperparathyroidism.

P57
Thirteen-year Study Of Growth In Children With Chronic Kidney Disease In Serbia

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Introduction: Stunting is one of the most visible co-morbid conditions of chronic kidney disease (CKD) in children. To the best of our knowledge, there is lack of published data about growth in pediatric patients with CKD from the region of the South East Europe. Herein we report the results about growth in Serbian pediatric patients with CKD.
Material and methods: The data reported in the present prospective analysis are from Serbian Pediatric Registry of Chronic Kidney Disease, collected between 2000 and 2012. A total of 324 children with CKD were enrolled into the registry.
Results: Prevalence of growth failure at registry entry was 29.3%. Mean Height Standard Deviation Scores (HtSDS) in children with stunting and those with normal stature were -3.00 (95% CI -3.21 - -2.79) and -0.08 (95% CI -0.22 – 0.05) ($p<0.001$), respectively. Children with hereditary nephropathy had worse growth at registration (-1.51; 95% CI -1.97 - -1.04) ($p=0.008$). Those with CKD stages 4 and 5 before registration had more chance to have short stature at registration than those with CKD stages 2 and 3 (OR=0.458, CI 0.268-0.782, $p=0.004$). Dialysis has shown to be independent negative predictor for keeping optimal stature during the follow up period (OR=0.324, CI=0.199-0.529, $p<0.001$), while transplantation is independent positive predictor for improvement of small stature throughout the follow up period (OR=3.706, CI=1.785-7.696, $p<0.001$).
Conclusions: Growth failure remains a significant problem in children with CKD. Growth failure is the worst in patients with hereditary renal disease. Patients with CKD stages 4 and 5 before registration had more chance to have short stature at registration than those with CKD stages 2 and 3. Growth is not improved by standard dialysis, while transplantation has positive impact on growth in children.

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Left Ventricular Mass Indexation In Infants, Children And Adolescents: A Simplified Approach For The Identification Of Left Ventricular Hypertrophy In Clinical Practice

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Introduction: Left ventricular (LV) hypertrophy (H) in children is a marker of cardiovascular risk in children with Chronic Kidney Disease. To identify abnormalities in LV mass the relation between heart and body size should be taken into account. A number of different approaches have been suggested, mostly needing time-consuming computation of specific centiles, resulting in poor clinical applicability. Our purpose was to determine a simplified method to correctly identify presence of LVH in pediatric populations.
Material and methods: Four hundred healthy children (N=400, 52% boys, 0-18 years) from two different European hospitals were enrolled in the study. Exams were performed on commercially available machines and reviewed off line on digital review stations to obtain measurements of ventricular diameters and thickness. Left ventricular mass was calculated according to the Devereux formula.
Results: There was a strong non-linear correlation between height and LV mass. This relation was examined by allometric equations and best fit procedure. Left ventricular mass was best related to height to a power of 2.16 with a correction factor of 0.09. Similar results were obtained when data were separated by gender or by age group. As compared to formula currently used in clinical practice (i.e. LVM/height**2.7) in which scatter of residuals increased at lower height range, analysis of residuals for LVM/[(height**2.16)+0.09] did not change with increasing height, also when dichotomizing the population by sex, suggesting an homoscedastic distribution in both genders throughout the whole height range. A partition value of 45g/m**2.16 was defined as the upper limit of normality for LV mass index.
Conclusions: We have derived a simplified formula to index LV mass from a population of 400 comprising both genders and equally distributed among all pediatric age range. Indexation for (height**2.16)+0.09 with a partition value of 45g/m**2.16 may be used in pediatric patients of both genders of any height, to easily identify LVH in newborns, children and adolescents.

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Hypertension In Adolescents In The Era Of The Childhood Obesity Epidemic: Correlation With Anthropometric Measures

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Introduction: The prevalence of childhood overweight and obesity is increasing worldwide, with a whole set of consequences for immediate health. Obesity and overweight in adults may be reliable predictors of cardiovascular (CV) risk. These risk factors may be present already in childhood and adolescence. The purpose of this study was to examine whether BMI, WC and WHtR are related to blood pressure (BP) in a sample of southern Italian schoolchildren.
Material and methods: A total of 1150 healthy southern Italian students enrolled in 3 secondary schools were examined between 2008 and 2013.We measured WC and calculated BMI and WHtR. Age- andsex-specific percentiles of BMI, based on the International Obesity Task Force (IOTF) growth charts, were used and then categorized into 4 groups: Underweight (BMI≤5th percentile), normal weight (5th<bmi95th percentile for the participant's sex, age and height were considered as high BP.
Results: A total of 1150 white Italian students were examined: 561 males (48.78%) and 589 females (51.2%) with age averaging 15.80±2.32 years, mean height 168.3±11.3 cm, weight 64.2±14.5 kg, WC 79.8±10.9 cm and BMI 23.1±7.9. Average WHtR was 0.45±0.5. According to the IOFT definition, 9.1% (n = 103) of students were obese and 16.3% were overweight (85th≥BMI<95th percentile). Binary logistic regression analysis showed a strong association between BMI and high BP (odds ratio [OR]=1.028, $p<0.0001$); between WC and high BP (OR=1.027, $p<0.0001$). Also WHtR was significantly related to high BP. The associations of BMI, WC and WHtR with high BP are stronger in boys than in girls.
Conclusions: WHtR showed a significant ability to predict high BP for both boys and girls, that might be the better predictor of CV risk in boys and girls, and it might represent an easily measurable anthropometric index. However, further studies are required to confirm our data.

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Disturbed Skin Barrier In Children With Chronic Kidney Disease

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Introduction: Chronic kidney disease (CKD) may be accompanied by various skin disorders. There are very limited data on skin lesions in

children with CKD. The aim of the study was an evaluation of skin barrier in children with different stages of CKD. The prevalence of xerosis, its severity as well as its link with selected demographic factors were examined.
Material and methods: The study included 103 children: 72 with CKD stage 3-5 (38 on conservative treatment and 34 on dialysis) and 31 patients with primary monosymptomatic nocturnal enuresis as a reference group. Skin barrier in children was assessed using several methods. Initially, all study subjects were asked to describe the location and severity of skin xerosis. Next, clinical evaluation of skin dryness, non-invasive corneometric assessment of epidermis moisturizing and measurement of transepidermal water loss using tewameter were performed.
Results: Skin dryness was considerably more frequently reported by children with CKD (54.2%) than by children from reference group (18.9%). The problem of xerosis was identified more frequently in patients on dialysis (67.6%) than on conservative treatment (42.1%) (p=0.01). Xerosis in children with CKD (both reported and found in a clinical examination) was more prevalent on forearms and lower legs. CKD patients divided according to skin dryness did not differ with regards to age, sex, initial kidney disease and CKD duration.
Conclusions: Disturbed skin barrier is an important concern of children with CKD. It aggravates with the progress of the disease. Skin dryness may occur already in the early stages of CKD and it should be taken into consideration in the CKD management.

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Combined Thickness Of The Carotid Intima-media In Children With Hyperlipidemia

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Introduction: Premature cardiovascular disease is related to hyperlipidemia present since childhood; illness risk diminishes with decreasing cholesterol levels. The combined thickness of the carotid intima-media (CIMT) has been used as a surrogate marker of arteriosclerosis; it is increased in children with primary hyperlipidemia. Objectives: 1. To compare the CIMT in children with and without hyperlipidemia. 2. To correlate and predict the thickness of the carotid artery, with age, lipids, C-reactive protein and blood pressure (BP).
Material and methods: This was an observational, descriptive, prospective, cross-sectional single-blind study, on children less than 18 years old (2 to 17), treated at the National Institute of Pediatrics, with cholesterol levels ≥200 mg/dL (cases) or ≤170 mg/dL (controls). CIMT was measured with a General Electric Logic 9 system with a multifrequency transducer of 12-14 MHz, along with Lenux software.
Results: 83 cases and 83 controls were included. Median CIMT was 0.5 mm in cases, and 0.45 mm in controls. The most important variables that influence CIMT were hyperlipidemia, age and diastolic BP. A predictive equation was developed as follows: CIMT = 0.361 + (0.036 * hypercholesterolemia) + (0.004 * age) + (0.001 * diastolic BP). The model was highly significant with a correlation coefficient of 0.495.
Conclusions: CIMT is increased in children with hyperlipidemia, regardless of cause. Variables most related to the increase in CIMT are hypercholesterolemia, age, and diastolic blood pressure.

P62
Measuring And Interpreting Blood Pressure Test In Childhood, Are We Doing It Well?

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Introduction: Adequate knowledge of the methods of measuring and interpreting blood pressure (BP) test in children is essential to obtain valid results for their proper approach. The objective of this study is to assess knowledge in measuring and interpreting blood pressure by pediatric staff in our local sphere and to evaluate the need to develop strategies for improving training in this field.
Material and methods: Epidemiological cross section study. Multiple-choice questionnaire with 19 questions taken to our hospital and Primary Care Area pediatric staff (physicians and nurses). Questions included job profile, type of training, knowledge of BP measurement technique and interpretation skills in pediatric BP. Statistical analysis was performed with SPSS.
Results: 124 workers answered the questionnaire. There were 56% of nurses and 43% of pediatricians; 61.3 % of them work in hospital settings and 29% in AP. Most of them (93 %) answered that nurses are responsible for measuring BP at their centers. The majority (90 %) believe that there are enough range sizes of rubber cuff in their workplace. 82 % reported that BP is usually measured in his/her work setting and 90% that BP values are frequently interpreted. 70% reported having received good training on this subject (65% of them only during their studies or clinical practice and a further 15% by attending session or specific courses). Regarding the measurement technique (7 items), 2% answered correctly all questions, 6%–6 out of 7, 18%–5/7, 34%–4/7, 23% –-3/7 and 17%–2/7 or fewer questions. Regarding interpretation (3 items), 49.6 % responded all questions correctly, 31.6 %– 2/3 and 19.4 %–1 or none.
Conclusions: A better, more formal and continuing training of physicians and nurses in the measurement and management of BP in children is needed because errors resulting from measurement lead to wrong interpretation that can affect children's health.

P63
Left Ventricular Hypertrophy In Children With Chronic Kidney Disease

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Introduction: Left ventricular hypertrophy (LVH) is an independent cardiovascular risk factor. The aim of the study was an assessment of the impact of traditional and uraemia-related cardiovascular risk factors on LVH in children with chronic kidney disease (CKD).
Material and methods: The study was conducted in a group of 71 children (27 girls and 44 boys) with CKD stage 1 to 5. The patients' mean age was 11 years and mean GFR was 32 ml/min/1.73m2. Serum cystatin C, electrolytes, Hb, albumin, oxLDL, thrombomodulin levels and lipids profile were measured. Ambulatory blood pressure measurements (ABPM) were performed. Echocardiography examinations were carried out with a HP 5500 device. The 95th percentile of LV mass index relative to height age was used to define LVH.
Results: LVH was detected in 34 out of 71 children (47.9%). The incidence of LVH increased with the progression of kidney disease (28% in CKD stage 1+2, 37% stage 3, and 58% in dialysed children). In children with LVH (N=34) significantly higher BMI (18.6 vs. 16.7 kg/m2;p=0.039), oxLDL (93.3 vs. 78.3 U/l; p=0.03), thrombomodulin levels (12,94 vs. 8,91 ng/ml; p=0,000) were found. Significantly lower albumin (41.5 vs. 45.4 g/l; p=0.013), HDL (1.14 vs. 1.5 mmol/l; p=0.001) and Ca levels (2.36 vs. 2.47 mmol/l; p=0.03) characterised LVH group. In the group of children with LVH significantly higher values of BP were observed in 24-hour measurements: systolic (119 vs. 109 mm Hg;

p=0.0016), diastolic BP (73 vs. 65 mm Hg; p=0.009) and MAP (89 vs. 81 mm Hg, p=0.004). Obesity and low HDL level were independent LVH risk factors in the multivariate analysis.
Conclusions: A decreased serum HDL cholesterol level, hypertension, malnutrition, overhydration, oxidative stress and endothelial dysfunction have significant impact on the development of LVH in CKD children.

P64
Renal Artery Stenosis In Association With Other Renal Anomalies
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Introduction: Renal artery stenosis (RAS) has several different etiologies in childhood, the most common globally being fibromuscular dysplasia and Takayasu arteritis, but some of them syndromal as with neurofibromatosis type 1 and Williams syndrome. We describe an increased number of children with congenital urinary tract malformations in the group of children with RAS that have been treated in our unit.
Material and methods: Design and Setting: Hospital-based retrospective chart review of children followed up at Great Ormond Street Hospital in London between 2003 and 2012 Patients and Methods: We reviewed the eight children (5 boys) in our cohort of children with RAS who were identified to have other renal anomalies in addition to their vascular problems.
Results: All subjects had renal abnormalities. Two children had a multicystic dysplastic kidney on the contralateral side, one renal hypoplasia on the contralateral side, one congenital solitary kidney with hydronephrosis, two unilateral vesicoureteric reflux with poorly functioning kidney and two children had unknown renal anomalies for which they received nephrectomies of the contralateral kidneys early in life. Seven cases had had unilateral nephrectomy at a median (range) age of 2.5 (0.4-10) years. All children were confirmed to have RAS by digital subtraction angiography at a median age of 10 (3.5-16.2) years. All except one were treated with angioplasty. Six children of those who had angioplasty achieved control of their blood pressure on reduced medications, with one cured of hypertension, while one child later needed vascular surgery
Conclusions: We highlight an association between RAS and other renal anomalies, which could indicate that they in some cases share a common genetic background

P65
Ambulatory Blood Pressure Monitoring In Children With Unilateral Partial Ureteropelvic Junction Obstuction
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Introduction: To investigate the tendency to have hypertension in children with hydronephrosis caused by unilateral partial UPJ obstuction and to examine the effects of unilateral UPJ obstruction on blood pressure.
Material and methods: Patient group consisted of 19 children with unilateral UPJ obstruction and control group of 19 healthy children. Patients had normal renal function, had not been operated on and had no additional renal pathology or systemic disease. Renal pelvis anteroposterior diameters were measured with ultrasonography. Clinic blood pressure measurements and 24 hour ambulatory blood pressure monitoring were performed. z scores were calculated with LMS method. Blood pressure loads and nocturnal dipping were evaluated.
Results: z scores for night diastolic blood pressure were 0,553 ± 0,833 in the patient group, and 0,132 ± 0,638 in the control group. Night time mean arterial pressure (0,804 ± 0,753 in patient group, 0,389 ± 0,688 in control group) were found higher in patient group than the control group. Number of cases whose blood pressure loads exceeded 30% and 40% respectively were statistically higher in the patient group that were at ≥90th and ≥95th percentiles . (In the patient group, 9 cases had loads of ≥% 30, 6 cases had ≥% 40 at ≥90th percentile and 8 cases had ≥% 30, 4 cases had ≥% 40 at ≥95th percentile. In the control group, 3 cases had loads of ≥% 30, 1 case had ≥% 40 at ≥90th percentile and 2 cases had ≥% 30, no cases had ≥% 40 at ≥95th percentile). In the patient group, the percentage of non-dipper cases was higher than the expected values in healthy children.
Conclusions: There was a tendency to have hypertension in children with hydronephrosis caused by unilateral partial UPJ obstuction. The long term physiopathologic consequences should be evaluated in these patients who are preferably managed conservatively.

P66
Ambulatory Blood Pressure Monitoring In Evaluation Of Cardiovascular Risk In Children With Glomerulopathies
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Introduction: Children with chronic glomerulopathies (GN) are predisposed to increased cardiovascular risk as a consequence of immune system activation, inflammation, hyperlipidemia, hypercoagulability, and recurrent character of the disease. Aim of the study was to assess arterial stiffness, pulse pressure and blood pressure dipping in children with chronic GN on basis of ABPM (ambulatory blood pressure monitoring).
Material and methods: In the group of 49 children (31 ♂, 18 ♀) with chronic GN in the mean age of 13.45±3.83 following parameters were evaluated: in ABPM - ambulatory arterial stiffness index (AASI), pulse pressure (PP) and blood pressure dipping; additionally, duration of kidney disease, presence of arterial hypertension (AH), BMI Z-score, medications: glucocorticoids, antihypertensive medications, and selected biochemical parameters. The control group (CG) consisted of 20 healthy children (14 ♂, 6 ♀) in the mean age of 13.59±3.72 years.
Results: Mean AASI value in children with chronic GN was significantly higher compared to CG (0.37±0.13 vs. 0.30±0.07, p=0.01); in children with chronic GN no significant differences were found between patients with and without AH (0.38±0.13 vs. 0.36±0.12, p=0.58) and between those with overweight/obesity and normal body mass (0.37±0.14 vs. 0.37±0.12, p=0.98). The study group did not differ from CG in PP (53.4±10.2 mm Hg vs. 52.2±7.1 mm Hg, p=0.59) and systolic pressure dipping (10.3±6.2% vs. 11.4±4.4%, p=0.42), but patients with chronic GN had significantly lower diastolic pressure dipping compared to CG (15.4±7.5% vs. 19.0±4.3%, p=0.017). In whole group of 49 children with chronic GN positive correlation between PP and duration of kidney disease (r=0.30, p=0.037) and negative correlation between diastolic blood pressure dipping and serum uric acid (r=-0.38, p=0.044) were found.
Conclusions: 1. Children with glomerulopathies have higher arterial stiffness and lower diastolic blood pressure dipping compared to healthy peers. 2. The relation between hyperuricemia and blood pressure dipping in children with chronic glomerulopathies requires further studies.

P67
Cerebrospinal Fluid Fgf23 And Klotho Are Blood And Brain-derived And Associated With Gender And Vitamin D Status In Children With Normal Renal Function
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Introduction: Fibroblast growth factor 23 (FGF23) is a major contributor to cardiovascular morbidity in CKD patients. Animal studies established receptors for FGF23 in the brain and the presence of its co-factor klotho in

cerebrospinal fluid (CSF). No data on the FGF23-klotho axis in the central nervous system of humans are available. The aim of this study was to investigate the CSF/plasma FGF23-klotho system with respect to age, gender, vitamin D status and CSF brain barrier in children with normal renal function, and to evaluate the source of these proteins (blood or brain).

Material and methods: In this study 40 children undergoing diagnostic lumbar puncture for work-up of cognitive delay and/or epilepsy were included. FGF23 and klotho protein were detected in CSF and plasma by western blot analysis. Concentrations of C-term FGF23 and klotho in plasma and CSF were quantified by ELISA. The intrathecal fractions of both proteins were derived from the characteristic curve of blood/CSF barrier, i.e. the difference between expected and proven values.

Results: FGF23 and klotho were clearly detected in CSF of children with normal renal function and both protein levels were significantly higher in plasma samples. The majority of CSF FGF23 (84%) and klotho (97%) were derived from brain. The concentration of CSF FGF23 and klotho was not affected by blood CSF barrier dysfunction. CSF klotho was significantly higher in male compared to female subjects, and positively correlated with plasma FGF23 and standardized height. Plasma and CSF FGF23 were positively associated with vitamin D serum levels.

Conclusions: FGF23 and klotho are present in CSF and originate from blood and brain in children with normal renal function. CSF FGF23-klotho system is affected by gender and vitamin D status. We hypothesize that excessive FGF23 pass the blood CSF barrier and potentially affect cognitive function in children with CKD.

P68

Progression Of Left Ventricular Hypertrophy In Children With Chronic Kidney Disease

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Introduction: The cardiovascular morbidity is the leader cause of mortality in pts with end stage renal diseases. Left ventricular hypertrophy (LVH) is independently associated with cardiovascular outcome both in the general population and in adults with chronic kidney disease (CKD). LVH may help reveal a risk group of poor cardiovascular prognosis in children. The aim of study was to determine the prevalence, incidence and risk factors associated with development of LVH in children with chronic kidney diseases.

Material and methods: Baseline and repeated echocardiograms, blood pressure monitoring, biochemical profiles were obtained in 84 children (10,75±4,12 years; M:F=0,9:1; eGFR=91,1±28 ml/min/1,73m2) with CKD including reflux nephropathy, kidney dysplasia, cystic kidney diseases, Alport syndrome and glomerulonephritis. Only seven of our patients (8%) had eGFR<60 ml/min/1,73m2. Left ventricular mass established by Deverex methods and indexed to height 2,7 (LVMI) was compared with age-specific percentile curves (P.R.Khoury, al., 2009). Follow-up period was 16,4±6,12 months.

Results: Six of 84 pts (7,1%) had a LVH at baseline. The prevalence of LVH increased to 14,2% at the moment of second observation. Eccentric LVH was the most common geometric pattern in our pts at initial (q=0,83) and consequence (q=0,83) investigations. Among 78 children with initially normal left ventricular mass 7 (8,9%) developed LVH. The normalization of LVMI with time was observed in 1 child with strict blood pressure control. Children with incident LVH had uncontrolled hypertension during follow-up period. Common systolic and diastolic blood pressure load correlated with LVMI (r=0,54, p<0,05 and r=0,45, p<0,05 respectively). There was no revealed the association of change of hemoglobin and calcium blood level, eGFR with development of LVH in our group.

Conclusions: The blood hypertension is the main risk factor for development of LVH in children with CKD with preserved renal function.

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Omentin Serum Level In Children With Chronic Kidney Disease

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Introduction: The adipose tissue due to secreted adipokines, creates a complex and highly active metabolic and endocrine organ. One of its products is omentin. Omentin is secreted by the stroma of adipocyte tissue, not by adipocytes themselves. Omentin has the vasodilatory properties so it is expected to participate in blood pressure regulation. It also enhances the insulin sensitivity. The evaluation of adipokines in children with CKD is important as they could serve as the predictors of cardiovascular complications progression and final outcome after kidney transplantation.

Material and methods: Omentin serum level was measured in the group 28 children and young adults (16 females and 12 males) at mean age 13.5 ± 5.5 years, with CKD stage 5 (17 on peritoneal dialysis, 10 on haemodialysis and 1 on conservative treatment) and compared with results obtained in 20 healthy age-, sex- and body size-matched controls. Serum omentin was determined using the immunoenzymatic method.

Results: The mean serum level of omentin in the study group was 46.2 ± 3,7 ng/ml, which was significantly higher than in controls (31.7 ± 3.0 ng/ml; p<0.0001). The difference remained significant after adjustment for BMI and BSA. The results did not differ significantly in regard to sex and RRT method. The correlation analysis revealed no significant dependences on available clinical parameters for omentin level and omentin/BMI ratio, whereas omentin/BSA ratio correlated negatively with age (r=-0.78; p<0.0001), which was similar to the relation observed in controls (r=-0.81; p<0.0001).

Conclusions: Regarding the physiological role of omentin (vasodilatatory properties and enhancing insulin sensitivity), it may be suspected that elevated levels of omentin in CKD children reflect adaptive and protective processes. However, the clinical utility and prognostic value of omentin measurements have to be established in longitudinal studies evaluating long-term outcome of CKD patients.

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Vaspin Serum Level In Children With Chronic Kidney Disease

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Introduction: Recently several biologically active substances secreted by adipose tissue were described. One of lately identified is vaspin, expressed mainly by visceral fat tissue. Functional role of vaspin was originally recognized in obese patients and its positive influence on insulin sensitivity and glucose tolerance was found. Potentially, vaspin may act as protective factor against atherosclerosis. Hence the evaluation of vaspin in children with CKD seems to be interesting.

Material and methods: Vaspin serum level was measured in 28 children and young adults (16 females and 12 males) at mean age 13.5±5.5 years, with CKD stage 5 (17 on peritoneal dialysis, 10 on haemodialysis and 1 on conservative treatment) and compared with results obtained in 20 healthy age-, sex- and body size-matched controls. Serum vaspin concentration was determined using the immunoenzymatic method.

Results: The mean serum level of vaspin in the study group was 1.83±0,26 ng/ml, which was significantly lower than in controls (2.34±0.21 ng/ml; p<0.0001). The difference remained significant after adjustment for BMI but became insignificant when vaspin/BSA ratio was used for comparison. The results did not differ significantly in regard to sex and RRT method. The correlation analysis revealed no significant dependences on available clinical parameters for vaspin level and vaspin/BMI ratio, whereas vaspin/BSA ratio correlated negatively with age (r=-0.70; p<0.0001), which was similar to the relation observed in controls (r=-0.81; p<0.0001).
Conclusions: Taking into consideration protective role of vaspin for circulatory system, it can be concluded that significantly decreased levels of vaspin in young patients with CKD may reflect the increased cardiovascular risk. It is not clear if low vaspin level results from malnutrition and decreased visceral fat tissue or is determined by CKD per se. The true clinical utility and validated prognostic value of vaspin measurements have to be established in longitudinal studies evaluating long-term outcome of CKD patients.

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Renovascular Hypertension In Children:results From A Tertiary Centre In Norway 1998-2013

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Introduction: The prevalence of hypertension in children and adolescents is 2-5%. Renal parenchymal diseases account for most cases followed by renovascular disease. Symptoms are often few or diffuse and many have already developed end organ damage when diagnosed. Angiography is the gold standard for diagnosis. The first line treatment for renovascular hypertension (RVH) is antihypertensive medication. If this is unsuccessful percutaneous transluminal renal angioplasty (PTRA) and surgery are important alternatives. The aim of the project was to estimate the prevalence of RVH and the results of interventional treatment at our centre.
Material and methods: Retrospective review of data for all children (0-16 years) that have been evaluated for RVH in the period 1998 – 2013 concerning etiology, results and end organ damage.
Results: 22 patients (11 boys, median age 9 years). 16/22 had interventional treatment; 3 patients > one treatment. Results are missing for 2/16 patients. 5 patients underwent nephrectomy; 4 patients underwent one PTRA; 1 patient underwent three PTRA; 1 patient underwent three PTRA, nephrectomy and autotransplantation; 1 patient underwent coiling of venous malformation and 1 patient underwent PTRA and autotransplantation. Improvement in blood pressure was observed in 60%, 80%, 100% 0%, 100% and 100% of the patients respectively. Totally had 10/14 patients (71%) improvement in blood pressure. 14/22 patients. 8/14 (57%) had signs of left ventricular hypertrophy. Ophtalmological evaluation was performed in 8 patients, of which 4 (50%) had hypertensive retinopathy. There were no complications registered related to PTRA ; one related to surgery (urinary leakage).
Conclusions: We can show over all good results; patients with isolated renal arterial stenosis had better prognosis than patients with underlying complicating medical conditions such as Nevrofibromatosis type 1 or Schimmelpenning. End organ damage was found in over 50% of the patients who were examined for it. Complication rate was low. The results are comparable to results from other international centers.

P72

Considerable Variations In Growth Hormone Policies In Pediatric End-stage Renal Disease: Results From The Espn/era-edta Registry.

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Introduction: Growth retardation is a potentially treatable complication of pediatric end-stage renal disease and affects health related quality of life. We aimed to quantify the variation in growth hormone (rGH) policies and compare policies with actual rGH use.
Material and methods: A questionnaire was sent to renal registry representatives or pediatric nephrology society correspondents of 38 countries in the European region. Data on height and actual use of rGH from 2007 onwards were retrieved from the ESPN/ERA-EDTA registry. We calculated the percentage of patients using rGH during the five years of follow-up.
Results: In 23 (82%) out of 28 responding countries rGH is reimbursed in children with chronic kidney disease (CKD). Policies varied in the minimum age in which rGH is reimbursed, the maximum age, as well as CKD stage. Mean height SDS [95%CI] was significantly higher in countries were rGH is reimbursed -1.80 [-2.04 - -1.57] compared to countries where rGH is not reimbursed (-2.35 [-2.49- -2.21], p<0.001). Countries where rGH is reimbursed only in CKD stage IV-V or III-V had significantly higher height SDS as compared to countries where rGH is reimbursed from CKD stage I onwards. Among the 13 countries for whom rGH use was available, overall rGH use between 2007 and 2011 in dialysis and transplantation was 26.0% and 8.9%, respectively. However, 45.9% and 38.9% of the children had a short stature on diaysis and transplantation respectively .
Conclusions: We found considerably variations in policies regarding rGH which might affect outcome as reflected by differences in height outcome parameters. This might be caused by differences in beliefs about the impact of growth failure and the positive impact of rGH use and possibly financial constraints. Finally, rGH was significantly less often prescribed than was indicated.

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Chronic Kidney Disease In Albanian Children: A Single-center Experience

Introduction: Chronic kidney disease (CKD) is a world-wide health problem, the causes of which differ in children from that reported in adult patients.
Material and methods: Aim of this study is the identification of major causes that leads to chronic renal failure in the pediatric age-group. To determine the major causes, clinical expression, course, and outcomes of CKD in Albanian children we conducted a prospective study from January 2011 to March 2014 in the pediatric nephrology department at the University Hospital Centre in Tirana, Albania.
Results: Thirty patients with varying degrees of renal impairment were involved in the analysis. A total of 10 children (33,3%) had obstructive nephropathy as the cause of chronic renal insufficiency, 17 children (56,7%) had non-obstructive nephropathy and the cause was unknown in 3 patients (10%). Neurogenic bladder and posterior urethral valves were the commonest cause of obstructive nephropathy, seen in 4 patients each (13,3%), nephrolithiasis and Uretero-Pelvi Junction (UPJ) stenosis were seen in 1 case each (3,3%). Reflux nephropathy was the commonest causes of non-obstructive nephropathy seen in 12 patients (40%). Chronic glomerulonephritis was seen in 3 cases (10%); renal hypodysplasia and nephrocalcinosis in one case each (3,3%).
Conclusions: Reflux nephropathy is the most important cause of chronic renal failure in Albanian children. The urologic causes remain the commonest problem of chronic kidney disease.

P74

Office Blood Pressure And Anthropometry In Obese Children

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Introduction: The increasing importance of obesity in the development of arterial hypertension in children and adolescents is well known. This studys goal is to establish the relationship between the blood pressure (BP) and the anthropometric features of the obese children.

Material and methods: The study was carried out in 100 children aged 9.91+2.7 years (range: 3.9 to 13.98 years), (53 women), (56 preuberal) diagnosed of obesity with a body mass index (BMI) > 2 Z-score for their age and gender. The office BP was measured in every child and, using the Auxlog® software, the percentiles (Pc) of systolic BP (SBP) and diastolic BP (DBP) for age, gender and height were calculated alongside the usual anthropometric indices [BMI, waist circumference (WC), waist/height ratio, waist/hip ratio and conicity index (CI)]. The anthropometric indices were correlated to the BP percentiles using Pearsons correlation test, grouping the children according to their gender and puberal stage

Results: 18 children (11 women) had BP > Pc 95. Children in puberal stage (men and women) had significantly higher BP percentiles than those in prepuberal stage. We present the correlation between the anthropometric indices and SBP-DBP (r value/p value): -BMI: prepuberal males SBP (r:0.43/p:0.02); puberal males SBP (r:0.61/p:0.01) -WC: prepuberal males SBP (r:0.39/p:0.02); puberal males SBP (r:0.63/p:0.01) -Waist/height ratio:prepuberal males SBP (r:0.41/p:0.02); puberal females DBP (r:0.44/p:0.02) -Waist/hip ratio: puberal females SBP (r:0.40/p:0.04) and DBP (r:0.71/p:0.0001) -CI:puberal females DBP (r:0.60/p:0.001)

Conclusions: The obese children in our study had a higher percentage of cases of high values of BP. The anthropometric indices are related to the values of SBP amongst males. We also found a correlation to the DBP values amongst women, specially in those anthropometric indices related to troncular obesity

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Office Blood Pressure And Body Composition In Obese Children

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Introduction: The increasing importance of obesity in the development of arterial hypertension in children and adolescents is well known. This studys goal is to establish the relationship between blood pressure (BP) and body composition in obese children

Material and methods: The study was carried out in 100 children aged 9.91+2.7 years (range: 3.9 to 13.98 years), (53 women) (56 prepuberal), diagnosed of obesity with a body mass index (BMI) > 2 Z-score for their age and gender. The office blood pressure (BP) was measured in every child and, using Auxolog® software, the percentiles (Pc) of systolic BP (SBP) and diastolic BP (DBP) for age, gender and height were calculated. Their body composition was assessed using Double Energy X-ray absorptiometry (DXA), obtaining information about percentages and distribution of lean body mass (LBM) and fat mass (FM). The data collected from the DXA were correlated to the BP percentiles used Pearsons correlation test grouping the children according to their age and puberal stage

Results: 18 children (11 women) had BP > Pc 95. Children in puberal stage (men and women) had significantly higher BP percentiles than those in prepuberal stage. We present the correlation between the parameters of BP and DXA (r value/p value): -FM/(Height)2: prepuberal males SBP (r:0.40/p:0.03) -% FM: prepuberal males SBP (r:0.37/p:0.04) -Android FM: prepuberal males SBP (r:0.40/p:0.03) -FM/LBM: prepuberal males SBP (r:0.37/p:0.04) -Total LBM: prepuberal females DBP (r:-0.45/p:0.03)

Conclusions: There is a correlation in males between the percentile of SBP and the amount of FM and its android distribution. However, in obese girls the LBM is negatively correlated to the DBP.

P76

Causes Of Chronic Kidney Disease In Egyptian Children

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Introduction: There are very few published reports on the causes of (chronic kidney disease) CKD in Egyptian children and especially no multicenter studies.

Material and methods: We reviewed the records of 1018 Egyptian patients suffering from CKD of any stage being followed at the pediatric nephrology units (outpatient clinics and dialysis units) of 11 universities over a period of two years. All patients with CKD of any etiology and between 1 and 19 years of age were included.

Results: 577 males (56.7 %) and 441 females were enrolled, with an average age of 9 years (range 12 months – 19 years). Mean GFR was 12.5 ml/min/1.73m2 (11 in females, 12 in males). Children with CKD stage I and stage II comprised 4.4 % of the studied group, while those with stage III, IV and V comprised 19.7 %, 18.3 %, and 57.6 % respectively. The most common single cause of CKD was obstructive uropathy, followed by reflux / UTI, aplasia/hypoplasia and familial/metabolic causes, comprising 21.7 %, 14.6 %, 9.8 % and 6.8 % respectively of all cases. Primary glomerulonephritis (including FSGS, RPGN and other causes of glomerulonephritis) together accounted for 15.3% of all cases. Unknown causes accounted 20.6 % of cases. Of the 587 patients who had reached end stage renal disease (ESRD), 549 cases (93.5 %) were treated by hemodialysis and only 38 (6.5%) by peritoneal dialysis.

Conclusions: It is hoped this study would form the basis of a permanent registry for CKD cases in children in Egypt.

P77

Variability In Urinary Albumin Excretion In Paediatric Patients With Chronic Kidney Disease

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Introduction: Persistently high urinary concentrations of albumin is an early marker of hyperfiltration and kidney damage. Together with the estimated glomerular filtration rate (eGFR) is the basis on which the diagnosis of chronic kidney disease (CKD) is sustained. The aim of this work is to study whether urinary excretion of albumin is homogeneous in CKD.

Material and methods: We studied 39 CKD children (25V, 14M) classified according to the stages of KDIGO Guidelines 2012 (10 G1, 15 G2, 10 G3, 4 G4). All of them had calculated the eGFR according to Schwartz`s equation based on creatinine levels (enzymatic method; 2009) and determined the albumin/creatinine (Alb/Cr) ratio in the first urine of the day. In addition, in 31 children the volume of 100 ml of GFR (V/GFR)

were calculated and in 20, the N-acetilglucosaminidase/creatinine ratio (NAG/Cr).
Results: Alb/Cr ratio was increased in 2/10 patients (20%) included in the G1 stage, in 7/15 (46.7%) of G2 stage, in 6/10 (60%) of stage G3 and 4/4 of stage G4 (100%). As for the value of the Alb/Cr ratio, 20 children were included in the category A1 (<3 μg/μmol), 14 in A2 (3-30 μg/μmol) and 5 in the A3 (>30 μg/μmol). The values of Alb/Cr did not correlate with the GFR but with the V/GFR (r=0.49, p=0.005) and NAG/creatinine ratio (r=0.52, p=0.02). Statistically significant differences were seen in the value of V/GFR in relation to the three categories of Alb elimination (Kruskal-Wallis, p=0.029).
Conclusions: It is well known that some of the filtering albumine is reabsorbed in the renal proximal tubule. Our results show some evidence that urinary excretion of Albumine in patients with CKD depends at least in part, on the degree of impairment of proximal tubular function that we studied through the urinary excretion of NAG and renal water management.

P78
Successful Surgical Treatment Of Single Kidney Artery Pseudoaneurism After Angioplasty

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Introduction: Angioplasty of renovascular hypertension in children is not without risk especially in a single functioning kidney. Therefore, experienced vascular surgical team must be available in a Center during angioplasty. In a one functioning kidney, warm ischemia time is crucial for the future kidney function.
Material and methods: During routine screening test a 6.5 year old healthy girl showed severe hypertension with blood pressure (BP) 200/140 mmHg. She showed no symptoms whatsoever. Further examination revealed: solitary right kidney with normal glomerula filtration rate (GFR- 112 ml/min/1,73 m2), left ventricular hypertrophy on echocardiography. Doppler ultrasound at the renal artery origin showed systolic blood flow acceleration with pressure gradient of up to 94 mmHg. Angiography demonstrated critical stenosis in the middle part of the main renal artery (diameter <1mm).
Results: Percutaneous transluminal angioplasty (PTA) was performed twice: the first attempt (3.5 mm balloon) failed, while the second attempt with larger balloon (4 mm balloon) caused lesion of distal part of the renal artery before segmental branching. After two weeks, control angiography revealed 18x15 mm pseudo aneurism on the upper pole segmental branch. Previous stenotc lesion was improved by 1.4 mm. After ten days this aneurism resected and saphenous vein patch was performed. Warm ischemia time was 21 min. Patient was anuric for 48 hours and CVVHDH was carried out. Hemorrhagic shock developed postoperatively due to massive abdominal bleeding. Relaparotomy was performed by pulling out large amount of intraabdominal hematomas. At this occasion only small perivertebral vessels were sutured. ACT was within recommended levels during CVVHDF, varying from 123s to 204s. Immediately after this second operation had been performed, the patient started with diuresis and CVVHDH was stopped. After 7 days, GFR significantly improved and was 81 ml/min/1,73m2 (creatinine 76 umol/l). After two weeks, US showed lack of cortical upper pole vascularisation. At the most recent follow up, two years after the surgery, patient's BP proved to be satisfactory with office blood pressure of 130/60 mmHg. Kidney function was normal (GFR 98 ml/min/1, 73m2), with no sign of proteinuria. Echocardiography revealed significant LVH regression.
Conclusions: This case clearly shows that angioplasty of a single artery stenosis in children is a high risk procedure which may result in either aneurism formation or bleeding. Surgical correction of artificial aneurism requires well-experienced vascular surgeon so as to preserve kidney function.

P79
Serum Cystatin C As A Measure Of Glomerular Filtration Rate In Children With Chronic Kidney Disease

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Introduction: Objectives: Estimation of glomerular filtration rate (GFR) in children is challenging. The ideal marker for determining GFR in children has not been found yet. Serum level of cystatin C has been proposed as a measure of GFR, but data of its use in children with chronic kidney disease (CKD) are not numerous. The aim of this study was to assess the significance of cystatin C compared to serum creatinine in estimating glomerular filtration rate in children with CKD stages 1-5.
Material and methods: 75 children (31 girls and 44 boys) with CKD stages 1-5 where investigated. Serum creatinine, measured clearance of creatinine, cystatin C, and estimated creatinine clearance (determined using different prediction equations based on serum creatinine and cystatin C) were simultaneously determined in all patients. Agreement between different predictive equations and measured GFR as well as diagnostic value of predictive equations to indentify early stages of CKD (CKD stage 2) was tested.
Results: Cistatin C highly correlated (p<0,05) with creatinine and measured creatinine clearance (p<0,05), and its levels in serum significantly increased from stage 1-5. GFR estimated from cystatin C based formulas significantly correlated with GFR calculated from creatinine based formuas (p<0,05) and measured creatinine clearance (p<0,05). Creatinine based formulas showed statisticaly unsignificant better diagnostic accuracy for detection of stage 2 CKD. The areas under the ROC curves for prediction equations based on serum cystatin C, for these GFR limits, was AUC≈0,88 while AUCs for prediction equations based on serum creatinine was AUC≈0,89. The combined creatinine-cystatin C equation provided best estimation of GFR.
Conclusions: Cystatin C may be a useful and reliable serum marker for identifying the magnitude of renal dysfunction in patients with CKD and may have its place beside serum creatinine as an alternative endogenous GFR marker. Combined formula provide most accurate estimation of GFR in children with CKD.

P80
Renovascular Hypertension -13 Years Experience Of Single Pediatric Center

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Introduction: Background: Renovascular hypertension (RVH) is common cause of potentialy treatable hypertension in children. The aim was to review out expeiance with RVH over the last 13 years.
Material and methods: Retrospective evaluation of RHV treated from January 2001-December 2013. Blood pressure (BP) was divided by the patient-specific (systolic and diastolic) 95th percentile BP to generate a BP index. Results of the therapy were classified according to BP response as follows: Cured: normal BP values with no need of antihypertensive medication (AM); Improved: normal BP values with AM requirements; Failed: abnormal BP values despite treatment with AM

Results: We evaluated 16 patients with RVH, 9 girls an 8 boys, mean age od 11.3 years. Eleven pts (68.7%) had congenital renovascular disorder (RVD) in the form of unilateral (31.2%), bilateral (43.7%) or single kidney (18.2%) renal artery stenosis (RAS) while the others had acquired RVD. At the time of the diagnosis all patients were severe hypertensive with mean hypertensive index 1.6 for systolic and 1.8 for diastolic BP. Four patients were asymptomatic. The most common congenital RVD was fybromuscular fibroplasia (54.5%). The others had RAS associated with syndromes or vascular malformations (neurofibromatosis type 1, Williams's syndrome, Marfan syndrome, Moyamoya disease, and Abernethy malformation) and/or CAKUT (vesicoureteral reflux, single kidney and renal duplication with neurogenic bladder). Antihypertensive treatment include antihypertensive (common multiple) drug therapy, percutanous transluminal angioplasty (PTA) in 13 patients, renal autotransplantation in 3 patients and surgical revascularisation in 2 patients. Mean a follow-up observation was 6 years. Seven patients were cured, seven improved, and two patient failed. All except one patient remained with normal renal function.
Conclusions: Incidence of RVH was 1.2 per years. Most of the patients had congenital RAS associated with other comorbidities. RVH is difficult to control by medical treatment alone. PTA should be the primary procedure.

P81
Patren Of Chronic Kidney Diease In Libyan Children
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Introduction: Chronic kidney disease (CKD) is a major public health problem with rising incidence and prevalence leading to poor outcomes associated with high cost. Objectives: to describe an epidemiological pattern of CKD in Tripoli and Benghazi and to determine the etiology of (CKD) among Libyan children.
Material and methods: This is a descriptive (case serious) study reviewed the records of 173 children diagnosed to have CKD over a 10-year from (2000-2010). According to K/DOQI guidelines all children were stage II and more were included. The GFR was calculated by using Schwartz formula.
Results: 173 children (male=98 (57%), female=75 (43%). The mean age at presentation to nephrology units was 5.6 (±4.6) years range from one month to 15 years. Of the group 80 (46.2 %) children from Tripoli Children Hospital, 39 (22.5%) children from Tripoli Medical Center, 32 (18.4%) from Benghazi Children Hospital, and 22(12.7%) children from other centers. Congenital urologic malformation was the commonest cause of CKD present in 88 (58%) children, chronic glomerulonephritis 12 (17%) children, hereditary nephropathy accounted 14(9%) children, reflux nephropathy accounted 12(8%) children and 20 (13%) children accounted for unknown etiology.
Conclusions: This study provides important and recent detailed epidemiologic information concerning CKD in Libyan children and adolescents. The main cause of CKD in children under 5 years of age was commonly due to congenital nephropathy and hereditary disease. More than 50% of congenital nephropathy was due to PUV with late presentation to pediatric nephrologists.

P82
Renal Tubulopathy As Unusual Manifestation Of Renovascular Disease
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Introduction: Renal artery stenosis is one of the most common secondary causes of hypertension in children, but its presentation as a salt-wasting tubulopathy is rare. We present a clinical case with initial suspicion of tubulopathy with final diagnosis of renovascular disease.
Material and methods: Review of clinical case
Results: A 30 months old girl was admitted to the emergency department for vomiting and weight loss. Since her first year of life she exhibited polyuria, polydipsia and failure to thrive. She had been evaluated by the Gastroenterology Unit for transient hypertransaminasemia with normal results for cystic fibrosis, celiac disease, thyroid hormones and other innate errors of metabolism. Three months ago, she had suffered a peripheral facial paralysis with complete recovery. In the physical examination we detected dehydration signs. Laboratory tests showed hypokalemic metabolic alkalosis, hyponatremia, hypochloremia, hypomagnesemia, proteinuria and an increased urinary excretion of sodium, potassium, chloride and calcium consistent with a renal tubulopathy. She had not history of prematurity, polyhydramnios, low birth weight or consanguinity. High blood pressure was detected (240/170 mmHg, > 99th percentile) so she was transfered to the pediatric intensive care unit. Three antihypertensive drugs were needed (labetalol, amlodipine and hydralazine). Regarding target-organ damage, left ventricular hypertrophy and retinal vascular changes were identified. A renal doppler ultrasonography evidenced a significant size discrepancy between kidneys due to a probable right renal artery stenosis. An angiography showed a subocclusive stenosis in the vessel´s origin, and therefore, a therapeutic percutaneous balloon angioplasty was performed. After this procedure a progressive normalization of blood pressure and electrolyte disturbances was observed. Monotherapy with amlodipine was achieved three months after her discharge.
Conclusions: Renovascular disease must be considered in children with salt-wasting tubulopathy signs associated with severe hypertension. Percutaneous angioplasty can be a successful therapeutic option in the management of these patients.

P83
Fractalkine Receptor Gene Polymorphisms And Chronic Renal Disease
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Introduction: Inflammation has critical role in the development of chronic renal disease. Chemokines are a superfamily of chemoattractant cytokines that play an essential role in leukocyte recruitment in acute and chronic inflammation. Fractalkine is a membrane-bound chemokine that mediates chemotaxis through the fractalkine receptor. We have investigated the association of genetic polymorphisms of fractalkine receptor encoding genes with the risk of chronic renal disease.
Material and methods: One hundred and one patients (M/F: 52/49) with chronic renal disease and 96 healthy children (M/F: 46/50) were enrolled in the study. Fractalkine Receptor BSMBI T280M and Fractalkine Receptor ACI V249I gene polymorphisms were analyzed by polymerase chain reaction and restriction length fragment polymorphism. Allelic prevalence was compared with reference values of control group and Hardy-Weinberg equilibrium was tested.
Results: Mean age of the patients at the time of diagnosis of chronic renal disease was 8.03±4.77 years. Median end stage renal failure progression time after the diagnosis of renal disease was 2 years (min: 0.5 year - max: 14 years). Urological problems were the leading causes of chronic renal disease in our study. The frequency of Fractalkine Receptor BSMBI T280M (CC) allele was occurred higher in patients group compared with controls. Any associations between Fractalkine Receptor ACI V249I and chronic renal disease have not been shown yet.
Conclusions: These results suggest that Fractalkine Receptor BSMBI T280M gene polymorphism is associated with the risk of chronic renal disease. Different approach of treatment such as fractalkine receptor

blockade strategies could reduce or finish renal damage in chronic renal diseases.

P84

Association Between Heat Shock Protein-72 Gene Polymorphism And Chronic Renal Failure In Children

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Introduction: Chemokines are a superfamily of chemoattractant cytokines that play an essential role in leukocyte recruitment in acute and chronic inflammation. A chemokine, heat shock protein-72 (HSP-72) is synthesized after renal injury; it plays an important role in renal cell survival and matrix remodeling. We have investigated the association of genetic polymorphisms of HSP-72 encoding gene with the risk of chronic renal disease.
Material and methods: One hundred and one patients with chronic renal disease and 96 healthy children were enrolled in the study. HSP-72 A (1267) G gene polymorphism was analyzed by polymerase chain reaction and restriction length fragment polymorphism. Allelic prevalence was compared with reference values of control group and Hardy-Weinberg equilibrium was tested.
Results: Mean age of the patients at the time of diagnosis of chronic renal disease was 8.03±4.77 years. Urological problems were the leading causes of chronic renal disease in our study. The frequency of HSP-72 (1267) AG allele which is associated with inflammation was found significantly higher in patient and control groups. HSP-72 A (1267) G gene polymorphism was associated with chronic renal disease in patients with urological problems, glomerulonephritidies or cystic renal diseases as the underlying causes. Deviation from Hardy-Weinberg equilibrium was shown in these patients. That deviation was not exist in other patient subgroups and control group. There is not statistical significance, HSP-72 (1267) AG allele was found in all children with high blood pressure.
Conclusions: These results suggest that HSP-72 A (1267) G gene polymorphism is associated with the risk of chronic renal disease in some etiology such as urological problems, glomerulonephritidies and cystic renal diseases. Different approach of treatment such as HSP-72 stimulation could reduce or finish renal damage in these chronic renal diseases.

P85

Posterior Reversible Encephalopathy Syndrome: A Different Presentation Of Hypertension In Various Renal Diseases - Case Series Report.

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Introduction: The "PRES" is a condition characterized by a combination of unique clinical, neurological and radiological features. Clinical features include headache, confusion, seizures or disturbed level of consciousness. Radiologically, oedema usually affects the posterior portion of the brain such as the brain stem and the cerebellum. Hypertension is considered the main risk factor for developing PRES in association with other contributing risk factors such as immunosuppressive, chemotherapeutic medications and renal failure.
Material and methods: We are reporting two cases of PRES associated with hypertensive encephalopathy. The first case is an eleven year old girl diagnosed with SLE with multiorgan affection and very malignant hypertension on four antihypertensive medications. The second case is a six and a half year old boy who went into end stage renal disease due to multiple drug resistant nephrotic syndrome and uncontrolled hypertension on three medications. Both of them had generalized tonic clonic convulsions with no neurological deficit. Extensive investigations were done to role out other organic causes. We noted multiple risk factors that may have contributed to the development of PRES in these cases. These include: medications such as steroids and Cyclophosphamide and chronic diseases like SLE and end stage renal disease.
Results: There is complete improvement of the two cases clinically with total resolution of the radiological findings.
Conclusions: PRES may be the presentation of hypertension in patients with renal diseases as SLE or renal failure. Hypertension is the main recognized cause of PRES but other risk factor may participate in the pathogenesis of this syndrome. Sometimes, there is great difficulty to distinguish the main triggering factor but radiological diagnosis is very essential to exclude other CNS involvement. Prompt diagnosis, withdrawal of risk factors and aggressive treatment are the corner stone in prevention of permanent neurological affection.

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Renovascular Hypertension: A Single Centre Paediatric Perspective

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Introduction: Renovascular disease (RVD) accounts for up to 10% of hypertensive children. Identification is important as RVD is amenable to corrective treatment. Digital subtraction angiography (DSA), requiring interventional radiology expertise is the gold standard diagnostic test. Objective: To review the diagnosis and management of RVD in a single paediatric nephrology centre.
Material and methods: Retrospective review of 21 paediatric patients that underwent DSA +/- angioplasty to investigate hypertension between 2005 and 2014.
Results: Age at presentation was 2.2-15 years. Incidental finding was the commonest presentation (7). Other notable presentations included headaches (5), faltering growth (1), blurred vision (1) and facial nerve palsy (1). Three patients had neurofibromatosis and one had William's syndrome. Systolic blood pressure at presentation was 116-250mmHg. Pre-angioplasty patients were on a median of 3 antihypertensives. 30 renal angiograms were performed in 21 patients in whom 13/21 (62%) were identified as having renal artery stenosis (RAS). Main artery RAS was seen in 5 patients, 3 had branch vessel disease, 2 intrarenal disease and 3 ostial stenosis. 5 patients had multiple stenoses and 2 had mid aortic involvement. Overall 12 balloon angioplasties were undertaken as part of a single stage procedure in 9 patients. Clinical progress necessitated repeat DSA in 6 patients, 3 of whom required repeat balloon angioplasty. Surgical intervention was required in two patients with reninoma and phaeochromocytoma. One patient developed complications with intraoperative spasm of a small segmental artery possibly leading to a small area of localised infarction. Follow up data for a median period of 39 months (range 4-60) was available for 12 patients. 80% benefited from angioplasty with 40% stopping antihypertensive medication and 40% having a reduction in treatment.
Conclusions: Our data support that selective use of DSA to diagnose and potentially treat renovascular hypertension in a population based cohort of children with hypertension is a successful treatment modality.

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An Unusual Case Of Hypercalcemia In A Child With Severe Chronic Kidney Disease

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Introduction: A 13-year-old girl, from Moroccan origin, with congenital bilateral renal dysplasia and chronic kidney disease (CKD) stage 5, presented with dyspepsia, anorexia and weight loss, due to hypercalcemia.
Material and methods: Clinical examination revealed signs of dehydration (BP107/59mmHg). Maintenance treatment consisted of sodium-bicarbonate (600mg/d), Calcium Kayexalate (2g/d), iron supplements, alpha-calcidol (1μg/d), erythropoeitine and growth hormone. Medical history revealed that she also was treated by her parents with Gum Arabic (GA) (up to 90g/day) for >1 year. Laboratory tests at presentation: creatinine 9.79 mg/dl, total calcium 3.98 mmol/l, ionised calcium 1.86 mmol/l, phosphate 1.40 mmol/L, alkaline phosphatase 87 U/L, calidiol 24,7 μg/L, calcitriol 60.6 μg/L, and PTH 58.7ng/L. 24h-calciuria was 238.6 mg/gcreat. We speculated that increased calcium absorption related to GA was responsible for the severe and symptomatic hypercalcemia. GA is a natural gum, defined as a dried, gummy exudates from stems and branches of Acacia tree and it is considered as the safest dietary fibre by the US FDA. It contains a complex mixture of glycoproteins and polysaccharides, rich in Ca2+, Mg2+ and K+. GA gains popularity, especially in Middle Eastern countries, as an adjuvant nutritional therapy to attenuate the progression of CKD. The mechanism(s) of this renoprotection is uncertain but may involve anti-oxidant and/or anti-inflammatory actions. Experimental and clinical data showed lower blood pressure, serum ureum and phosphate levels and improved quality of life in GA treated cases. Confirming evidence from appropriately designed studies is lacking so far.
Results: The patient was rehydrated and therapy with GA, active vitamin D and the calcium containing potassium binder were all stopped. The clinical condition as well as biochemistry gradually improved. Renal function improved (6.46 mg/dl), calcium levels normalised 2.66 mmol/l (ionized calcium of 1.29 mmol/l) and calciuria fell (40.5mg/g creat). Serum PTH levels, not surprisingly, raised.
Conclusions: We describe a 13 years old girl with CKD stage 5, who presented with severe symptomatic hypercalcemia, most probably related to (excessive consumption) of GA, a putative renoprotective nutritional supplement that becomes increasingly popular, especially in Arabian medicinal practices. Rehydration and withdrawal of GA resulted in a normalisation of the hypercalcemia/uria and an improvement of the kidney function.

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Sclerostin And Klotho Levels In Pediatric Ckd

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Introduction: Sclerostin (SOST) is a protein synthetized by osteocytes that inhibits bone formation; its circulating levels increase in adults with chronic kidney disease (CKD). The expression of Klotho, the cofactor required for most FGF23 biological effects, mainly occurs in kidneys and parathyroid: it decreases early in adult CKD.
Material and methods: SOST and Klotho levels were measured in the cohort in which we determined a few years ago reference values for FGF23 levels depending on age, gender and glomerular filtration rate (inulin clearance). We measured in the remaining sera these biomarkers using a human sclerostin high sensitivity enzyme immunoassay (TecoMedical) and a Klotho solid-phase sandwich Elisa assay (IBL, TecoMedical).
Results: 209 patients, aged 11.2±4.1 years (112 boys) were analyzed, with a mean GFR of 99±34 mL/min/1.73 m2 (109 GFR stage I, 57 II, 23 III, 2 IV, 18 with GFR>140). The median (range) SOST and Klotho levels were 0.42 (0.13-1.34) ng/mL and 1614 (381-8057) pg/mL, respectively. Spearman bivariate analyses showed that there was no association between SOST and age, PTH, FGF23, 1-25D. SOST levels were positively associated with 25D (r=0.171, p=0.013), Klotho (r=0.222, p=0.001), and IGF1 (r=0.169, p=0.017), and negatively with GFR (r=-0.144, p=0.038). By multivariable analyses, 25D and IGF1 remained significant predictors of SOST. Spearman bivariate analyses showed that there was no association between Klotho and GFR, PTH, 25D, 1-25D and FGF23. Klotho levels were positively associated with height SDS (r=0.146, p=0.035), calcium (r=0.206, p=0.003), phosphate (r=0.165, p=0.017), TmP/GFR (r=0.249, p<0.001), and IGF1 (r=0.181, p=0.011), and negatively associated with age (r=-0.227, p=0.001). By multivariable analyses, TmP/GFR and IGF1 remained significant predictors of Klotho.
Conclusions: In pediatric CKD, SOST levels increase slightly when GFR decreases but surprisingly Klotho levels are not modified, with important variations of these biomarkers (quality of sera conservation?). The link between FGF23, SOST, Klotho and IGF1 deserves future studies.

P89

The Role Of Brain-derived Neurotrophic Factor (bdnf) In Diabetes Associated Nephropathy And Comorbid Depression

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Introduction: Comorbid depression occurring both in diabetes (DM) and chronic kidney disease (CKD) contributes to the progression of diabetic nephropathy. The level of BDNF and sigma-1 receptor (S1R) decrease in depression. Recent findings suggest a common BDNF-Sigma-1R signalling pathway in the comorbidity of depression and CKD. This pathway in the kidney has not been investigated yet.
Material and methods: After 5 weeks of streptozotocin induced diabetes, male Wistar rats (n=8/group) were treated diabetes po. with non-pressor dose of enalapril, ramipril, losartan, spironolactone and eplerenone. Untreated diabetic and healthy rats served as controls. Blood pressure and renal parameters were measured and the depressive behaviour was evaluated. Renal S1R and BDNF levels were analysed. Human kidney proximal tubular cells (HK2) were cultured in normal or high glucose mediums. Cells were treated with the drugs above for 24h and 48h and BDNF levels were determined.
Results: Neither DM nor renin-angiotensine-aldosterone-system (RAAS) inhibitors influenced the blood pressure. Impairment of renal function and depressive behaviour was observed in DM, which was improved by all RAAS-blockers. BDNF was successfully detected in the rat kidney. Different renal expressions of the precursor and mature forms was measured in DM. S1R and mature BDNF increased while immature BDNF did not change. All RAAS inhibitors decreased both the level of S1R and mature BDNF. In vitro experiments proved that HK2 can express BDNF and its expression is highly upregulated by glucose already after 24h. RAAS inhibitors decreased BDNF expression after 48h.
Conclusions: These results suggest the potential role of a common, RAAS regulated S1R-BDNF pathway in the development of DM – CKD- comorbid depression thus exploring a new therapeutic horizon for RAAS inhibitors in the treatment of depression in DM and CKD.

P90

A New Animal Model Of Growth Retardation Secondary To Chronic Kidney Disease (ckd) Induced By Adenine Diet. Effect Of Growth Hormone (gh) Administration

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Introduction: Disturbed growth is a major problem in children with CKD. The 5/6 neprectomy rat model is classically used to analyze the mechanisms responsible for growth impairment in CKD and to test therapeutic options. Yokozawa et al (1986) induced CKD by 0.75% adenine diet in adult rats. Our aim was to develop a new model of growth retardation secondary to CKD using a 0.5% adenine diet and to assess the effect of GH treatment.
Material and methods: Weaning female rats were grouped (n=10/group) as follows: C (normal diet ad libitum); U (0.5% adenine diet ad libitum); U+GH (0.5% adenine diet ad libitum + 3.3 mg/Kg/day of sc GH from day 11 to 21); PF (normal diet, pair fed with U group). Growth was assessed by gains in weight and length and by food efficiency (g of weight gained/ g of chow consumed). On day 21 of the protocol, rats were sacrificed.
Results: Data are X±SEM. Renal failure of U and U+GH rats was demonstrated by elevated ($p<0.01$) serum concentrations of urea nitrogen and creatinine. Cumulative weight gain (g) and food efficiency (g/g) were less ($p<0.005$) in U (55±5; 0.22±0.01) and PF (52±4; 0.21± 0.01) than C (104±5; 0.26±0.01) rats. Length gain (cm) was lower in U (6.9±0.3) than C (11.1±0.2) ($p<0.001$) and PF (7.6±0.1) ($p<0.05$) groups. During the GH treatment period, weight gain and food efficiency increased ($p<0.001$) in U+GH rats (21.8±3.6 g and 0.28±0.01 g/g) in comparison with U animals (5.8±2.4 g and 0.22±0.01 g/g).
Conclusions: Three-week administration of 0.5% adenine diet to young rats causes growth retardation secondary to CKD. This procedure is less aggressive than subtotal nephrectomy and induces a more reproducible degree of renal function reduction. Thus, it may serve as a reliable animal model to study longitudinal growth in uremia. In this model, GH improved growth.

P91

Are Children With Lupus At Increased Risk Of Cardiovascular Disease? An Assessment Of Vascular Phenotype

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Introduction: The increased risk of cardiovascular disease (CVD) in adults with systemic lupus erythematosus (SLE) has been known since the 1970s but studies in juvenile-onset SLE (JSLE) have been conflicting and more data is needed. This cross-sectional study aimed to establish the baseline risk of CVD in a cohort of UK patients with JSLE.
Material and methods: Children with JSLE attending the nephrology or rheumatology services in Great Ormond Street were approached and asked to take part in the study. Children with JSLE who have been diagnosed with end-stage kidney disease, within 6-weeks of a major surgical procedure or under 5-years of age were excluded from recruitment. Data was collected to establish disease duration, disease activity, medication use and activity levels as well as demographic data including family history of CVD. Vascular phenotype was established using well-validated measures of carotid intima media thickness (cIMT) and pulse wave velocity (PWV).
Results: 45 children (39 female) of mean age of 13.5±2.9 years were recruited to the study. 24 has a history of biopsy proven lupus nephritis and all had normal renal function at the time of the study. When compared with data from healthy controls previously scanned at our hospital the cIMT was significantly higher (0.45 V 0.37mm, $p<0.0001$). This was associated with the use of antihypertensives ($p=0.04$) and higher or lower doses of prednisolone ($p<0.0001$). PWV was not significantly different to controls (5.27 V 5.34m/s, $p=0.77$). Mean BMI centile was 65.63±28.8 and median physical activity score was 1773(676-2854) METs. No children admitted to cigarette smoking and 10 had a positive family history of CVD.
Conclusions: This study shows an increase in cIMT without an increase in PWV suggesting possible early adaptive changes in juvenile-onset SLE. Follow up data is needed to determine whether these change with time.

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The Repair Effects Of Transplant Bone Marrow Derived Endothelial Progenitor Cells On Renal Interstitial Fibrosis In 5/6 Nephrectomy Rats

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Introduction: Transplant of the bone marrow-derived endothelial progenitor cells (EPCs) in rats undergone 5/6 subtotal nephrectomy via caudal vein and study the effects of EPCs transplantation to renal interstitial fibrosis and epithelial-mesenchymal transition (EMT).
Material and methods: Rat bone marrow-derived EPCs were separated by gradient centrifugation of Ficoll and cultured. Immune-fluorescence assay, Acidic-β-gal staining, MTT, and flow cytometry were used respectively to measure the surface antigen and the abilities of EPCs to senescence, proliferation, and apoptosis. Transplant of EPCs into rats undergone 5/6 subtotal nephrectomy via caudal vein and observe the renal interstitial fibrosis and EMT indicator through techniques of Real-Time PCR and Western blotting at the time of 4th weeks, 8th weeks, 12th weeks after transplantation.
Results: Bone marrow derived mononuclear cells showed endothelial progenitor cells morphology, expressed CD133, vWF, and VEGFR -2, and could uptake DIL-ac-LDL and bind FITC-UEA-Isimultaneously. The rates of senescence, apoptosis cells in EPCs were lower, and the proliferate rate were higher. The degree of renal interstitial fibrosis of remnant kidney in EPCs group was less than in model group ($P<0.01$). The kidney expressions of TGF-β1 mRNA and protein were higher in model group than in sham group ($P<0.01$), with the tendency of elevation with the time prolongs. The expressions were decreased in EPCs group than that in model group ($P<0.01$). Compared with sham rats, the model rats displayed the progressive higher expressions of vimentin and α-SMA, and lower expression of cytokeratin. While in the EPCs group these changes were decreased than those in model group ($P<0.01$).
Conclusions: Isolated and cultured endothelial progenitor cells successfully in vitro. The transplantation of EPCs into remnant kidney rats could inhibit the progression of renal interstitial fibrosis and down-regulating TGF-β1 and repressing EMT.

P93

Normal Values For Urine Renalase Excretion In Children.

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Introduction: The objective of this study was to establish age-dependent values for urinary renalase/creatinine (renalase/cr.) ratio in healthy children and adolescents.
Material and methods: The study was conducted on a random sample of 157 healthy children and adolescents (0.1-17.9 years) divided into 6 age groups in 3 years intervals. Urine renalase concentration was measured using an ELISA kit (Uscn Life Science, Wuhan, China).
Results: We analyzed median urine renalase/cr. ratio in particular age groups with the use of ANOVA. Renalase/cr. levels were significantly

higher in the youngest children<3 years in comparison with other age groups (4.07 ng/mg cr., p<0.05). There was a statistically significant negative correlation between urine renalase/cr. and BMI Z-score (r=-0.22, p<0.05) and both systolic (r=-0.22, p<0.05) and diastolic (r=-0.21, p<0.05) blood pressure, respectively. We constructed the reference renalase/cr. percentiles according to age in 3- year intervals.
Conclusions: To the best of our knowledge this study is the first to present reference values of urine renalase excretion in healthy pediatric population. Further studies should concentrate on the influence of increased blood pressure or obesity on urine renalase excretion in children and teenagers.

P94

Aortic Intima-media Thickness, Aortic Elasticity And Aortic Systolic Pressure In Small For Gestational Age Infants At 6 Years Of Age: Elast_rciu Study*

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Introduction: Aortic systolic artery pressure (SAP_Ao) is a better predictor of cardiovascular risk than peripheral pressure (SAP_P). Fetal growth restriction has shown to induce aortic remodeling in animal models. This may affect aortic elasticity and central pressure in later life. Objective: To assess aortic elasticity, aortic intima-media thickness (Ao_IMT) and SAP_Ao in term small for gestational age (SGA) infants at 6 years of age.
Material and methods: Case-control study. Inclusion criteria: Healthy term SGA (birth weight percentile <10) matched by birth date, sex and gestational age with term appropriate birth weight (AGA) infants born at our institution during year 2007. Measurements: Ao_IMT(mm), M mode echocardiographic aortic elastic properties [strain(%), distensibility (106cm2dyne-1), stiffness index and aortic arch doppler PWV(m/seg)], aortic tissue Doppler velocities(m/seg) and SAP_Ao(mmHg) (SphygmoCor® device). Analysis: Comparison of groups by general linear models adjusted by sex, age, BSA and gestational age
Results: 25 cases and 22 controls were included. SGA showed increased Ao_IMT (0.768 ±0.11 vs 0.606±0.07, p<0.001), impaired strain (11.87±4.85 vs 15.44±4.39, p<0.05) and distensibility (9.32±4.57 vs 11.72±3.86, p<0.05) and increased PWV (4.84±1.38 vs 2.82±0.59, p<0.001). SGA showed a tendency to higher central SAP_Ao 93.16±7.2 vs 89.04 ±7.2, p=0.074). Aortic systolic (0.045±0.09 vs 0.504±0.06, p <0.05) and diastolic (0.045±0.01 0.045±0.01 vs 0.057+0.10, p <0.05) velocities were reduced in SGA
Conclusions: Increased IMT_Ao provides a direct clinical evidence of aortic remodelling in SGA during childhood. This occurs associated with impaired aortic elasticity. For the first time tissue doppler velocities of central aorta have been studied in SGA children showing slower expansion and contraction of aortic tissue similar to that found in vascular ageing and pre-hypertensive adults. A tendency to increased SAP_Ao was shown. Our findings may represent an early stage in vascular damage and may contribute to explain some mechanisms of increased cardiovascular risk of fetal growth restriction in later life. *(Funded by FESV, AEP, SACYL)

P95

Serum Copeptin Levels In Adolescents With Primary Hypertension

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Introduction: The prevalence of hypertension continues to rise in the paediatric population. In recent years, there has been an increasing amount of reports on serum arginine vasopressin and its derivative, copeptin, in blood pressure control, but its role is still unclear. The objective of this study was to assess serum copeptin in adolescents with essential hypertension.
Material and methods: The study cohort consisted of 84 subjects (30 girls and 54 boys) aged 11 - 18 years, divided into two groups: HT – 53 subjects with confirmed primary hypertension and R - reference group – 31 subjects in whom hypertension was excluded on the basis of ABPM (white coat hypertension). Serum copeptin concentration was measured using a commercially available enzyme-linked immunosorbent assay kit (USCN).
Results: Hypertensive patients had higher serum copeptin levels (median: 267 [Q1-Q3: 151.1 – 499.7 pg/mL]) than controls (median: 107.3 [Q1-Q3: 36.7 – 203.4 pg/mL]), (p< 0.01). Statistically significant difference was found both in males and females. In both groups positive correlations between serum copeptin and uric acid levels (r= 0.31, p<0.01), albuminuria (r= 0.45, p<0.01), serum triglycerides (r= 0.3, p<0.05), BMI SDS (r= 0.24, p<0.05) and 24-hour SBP (r= 0.37, p<0.01) and DBP (r= 0.23, p<0.05) were found.
Conclusions: In summary, higher serum copeptin levels, a surrogate for AVP release, are associated not only with systolic and diastolic blood pressure, but also with several components of metabolic syndrome including obesity, elevated concentration of triglycerides, albuminuria, and serum uric acid level. However, for the time being, more research is needed in order to confirm the role of serum copeptin as a novel marker of elevated blood pressure and predictor of metabolic syndrome.

P96

Results Of A Prospective Registry Study Observing The Safety And Patterns Of Use Of Darbepoetin Alfa In European Paediatric Chronic Kidney Disease Patients Receiving Or Not Receiving Dialysis

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Introduction: Limited prospective data are available surrounding the safety of darbepoetin alfa (DA) in paediatric subjects with chronic kidney disease (CKD). We evaluated long-term DA safety in anaemic paediatric subjects with CKD receiving or not receiving dialysis.
Material and methods: In this prospective, multicentre, observational registry study, subjects <16 years old diagnosed with CKD anaemia receiving DA at the time of enrolment were observed for ≤2 years or until renal transplantation, permanent cessation of DA, enrolment into an interventional study, or withdrawal of informed consent.
Results: Of 321 subjects enrolled, 319 were included in the analysis and 145 completed the study. Mean (SD) age at enrolment was 9.1 (5.0) years; 13 subjects (4.1%) were <1 year, 83 (26%) were 1-<6 years, 90 (28.2%) were 6-<12 years, and 133 (41.7%) were ≥12 years. Approximately 50% of subjects were on dialysis at study entry. Peritoneal dialysis was more common in subjects <12 years. Primary endpoints were serious adverse drug reactions (SADR) and serious adverse events (SAE). Four subjects (1.3%), all ≥6 years old, experienced 9 SADRs including

thrombocytopenia, haemolytic anaemia, priapism and thrombosis. Of 434 SAEs reported in 162 subjects, most common were peritonitis (10%), gastroenteritis (6%) and hypertension (4.1%). Six subjects (1.9%) died, none deemed related to DA. At baseline, 299 subjects (93.7%) were being treated with DA, with a mean dose of 2.67 μg/kg/month (n=273). Overall mean haemoglobin (Hb) concentration was 11.1 g/dL. Mean Hb concentrations remained consistent throughout the study (11.3–11.5 g/dL irrespective of age category). Mean Hb levels were 10.9–11.5 g/dL for subjects receiving and 11.2–11.7 g/dL for those not receiving dialysis at baseline. Four subjects reported a non-serious ADR, all injection site pain.

Conclusions: No new safety signal was identified with the use of DA in the paediatric subjects studied.

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Left Ventricle Size And Mass In Small For Gestational Age Infants At 6 Years Of Age: Elast-rciu Study*

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Introduction: Low birth weight is associated to arterial hypertension and increased cardiovascular risk in adult life. Left ventricle (LV) hypertrophy is an independent predictor of cardiovascular mortality. The objective of this study was to assess LV size and mass of small for gestational age infants (SGA) at 6 years of age

Material and methods: Case-control study. Inclusion criteria: Healthy term SGA defined as a birth weight <10th centile matched by birth date, sex and gestational age with term appropriate weight infants (AGA) Measurements: Echocardiography with size and calculation of LV mass index (LVMI). Analysis: Comparison of groups by general linear models adjusted by sex, age, BSA, BMI and gestational age and regression analysis to find predictors of LV mass

Results: 25 SGA and 22 controls were included. Basal-apex length (68.59±8.22 vs 64.46±5.98 mm/m2, p<0.05), basal diameter (39.71 ±3.39 vs 34.58±3.16 mm/m2, p<0.001), interventricular septum diastolic diameter (8.19±1.06 vs 6.65±0.82 mm/m2, p<0.001), left ventricle diastolic diameter (46.25±4.3 vs 42.27±4.2 mm/m2, p<0.01), left ventricle posterior wall thickness (7.12±0.71 vs 5.78±0.70 mm/m2, p<0.001) normalized by BSA were higher in SGA infants whereas sphericity index (Base-length diameter/Basal diameter) was lower (1.73±0.23 vs 1.87 ±0.28, p<0.05). LVMI (39.64±5.3 vs 31.34±5.7 gr/m2, p<0.001) There was a negative linear relation between birth weight and LVMI (R: -0.555, p<0.001). Among potential predictors considered in multivariant regression (birth weight, birth length, gestational age, age, sex, BMI, BSA, systolic arterial pressure and pulse pressure) only sex, BMI and birth weight showed a significant contribution with the latest having the greatest standardized beta coefficient (-0.690, p<0.001)

Conclusions: LV of SGA infants at 6 years is characterized by increased size, a more spherical shape and increased mass. Low birth weight seem an important determinant of increased LVMI. Our results suggest left ventricle remodeling in children born SGA during childhood which may indicate subclinical cardiovascular damage *(Funded by FESV, AEP, SACYL)

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Associations Between Screen Time, Body Mass Index And Blood Pressure In Children And Adolescents

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Introduction: The increased incidence of hypertension in children mainly in association with obesity raises concerns about increased cardiovascular morbidity in the future. The aim of the present study was to examine possible correlations between blood pressure (BP) levels and risk factors for hypertension in hospitalized children.

Material and methods: The study population included children who were hospitalized in our department from January 2013 until March 2014. Critically ill children with hemodynamic instability were excluded. BP was measured three times in each arm in all children and mothers and/or fathers with an oscillometric device. Anthropometric characteristics, personal and family history were recorded for each patient and a questionnaire on sedentary activity (screen time) was completed.

Results: The study population consisted of 150 consecutive children (56.7% boys) with a mean age 5.9±4.6 years. Mean SBP and DBP was 113±10.4 mmHg and 69.3±9.4 mmHg, respectively. Mean Body Mass Index (BMI) percentile (pc) was 54±35.4, mean screen time daily was 6±1.8 hours, and weekly 50.0±14.2 hours. There was no statistically significant difference in BP levels with gender or family history of hypertension and/or cardiovascular disease. Moreover, there was no association between children's and parents' BP levels. In toddlers SBP and DBP z-score correlated with BMI z-score (r:0.548 and r:0.800, respectively, P<0.01) and negatively with e-GFR (r:-0.424, P<0.05, and r:-0.517, P<0.01, respectively). In adolescents SBP and DBP z-score correlated with birth weight (r:-0.411, and r:-0.460, respectively, P<0.05), BMI pc (r:0.364, and r:0.442, respectively, P<0.05), and weekly screen time (r:0.385 and r:0.365, respectively, P<0.05), while daily screen time correlated only with SBP z-score (r:0.354, P<0.05). BMI z-score was the was main determinant of SBP z-score for all ages in multiple linear regression analysis (R2:0.219, P<0.01).

Conclusions: Obesity and sedentary activity are predisposing factors for high BP levels in children. Therefore, ideal body weight and active lifestyle in childhood seem to be of critical importance to prevent future hypertension.

P99

Apparent Mineralocorticoid Excess Syndrome In Fifteen Year Old Female

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Introduction: Apparent mineralocorticoid excess (AME) is a rare form of pseudohyperaldosteronism characterized by very early-onset and severe hypertension, associated with low renin levels and hypoaldosteronism. Prevalence is difficult to estimate and likely varies between populations depending on the level of consanguinity. Prevalence is difficult to estimate and likely varies between populations depending on the level of consanguinity. Less than 100 cases have been reported in the literature so far.

Material and methods: Our patient is 15 year old female observed by her parents to have polyuria, polydipsia & failure to thrive by the age of 8 years. She is the 2nd in order to 1st cousin marriage. Her older brother has similar symptoms. On examination her weight & height were below the 3rd centile for age & was found to be hypertensive. Her sexual maturity rating was Tanner stage I. Renal, bone & liver panel, serum Mg, CBC with blood film, sickling test, seru renin, serum aldosterone, free urine cortisol/corticosterone & gene study were done. Echocardiogram & renal U/S was also requested.

Results: Workup revealed hypokaleima, metabolic alkalosis, low serum rennin, low serum aldosterone, elevated free urine cortisol / cortisone (30-fold). Gene study revealed homozygous deletion, c. 1010_1012delGCT in the exon 5 of the HSD 11 B2 gene that is consistent with Cortisol 11-

Beta Ketoreductase Deficiency. Echocardiogram revealed mild concentric LV hypertrophy, mild tricuspid insufficiency with normal myocardial function. The patient was treated by KCl, Spironolactone & Lisinopril.
Conclusions: We report a fifteen year old adolescent female with apparent mineralocorticoid excess syndrome secondary to Cortisol 11-Beta Ketoreductase Deficiency.

P100
Pediatric Nephrology And Follow-up In Adulthood - The Experience Of A Tertiary Hospital

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Introduction: Chronic kidney disease (CKD) beginning in childhood offers a challenge for both pediatric nephrologists and adults nephrologists. The period of transition to adult out-patient clinic is critical, followed by known high drop-outs and non-adherence to treatment with impact on both kidney and patient survival.
Material and methods: We analyzed a fifteen years experience of a tertiary hospital on referral and follow-up of children who developed CKD needing continuous care in adult age but were not yet on renal replacement therapy.
Results: One hundred and fifty one patients were transferred for adult care; 84 males, 67 females. Fourteen developed the need for renal replacement therapy, 4 were transferred to other hospitals and 18 (12%) dropped-out. The prevailing pathologies are uropathies n=61(41%), glomerulopathies n=46(31%), tubulopathies n=18(12%), cystic diseases n=7(5%) and "other" n=15(10)%. Mean age at diagnosis is 6,3 years (2,8 years for uropathies and 9,2 years for glomerulopathies). Mean age for transference do adult care is 19,1 years, mean medical adult follow-up time is 5,9 years. In their first appointment with adults nephrologist, renal function was normal in 97 patients (71%), CKD stage 2 in 23 patients (17%), CKD stage 3 in 6 patients (4%) and CKD stage 4 in 10 patients (7%). The mean annual decrease of GFR is 2,4ml/min/1,70m2/year (2,4ml/min/1,70m2/year in uropathies, 2,6ml/min/1,7m2/year in glomerulopathies, 1,4 ml/min/1,70m2/year in tubulopathies). Demographic evaluation of the one hundred and fifteen patients that currently attend to the consultation shows that 12% are married, 11,4% have children. 86% have finished high-school, 4% received special education. 52% are students (from which 62% are in universities), 59,8% are currently working and 7,8% are unemployed.
Conclusions: The results obtained suggest that this is a successful model, with low drop-outs and favorable follow-up and progression. The social insertion verified may also contribute for these results; other studies should be done concerning these factors.

P101
Blood Pressure Screening During Pediatric Visits

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Introduction: Guidelines in both Europe and the US recommend screening for hypertension during pediatric visits in all children >3 years old. The aim of the study was to assess the frequency of BP measurement during preventive or chronic care pediatric visits and determine the factors that may associate with screening.
Material and methods: The study included consecutive children who were hospitalized in our department from January 2013 until March 2014. Anthropometric measurements were performed to all children. Personal, family history and self reported BP screening during pediatric visits were recorded.
Results: A total of 150 patients, 20.7% infants, 35.3% toddlers, 22% school-age children and 22% adolescents were included in the analysis. Hypertension screening was performed at least once in 45.3% of the children during pediatric visits, while in 54.7% BP has never been measured. There was no statistically significant difference in BP screening frequency across the age groups except for the infants group (12.9% screening vs. 87.1% no screening, P<0.001). Hypertension screening was performed in 26.5% of children <3 years old vs. 73.5% in children ≥3 years old (P<0.001). Low birth weight, history of prematurity or chronic disease was not associated with increased frequency of screening in children <3 years old, while screening was more likely in children >3 years old with a positive personal history for chronic disease [Odds ratio (OR):2.54, CI:1.06-6.06, P<0.05]. Obesity tended to increase the frequency of hypertension screening in all ages (OR:2.6, CI:0.93-7.28, P=0.06). Finally, family history of hypertension or cardiovascular disease did not affect pediatrician's decision for hypertension screening (48.4% screening vs. 51.6% no screening, NS).
Conclusions: Hypertension screening does not occur during routine pediatric visits for significant percentage of children. Therefore, efforts to encourage routine screening at preventive pediatric visits, particularly in younger children, may be needed.

P102
Asessment Of Vascular And Hemodynamic Parameters During Antihypertensive Therapy In Children With Renal Arterial Hypertension.

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Introduction: Studies of cardiac and vascular changes in arterial hypertension (AH) represent useful tools for clinical evaluation. However the value of arterial intima-media thickness (IMT) needs more data for practical use.
Material and methods: We examined 83 children with renal parenchymal hypertension (61% with nephrotic syndrome, 6% with hereditary nephritis, 33% of other disorders of the kidneys). Median age of children was 10,3±4,9 years at the start of the study. Duration of CKD in children with renal hypertension was 62,3±49,8 months. AH duration averaged 26 ± 25 months. Fifty % of patients had 1 st. AH, 44% – 2 st. AH and 6 % - 3 st AH. Monotherapy of AH (ACE inhibitor or calcium channel blocker) performed in 54% of patients, combined antihypertensive therapy in 46%. All patients were assessed for left ventricular wall thickness and IMT of the common carotid and femoral arteries using ultrasound technic.
Results: Significant correlation between IMT and duration of CKD and hypertension (r = 0,4, r = 0,5, p <0.05, respectively) was revealed. Also a significant correlation between systolic AH, thickness of the interventricular septum and the IMT of the common carotid and femoral arteries (r = 0,3, r=0,4, p <0,05, respectively) was observed in our children. According to the ultrasonic diagnostics left ventricular hypertrophy was observed in 80% of patients with high level of blood pressure on background antihypertensive therapy. In this group of children thickening IMT of femoral artery was found in 93%.
Conclusions: Thickening IMT carotid and femoral arteries was found in children already with 1st AH. The progression of IMT thickening is significant criterion for evaluating the effectiveness of treatment of AH. Our data indicate that the ultrasonic method of assessment of the arterial IMT may serve as an additional method in the evaluation of the effectiveness of antihypertensive therapy in children with CKD.

P103

Matrix Metalloproteinases Promote Uremic Vascular Calcification

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Introduction: Calcifications of the arterial media are a hallmark of advanced cardiovascular disease in patients with chronic kidney disease. Matrix metallproteinases (MMP) are proteolytic enzymes degrading extracellular matrix proteins.

Material and methods: We studied (1) the presence of MMP-2 and MMP-9 in the aorta of uremic rats with calcitriol-induced vascular calcifications and (2) the effect of MMP-2 and MMP-9 in an ex-vivo model of calcium/phosphate induced calcifications in aortas of uremic mice. (1) Immunohistological staining of aortas from sham-op, 5/6-Nx and 5/6-Nx plus calcitriol-treated rats was performed for MMP-2 and MMP-9. (2) C57BL/6 mice underwent 5/6-nephrectomy. These animals are known to be highly calcification-resistant. Mice were sacrificed after 8 weeks and the aortas were dissected. Vessels were cultivated at 37°C in a calcifying medium consisting of 2,7mM calcium und 2,0mM phosphate, with or without the addition of recombinant MMP-2, recombinant MMP-9 or the MMP inhibitor doxycycline. Histological evaluation of the aorta sections for media calcification was performed after 21 days.

Results: An increased presence of MMP-2 was found in the tunica media of uremic rats, and this effect was enhanced in aortas from calcitriol-treated uremic rats, with a similar tendency for MMP-9. Calcification could be induced with calcifying medium in explanted uremic mice aortas, but not in aortas from normal control mice. Addition of MMP-2 or MMP-9 to the calcifying medium resulted in strongly enhanced calcification of aortas from uremic mice and even aortas from healthy mice. In contrast, calcifications were not found in uremic mice aortas treated with doxycycline.

Conclusions: The presence of MMP-2 and MMP-9 parallels increases in the formation of media calcifications in uremic rats. Under calcifying culture conditions, addition of these proteolytic enzymes induces calcification in ex-vivo cultured aortas of mice, whereas inhibition of MMP activity prevents calcification, indicating that MMP-2 and MMP-9 have an important role in the pathophysiology of arterial calcification.

P104

Etidronate In Generalized Arterial Calcification Of Infancy

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Introduction: Generalized arterial calcification of infancy (GACI) is a rare autosomal recessive disorder that leads to the calcification of large and medium sized arteries. The prognosis is terrible without treatment and the majority of children affected die in the first six months of life due to cardiac and vascular complications.

Material and methods: We are reporting a 3-year-old boy diagnosed with CAGI in the neonatal care unit because of high blood pressure. No prenatal signs of the disease were detected. Echocardiography on the first day of life revealed increased echogenicity of the walls of the pulmonary arteries, the aorta and the coronary arteries. Sonography of the abdomen showed hyperechogenic walls of renal arteries bilaterally. A chest X-ray showed calcification of the femoral and popliteal arteries. Genetic screening found three mutations in heterozygous in ABCC6, one inherited from his father, who is a homozygous carrier of the mutation, and the other two were inherited from his mother who is a heterozygous carrier of both mutations. Both parents are asymptomatic.

Results: He started treatment with etidronate at the time of diagnosis (15 mg/kg/d) and he continues taking it. Biochemical parameters of mineral homeostasis (in blood and urine) have been normal in all his follow-up and the DMO does not show osteoporosis. Calcifications have improved with the treatment and he has a good quality of life instead of he needs 7 drugs to maintain a good level of blood pressure.

Conclusions: Biphosphonates could modify the prognosis of this disease if they are started early with no severe adverse effects in bone density with moderate doses over a short time.

P105

Risk Factors For Hypertension In Obese Children

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Introduction: In the present study, we aim to evaluate risk factors for hypertension in obese children and relationship between obesity-associated hypertension and artherosclerosis.

Material and methods: This cross-sectional study was carried out in 60 obese children aged between 10-18 years and 20 age-matched healthy children. Ambulatory blood pressure monitoring was performed in the controls and obese children. Obese children were classified into two clinical groups. Twenty seven of them who had 24h mean arterial pressure >95th percentile and/or who were using antihypertensive drugs were described as hypertensive (HT-obese group), and the remaining 33 were described as normotensive (non HT-obese group). Antropometric indices [height, weight, body mass index, waist circumference, fat mass (by multi-frequency bioelectrical impedance analysis)], biochemical markers (serum glucose, insulin, HbA1c, LDL, HDL, total cholesterol and triglyceride), inflammation markers [serum high sensitive C reactive protein (hsCRP), interleukin 6 (IL-6), tumor necrosis factor-α (TNF-α), and adiponectin] and the carotid artery intima media thickness (cIMT) were measured in the study population.

Results: In the HT-obese group, waist circumference–SDS, fat mass-z score and serum IL-6 levels were significantly higher as compared to non HT-obese group ($p=0.007$, $p=0.005$ and $p=0.003$, respectively). Logistic regression analysis showed that IL-6 was the only predictor of hypertension in the obese children. In the HT-obese group, cIMT-SDS was significantly higher than the healthy controls ($p=0.021$); however, there was no significant difference in cIMT-SDS between the HT-obese and the non HT-obese groups.

Conclusions: Our results suggest that both central obesity and increased fat mass seem to be the risk factors for hypertension; however, inflammation appears to play a key role in obesity-associated hypertension. In addition, hypertension itself may be a risk factor for arteriosclerosis in this population.

P106

Idiopathic Infantile Arterial Calcification Presenting As Late Onset Persistent Hypertension

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Introduction: Idiopathic infantile arterial calcinosis (IIAC) is a rare autosomal recessive and life-threatening disorder in infants. Most of the patients die by 6 months of age.

Material and methods: This report describes a patient with diagnosed IIAC presenting as late onset persistent hypertension and heart failure in 3-years-old girl.

Results: She was admitted to our service with abdominal pain, fatigue since 2 months and shortness of breath. Physical examination showed that hypertension (140/90 mmHg), tachypnea, hepatomegaly, 3/6 systolic murmur and hypertensive retinopathy. High plasma renin activity [87

ng/ml/s (normal:1-6.5 ng/ml/s)] and aldosterone level [>500pg/ml (normal:30-350 pg/ml)] were documented with normal blood biochemistry and PTH level. Echocardiogram showed depressed myocardial functions and dilated cardiomyopathy. Ultrasonography revealed bilateral medullary nephrocalcinosis, small left kidney and vascular sclerosis in spleen. Renal CT-angiography was demonstrated significant left renal artery stenosis. Doppler ultrasonography revealed intimal calcifications in the bilateral radial and ulnar arteries, bilateral brachial artery, common femoral artery and right iliac artery and calcification of left posterolateral abdominal aorta. CT-angiography of the upper extremity demonstrated occlusion of the ulnar artery at the place of distinction of the inter-osseous arteries. Digoxin, enalapril, amilodipine, furosemide and etidronate, a bisphosphonate, therapies were started. Left nephrectomy of was performed due to minimal function (%7) on DMSA/DTPA scan and persistent hypertension. Histological examination of kidney showed calcium deposition in the internal elastic lamina of the renal artery with intimal thickening. Ultrasonographic improvement was observed in peripheral calcifications after one year of etidronate therapy.

Conclusions: In conclusion, IIAC should be considered a cause of hypertension in children as well as infants. If nephrocalsinosis detect in a hypertensive child, the doctor should look beyond renovascular disease and investigate other calcific areas especially arteries such as underlying metabolic disorder of inorganic-pyrophosphate which reflects IIAC. Etidronate treatment may dissolve arterial calcifications and may prevent further ischemic damage.

P107

Renovascular Hypertension Related With Alagille Syndrome: A Rare And Severe Clinical Case

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Introduction: Renovascular hypertension (RVHT) represents about 10% of secundary hypertension. In Alagille syndrome vascular abnormalities are present in about 6-9% of patients but only few have bilateral renal artery stenosis.

Material and methods: A seven-year-old female child with cholestasis, peripheral pulmonary stenosis and posterior embriotoxon was diagnosed with Alagille syndrome at 2 months of age. Arterial hypertension was diagnosed on December/2011. Abdominal magnetic resonance angiography (MRA) revealed bilateral renal artery (RA) severe stenosis, celiac trunk kinking and superior mesenteric artery stenosis. In February 2012, a balloon angioplasty was aborted and complicated with acute anemia. One month later the procedure was successfully repeated and blood pressure (BP) controlled with 5 antihypertensive drugs.

Results: In May 2012, BP values became elevated and renal function deteriorated. She was submitted to a cutting-balloon angioplasty and, after this, medication was progressively reduced to one antihypertensive drug. Five months later her BP raised again and renal function declined: MRA showed worsening of previously identified stenosis. In April/2013 she was submitted to left RA cutting-balloon angioplasty. In D5 post-op it was identified a left perirenal hematoma with infarction of the superior half of left kidney and left RA pseudoaneurysm. She went through hematoma drainage without intraoperative identification of pseudoaneurysm, which progressively increased in size. At that time creatinine clearance was 36 ml/min/1.73m2 (Cr-EDTA), with symmetrical renal function (DMSA). After multidisciplinary discussion about surgical (bypass/auto-transplant) or endovascular (stent/embolization) options, she was transferred to an international center for endovascular stenting. Left RA pseudoaneurysm embolization was performed, despite left kidney sacrifice, and also right RA stent placement. At present she's on 4 antihypertensive drugs and she has a slightly increased serum creatinine.

Conclusions: This clinical case shows how fast disease progression could occur and the difficulties in short- and long-term therapeutic approach, namely preventing deterioration of renal function and choosing a renal replacement therapy.

P108

Chronic Kidney Disease In Vacterl Association

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Introduction: VACTERL association is defined by the presence of at least 3 of the following congenital malformations: vertebral anomalies, anal atresia, cardiac malformation, tracheo – esophageal fistula, renal, limb anomalies with the frequency of less than 1/10.000 to 1/40.000 live - born infants. Approximately 60 – 90% of VACTERL patients have renal anomalies sometimes with chronic kidney disease. The Aim of study was to evaluate the frequency and type of VACTERL association and renal anomalies in children and kidney failure in the follow-up period.

Material and methods: Retrospective analysis of 13 children (7 girls) with VACTERL association in the period of 1996 to 2013 was done. Patients had the following of VACTERL association: anal atresia and renal anomalies were found in all children; 9 (69,2%) patients had cardiac and vertebral malformations. Four had all above mentioned 4 malformations, one – instead of vertebral anomalies had a trachea – esophageal fistula. Limb anomalies were found in 2 patients, both had 5 malformations.

Results: All children had renal anomalies: 9 (69,2%) had hydronephrosis and/or nephrosclerosis; 8 (61,5%) – single, cystic or/and dysplastic kidneys; 6 (46,1%) had genitourinary abnormalities and 4 (30,7%) – II - IV grade vesicoureteric reflux. Ten (76,9%) had a combination of several anomalies. Eleven out of 13 had renal failure in the first months of life. The mean follow – up period was 4,3 years (1 – 17 years). After optimal surgical correction 4 patients had normal renal function. Chronic kidney disease stage 2 – 4 was found in 5 patients, two progressed to the end – stage renal disease (ESRD). The onset of renal failure was different: one manifested with ESRD, another one developed it after 17 years.

Conclusions: In our group of VACTERL association patients all had different level of kidney involvement with high number of renal failure on the follow – up.

P109

Obesity And Metabolic Syndrome As A Risk Factor Of Hypertension

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Introduction: Obesity, one of the risk factors of hypertension, has been increasing in children, especially in teenagers. The aim of the study was to determine whether the frequency of metabolic syndrome increases among hypertensive children as the incidence of obesity increases.

Material and methods: Hypertension was defined as systolic and/or diastolic blood pressure to be higher than the 95th percentile for age and gender. 201 Patients (76 female, 125 male) who presented to our outpatient clinic with hypertension were evaluated retrospectively in terms of etiology of hypertension. The mean age was 11±4.33 years. The patients were divided in to two groups. Group I consisted of 82 Patients (32 of them adolescents) presented during the period of 2001-2008 and Group II consisted of 119 patients (65 of them adolescents) presented during the period of 2009-2013.

Results: The most common presenting symptom was headache (30%). Most of our patients (63%) had essential hypertension. Other causes of

the hypertension in order of frequency were metabolic syndrome (13.4%), renovascular hypertension (6.5%) and renal parenchymal diseases (5%). Age and gender distribution were not different in two groups (p>0.05). In comparison of adolescent patients with pre-adolescents, mean body mass index (BMI) was significantly higher in adolescents (25.47±5.23 vs 21.62±6.27)(p=0.0001) and metabolic syndrome was more frequent in adolescents (19.6% vs 7.7%)(p=0.024). The mean BMI was significantly higher in Group II than in Group I (24.35±6.49 vs 22.2±5.23)(p=0.014). Although the rate of metabolic syndrome was higher in Group II, difference between the two groups was not statistically significant (16% vs 9.7%)(p=0.28). When we compared the adolescent patients in Group I with those in Group II, increase in BMI and frequency of metabolic syndrome were not statistically significant (p>0.05).

Conclusions: Although BMI increased in children with time, the frequency of metabolic syndrome did not increase proportionally. Moreover, adolescent patients are more likely to have obesity and metabolic syndrome.

P110

Hypertension In Childhood : Outcome Of Two Years Experience

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Introduction: Hypertension (HTN) in childhood is a serious cause of mortality and morbidity as in adulthood. Demographic profiles, treatment regimens, response to treatment and etiology of hypertension were reviewed in children diagnosed with hypertension in this study.

Material and methods: Children diagnosed with hypertension in outpatient clinics of Pediatric Nephrology Department of Uludag University between January 1, 2012 and December 31, 2013 were reviewed in this study.

Results: The mean age of 231 patients diagnosed as hypertensive was 14,4±4,5 years with a mean age of 11,4±4,7 years at the time of diagnosis. One hundred seventeen patients (50,6%) were classified as having primary hypertension and 49,4% of the patients were classified as having secondary hypertension. Family history was present in 11,7% of the patients. Twenty patients with primary hypertension had family history whereas 7 patients with secondary hypertension had family history, this difference was statistically significant (p=0,01). Serum uric acid levels were high in 13,9% of the patients. There were 17 hypertensive children with chronic kidney disease and 20 renal transplantation patients were found to be hypertensive. Hypertensive retinopathy, left ventricular hypertrophy and proteinuria were found in 47 (20,3%), 30 (13%) and 59 (25,5%) patients respectively. Ninety four patients were advised life style changes, 60 patients were treated by calcium channel blockers, 22 patients by angiotensin converting enzyme inhibitors, 19 patients by beta blockers and the rest of the patients by combined therapy. Treatment was efficient in 76,2% of the patients. Response to treatment did not differ between primary and secondary hypertension. There was no association between end organ damage and younger age at the time of diagnosis.

Conclusions: Hypertension during childhood is diagnosed more than past as a consequence of increasing awareness about childhood hypertension, measuring blood pressure by the accurate technique and childhood obesity epidemic.

P111

Vitamin D In Chronic Kidney Disease

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Introduction: In this study, we aimed to evaluate vitamin D status in patients with chronic kidney disease (CKD) and to investigate the effect of cholecalciferol supplementation in vitamin D deficient patients on Vitamin D, parathyroid hormone (PTH) and some other biochemical parameters.

Material and methods: A total of 55 patients ranging from 2,6 to 21 years of age were in this study, 21 females and 34 males .

Results: Vitamin D deficiency (<30 ng/ml) was detected in 87,3% of patients (n=48). The frequency of severe vitamin D deficiency (<5 ng/ml), moderate vitamin D deficiency (5-15 ng/ml), vitamin D insufficiency (16-30 ng/ml) and normal vitamin D levels were 18,2%, 43,6%, 25,5% and 12,7% respectively. In our study, we showed that vitamin D levels decreased with increasing age (p=0,02). Vitamin D levels in predialysis CKD patients were statistically significantly higher than haemodialysis and peritoneal dialysis patients (p=0,0001). Thirty-one of vitamin D levels measured in winter and spring were <15 ng/ml, while 14 of vitamin D levels measured in summer and fall were >15 ng/ml (p=0,0001). After 3 months of cholecalciferol supplementation, 65,2% of patients with vitamin D deficiency restored their vitamin D status (>30 ng/ml). This rate was 60% after 6 months of cholecalciferol supplementation. It was found that average value of PTH level before cholecalciferol supplementation was 327,3±333,6 pg/dl, at 3 months of treatment 298,8±370,7 pg/dl and at 6 months of treatment 249,8±287,1 pg/dl. There was no significant decrease in PTH levels (p>0,05). A negative correlation was observed between vitamin D levels and serum creatinin levels (p=0,000), CKD stage (p=0,001) and age (p=0,012); as well as a positive correlation between vitamin D levels and hemoglobin levels (p=0,033). There was no correlation between vitamin D levels and albumin, uric acid, HCO3 and CRP level (respectively p=0,109, p=0,759, p=0,685, p=0,069).

Conclusions: Vitamin D, antihypertensive, anti-inflammatory, antioxidant, which is a cause of morbidity CKD is effective for prevention of hyperparathyroidism. In the study of vitamin D deficiency in children with CKD is very common, oral cholecalciferol treatment for the correction of vitamin D status was determined can be used as an efficient and reliable.

P112

Racial Disparities In Paediatric End Stage Renal Disease In The Espn/era-edta Registry

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Introduction: Concern has arisen regarding ethnic disparities in the quality of care for paediatric end stage renal disease patients. We therefore aimed to assess differences in patient and treatment characteristics between racial groups among children on renal replacement therapy (RRT) in Europe.

Material and methods: Using data from the ESPN/ERA-EDTA Registry, we included patients aged <19 years prevalent on RRT on December 31 2011. To avoid confounding by economic factors, analyses were restricted to high-income countries. Racial groups were defined as white, black, Asian and other. Patient and treatment characteristics in these groups were compared using ANOVA and Chi-square tests.

Results: 1,096 patients from 6 countries (Belgium, Greece, the Netherlands, Portugal, Slovakia, United Kingdom) were included. The majority (77.5%) of patients were white, 5.0% black, 9.7% Asian and 7.8% from other racial groups. Treatment modality on December 31 2011 was different between the groups (P=0.003); white (81.2%), Asian (86.8%) and other (75.6%) were more often transplanted than black patients (63.6%). Patient histories showed that white patients had been

significantly more often transplanted pre-emptively (23.2%) than all other groups (black 9.1 %, Asian 14.1%, other 14.0 %; P=0.007). In addition, time on dialysis before transplantation was longer in black, Asian and other (median 35.1, 25.0 and 21.2 months, respectively) than in white patients (14.2 months; P=0.01). These differences could partly be explained by a higher proportion of living kidney transplants in white (34.0%) versus black (14.3%), Asian (19.6%), and other (24.6%) patients (P<0.001).

Conclusions: These results suggest that white paediatric RRT patients are more likely to receive optimal treatment than minority racial groups. Further research is required to identify and address the contribution of medical and socio-cultural barriers to preferred treatment in these groups.

P113

Central Blood Pressure Obtained From Ultrasound Wall-tracking Of The Carotid Artery In Children: Comparison With Arterial Tonometry And Invasive Measurements

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Introduction: Data suggest better prediction of cardiovascular events with central compared with peripheral blood pressures. This has resulted in increasing interest in the non-invasive estimation of central blood pressure in children. Our study compares estimates of central systolic blood pressure (cSBP) obtained with radiofrequency ultrasound wall-tracking of the carotid artery with those obtained by radial applanation tonometry and direct measurements of pressure obtained during cardiac catheterisation.

Material and methods: We estimated cSBP in 84 children (5-18 years, 43 male, 56 with chronic kidney disease) by radiofrequency ultrasound wall-tracking of the carotid artery (Esaote ARTlab system) and by transformation of a radial artery pressure waveform obtained by tonometry (SphygmoCor, using the standard transfer function derived in adults). Peripheral blood pressure was measured by an oscillometric method and used to calibrate both radial tonometry and carotid distension waveforms. Thus, errors in determination of peripheral blood pressure were common to both methods. Central pressure measurements obtained using the ARTlab system were also compared with invasive intra-aortic measurements in 10 children (3-16 years) during cardiac catheterisation.

Results: Values of cSBP estimated by SphygmoCor and Artlab were closely correlated, (R = 0.947), with no significant difference in mean cSBP (difference±SD) -0.76±3.7 mmHg (P=0.09). ARTlab estimation of cSBP was highly correlated with invasive measures of cSBP (R = 0.98) with mean difference -4.7 ± 3.6 mmHg.

Conclusions: These results suggest that the ARTlab provides an accurate measure of cSBP but invasive validation in a larger group would be advisable. The close agreement of cSBP obtained by the ArtLab and SphygmoCor suggests that these methods provide similar results when calibrated from the same peripheral blood pressure. Accuracy of absolute measurements is dependent on the accuracy of peripheral blood pressure.

P114

A Retrospective Analysis Of Obese, Overweight And Normal Weight Patients Below 18 Years Old Diagnosed With Essential Hypertension

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Introduction: The aims of the study are to point out the most important factors in early diagnosis of essential hypertension (HT), to determine the most relevant markers of end organ damage (EOD) during the first assessment of the patients and to identify ABPM parameters related with those markers.

Material and methods: 200 pediatric patients with office HT between January 2008 and January 2013 were retrospectively evaluated. Patients with secondary HT and who had been treated with antihypertensive drugs were excluded. Sociodemographic data, laboratory results at the time of initial assessment, ABPM parameters and findings of EOD were evaluated. Patients with office HT were divided into subcategories according to their weight status as normal weight, overweight and obese group as well as according to their blood pressure (BP) status as white coat effect, prehypertension, masked HT (MHT) and HT groups. Whole laboratory data were compared among these subgroups.

Results: 180 patients had high BP (HBP) and 20 patients had normal BP according to ABPM results. Hypertension was significantly associated with body mass index. Laboratory results including uric acid, lipid profile, AST, ALT, hemoglobin, aldosterone and microalbuminuria levels and ABPM day- and night-time parameters were significantly correlated. Uric acid levels were significantly correlated with non-dipper pattern. One fifth of the patients in HBP group had MHT. EOD including left ventricular hypertrophy and hypertensive retinopathy was found even in patients with MHT. Non-dipper pattern was more common in obese and overweight patients compared to normal weight patients in HBP group.

Conclusions: MHT is accompanied by increased risk for EOD. ABPM is a better predictor of EOD than office BP measurement. Laboratory tests especially microalbuminuria and uric acid had been considered to be early bio-markers of EOD and were significantly correlated with ABPM parameters. Therefore, all patients should undergo ABPM for early diagnosis and appropriate treatment of HT.

P115

Diagnostic Challenges In An Adolescent With Hypertension Caused By Primary Hyperaldosteronism Due To Kcnj5 Mutation.

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Introduction: Primary aldosteronism (PA) is a rare form of secondary hypertension. In adults PA is often caused by unilateral adrenal adenoma which can be cured by unilateral adrenalectomy. However, in young patients hereditary causes of aldosteronism have to be considered with bilaterally affected adrenal glands. Accurate diagnostic tests are required in elucidating the correct diagnosis. We report on an adolescent with PA due to a rare KCNJ5 mutation.

Material and methods: A 16 year old boy was referred to our clinic because of hypertension. Diagnostic work-up revealed elevated aldosterone concentrations in serum and urine accompanied by low renin concentrations. Aldosterone was not suppressed by sodium loading which confirmed the diagnosis PA. A CT scan of the abdomen showed focal thickening of the left adrenal gland, suggesting unilateral production of aldosterone. However, adrenal venous sampling did not show lateralization of PA.

Results: Mutation analysis was negative for the hybrid CYP11B1/CYP11B2 gene that causes glucocorticoid-remediable aldosteronism but revealed a 'de novo' germline missense mutation in the KCNJ5 gene (c.452G>A (p.Gly151Glu)). This mutation has only been described in 7 families causing familial PA type III. Somatic mutations in the KCNJ5

gene are also present in about a third of aldosterone-producing adenomas. In our patient, treatment with an aldosterone antagonist was successful for blood pressure control without surgical intervention.
Conclusions: PA is a rare cause of secondary hypertension, especially in children and adolescents. In hereditary forms of PA bilaterally elevated production of aldosterone are expected and can be detected by adrenal venous sampling of aldosterone. Surgery is not the first choice treatment. We recommend mutation analysis for CYP11B2 and KCNJ5 mutation in all children and aldolescents with biochemically proven PA, also in the face of unilateral focal adrenal gland thickening.

P116
Renal Artery Stenosis In An Adolescent With Type 1 Dm

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Introduction: Renal artery stenosis (RAS) is the most common cause of renovascular hypertension, which leads to renal dysfunction and hypertension. The most common etiological factors are fibromuscular dysplasia in adolescents and atherosclerosis in adults. The concurrence of type 1 diabetes mellitus (DM) and RAS has been rarely reported.
Material and methods: Case: A 15- year- old male diagnosed with type 1 DM and regularly followed up for the last 9 years presented with headaches. On admission, his blood pressure was 170/100 mmHg. During the evaluation for the etiology of hypertension, renal Doppler ultrasonography revealed reduction of flow distal to the right renal artery and decreased intrarenal vascularization. A renal CT angiography was proposed, which demonstrated a narrowing segment of 2-3mm in the right renal artery about 25 mm after the branching from the aorta and no aberrant or accessory renal arteries were recorded. The conventional angiography of the right renal artery showed a fibrotic segment causing a stenosis of 90-95% in the middle of the artery. Percutaneous transluminal balloon angioplasty was performed, but subsequently a stent has to be placed due to the residual gradient. After the last intervention, the right renal artery was completely widened. The blood pressure of the patient significantly decreased during the follow-up and anti-hypertensive treatment was stopped.
Results: none.
Conclusions: Successful interventional treatment of RAS in an adolescent patient diagnosed with type 1 DM has been presented since it is a rare condition.

P117
Chronic Renal Failure In A Young Boy Presenting With Enuresis

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Introduction: Ochoa syndrome is a rare disease characterized by non-neurogenic bladder dysfunction along with facial inversion while smiling.
Material and methods: Case report: A 13-year-old boy was admitted to another clinic with enuresis nocturna denying any other complaints. He had no history of urinary tract infection, daytime incontinence or encopresis. Ultrasound revealed bilateral hydroureteronephrosis and trabeculated bladder. Voiding cystoureterography determined no reflux, but multiple diverticuli. Renal scan showed bilateral reduced uptake and multiple renal scarring. Diuretic renogram revealed bilateral obstruction. Urodynamic evaluation revealed poorly compliant hyperactive bladder with high voiding pressures and significant residual volume. Laboratory tests were consistent with chronic renal failure and he was referred to a nephrologist. He had normal height and weight percentiles but an abnormal, grimacing gesture on attempt to smile in physical examination. He was then diagnosed as Ochoa Syndrome and started on antibiotic prophylaxis, anticholinergics and clean intermittant catheterization.
Results: Conclusions:
Conclusions: This case was reported to increase the awareness of physicians as early diagnosis is mandatory to prevent renal failure. Asking the patient to smile would easily lead to diagnosis.

P118
Impact Of Obesity On Daytime And Night-time Blood Pressure In Children And Adolescents

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Introduction: The prevalence of pediatric hypertension in European countries is on rise in these days, probably due to its primary cause - epidemics of obesity. From several modalities, 24-hour ambulatory blood pressure measurement was proved as most reliable method for assessment the blood pressure. The goal of our study was to perform a comprehensive assessment of relationship between daytime and night-time hypertension in obese children and adolescents with a wide range of obesity.
Material and methods: 109 patients from 7 to 18 years of age with primary obesity were enrolled in the study and divided into three groups according to BMI Z scores. Normotension and various degrees of ambulatory hypertension were classified according to recent recommendations for ambulatory blood pressure monitoring. The cumulative frequency distribution was calculated for daytime and night-time BP.
Results: The daytime SBP, DBP, and MAP increased significantly with the degree of obesity, whereas no significant increase in night-time BP between groups was observed. However, the night-time SBP, DBP, and MAP were significantly elevated in all patients when compared with the 50th percentile of a normal population (Z-score = 0). When the SBP cumulative distribution reaches 50%, the daytime SBP Z-score value is + 0.65, whereas the night-time SBP Z-score is already +1.37 (i.e. the night-time BP curve is shifted to the right). This shift to the right is directly proportional to the degree of obesity in both daytime and night-time SBP; however, less expressed in the night-time SBP.
Conclusions: Our study shows a significant association between obesity and ambulatory hypertension in children and adolescents. The daytime SBP seems to be directly related to the degree of obesity, whereas the night-time BP remains elevated through the wide range of BMI Z-score. This fact encourages implementing ABPM in obese children, because the first pathological changes will be found during the night.

P119
Arterial Siffness In Children With Ckd

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Introduction: Cardiovascular disease (CVD) is the most important risk factor (RF) for morbidity and mortality in adult patient with chronic kidney disease (CKD). One RF is Arterial stiffness, measured by carotid-femoral pulse wave velocity (PWVcf). Aim of the study was to

evaluate PVWcf in children with CKD, and examine its relation with parameters of nutrition, inflammation and vascular system
Material and methods: Twenty one patients (11 males), mean age 13.6±4.7 (range 8-16) with CKD not on dialysis (group A), nine patients (1 male) on dialysis (group B), and 30 children (control group), comparable for age and sex, were enrolled. We registered weight, height, BMI, Systolic (PAS) and diastolic (PAD) office blood pressure. We also analyzed biochemical assessments, including PCR, phosphorus, PTH, colesterol and FET-A levels (Elisa-Dynex). PWVcf was measured using the Vicorder System.
Results: We documented a significantly higher values of PWVcf in group A and in group B (4,7 ± 0.6 m/s and 6,1± 0.8 m/s) vs group C (4,2 ± 0.5 m/s). PWVcf was significantly higher in children on hemo-dialysis vs peritoneal dialysis. PWVcf correlated only with age, while no correlation was found with other biochemical parameters
Conclusions: In our study arterial stiffness was found significantly higher in all stage of CKD, especially in children on hemo-dialysis. The absence of any correlation of PWV with FET-A and other RF, is probably due to the small number of our patients. PVW measurement could be useful to assess cardiovascular risk in children with CKD.

P120
Usefulness Of Pulse Wave Velocity And Pulse Wave Analysis In Assessment Of Hypertensive Target Organ Damage In Children With Primary Hypertension

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Introduction: Arterial stiffness measured as pulse wave velocity (PWV) is regarded as one of the markers of target organ damage (TOD) in hypertensive adults. Pulse wave analysis (PWA) adds the information about central blood pressure (CBP), backward pulse wave, cardiac output and total peripheral resistance. The aim of the study was to estimate the relationship of PWV and PWA with established markers of TOD (left ventricular mass index - LVMI, carotid intima-media thickness - cIMT, carotid wall cross sectional area –WCSA) in children with untreated primary hypertension (PH).
Material and methods: 95 patients (pts) (14.9 ±2.5 years; 23 girls) referred as newly diagnosed PH were included to the study. PWV and PWA were measured by oscillometric method using Vicorder device. PWV and cIMT were expressed as absolute and SDS - values regarding recently published normative values. BP status was determined according to recent classification based on 24hour ambulatory blood pressure monitoring.
Results: In 95 pts referred with elevated BP and underwent full diagnostic process, normotension was diagnosed in 32, prehypertension in 12, ambulatory hypertension in 7 and severe ambulatory hypertension in 44 pts . Pts with left ventricular hypertrophy (LVH) had significantly greater 24h systolic BP, pulse pressure, cIMT and WCSA than pts without LVH. There were no differences in PWV, augmentation index (AI), augmentation pressure (AP) and CBP between pts with LVH and/or cIMT>2SDS and pts with cIMT<2SDS and normal LVMI. The comparison of pts divided into four groups according to BP status revealed that only pts with severe ambulatory hypertension had significantly greater AP and AI compared to other groups. However, our groups did not differ regarding PWV. PWV correlated with uric acid and LDL-cholesterol, but not with TOD. AP and AI correlated with triglycerides and LVMI. The step-wise regression analysis revealed that only 24h systolic BP predicted LVMI.
Conclusions: In children with PH PWV and PWA do not correlate with TOD markers. However, PWV correlates with biochemical risk factors of arterial injury. The lack of direct association between PWV and PWA with cIMT and LVMI may be due to the relatively modest elevation of BP and short duration of hypertensive disease in PH children.

P121
Treg And Vascular Inflammation In Pediatric Patients With Ckd

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Introduction: Cardiovascular disease is an important risk factor for morbidity and mortality on patients with chronic kidney disease (CKD). Studies on cardiovascular system, vascular inflammation and their early indicators in pediatric age group are limited. In this study, we aimed to detect the findings of the blood vessel inflammation in patients with CKD and to evaluate its relationship between Treg cells.
Material and methods: This prospective study was performed on patients with CKD at the Ege University, Faculty of Medicine Department of Pediatric Nephrology. Involvement of 40 patients was planned in this study. Aortic stiffness, carotid artery intima -media thickness, left ventricular mass index, Augmentation index, and pulse wave velocity (PWV) were performed on all patients.
Results: A total of 10 patients were included since the beginning of the study. Mean age was 14.5 ± 2.5 (range: 1-17 years). 2 of the patients were detected as stage 5 CKD, 3 of the patients were stage 2 and 5 of patients were stage 3 CKD. Patients' values of serum creatinine, urea , GFR, uric acid, PTH, CRP, ESR, COL, and TG were detected as 3.07±1.2, 79.5±5.9, 45.6±6.7, 7.6±0.9, 245.3±12.5, 0.95±0.2, 32±6, 181±5.2, 336 ± 10.2, respectively. Also augmentation index was 31.3% (N = 9.41 ± 8.54 %), higher than normal, carotid intima/media was 0.57 (N: 0.404 ± 0.041) and it was also detected to be high. PWA was 5.72 (N: 5.3 ± 0.7 m / s) and normal. Treg values of patients were found as 25.3 ± 0.5 (N=7) and these values were lower than normal.
Conclusions: This findings are the pre-data of this study. Treg cell values were detected to be lower than normal in these patients, therefore; this can be used as an early indicator for blood vessel inflammation, which is linked to the risk of cardiovascular diseases.

P122
Renal Insufficiency In A 7-year Old Boy With Hinman Syndrome

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Introduction: Hinman syndrome, non-neurogenic neurogenic bladder (NNNB), is a rare dysfunction of the bladder's contraction due to detrusor/sphincter incoordination. Children with Hinman syndrome, have the symptoms found in a neurogenic bladder in the absence of neurological defects, or urinary tract anomalies. In severe cases, it leads to Christmas-tree shaped bladder-wall change and end-stage renal disease due to obstructive-like bladder dysfunction. The syndrome is probably caused by acquired behavioral and psychological disorders.
Material and methods: Case report: A 7.5-year old boy was referred to our hospital due to acute renal failure and febrile E. coli urinary tract infection. His main symptoms were morning nausea and vomiting for the past two weeks. The patient suffered from both diurnal and nocturnal enuresis, constipation, encopresis and recurrent urinary tract infections. Psychosocial pressure on the child and abnormal family dynamics were detected.
Results: At the time of admission, urea and creatinine levels were elevated (U=75mg/dl and Cr=1.91mg/dl). No hematuria/proteinuria was detected in urine analysis. Admission's glomerural filtration rate (GFR) was 37.1ml/min/1.732. The renal/bladder ultrasound examination showed hydroureteronephrosis and thickened bladder wall. In cysteourethrography vesiureteral reflux and posterior urethra valves were not detected. The urodynamic study revealed a high-pressure bladder and

inappropriate voluntary contraction of the striated, urinary sphincter during micturition. Urethrocysteoscopy showed an elongated and highly trabeculated bladder. A spinal magnetic resonance imaging study was normal. Hinman syndrome diagnosis was established. The patient initially received adequate hydration and antibiotic treatment for the UTI. He was then placed on antibiotic chemoprophylaxis, intermittent catheterizations, oxybutynin and mild behavioral interventions. Azotemia has resolved, current GFR is 90 ml/min/1.732 and ultrasound shows a significant decrease in the degree of hydronephrosis and bladder-wall thickness.

Conclusions: NNNB is a rare bladder dysfunction that can cause, in severe forms, renal insufficiency and needs early diagnosis and intervention to prevent adverse renal outcomes.

P123

Hemodynamics Of Primary Hypertension In Children

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Introduction: It is supposed that early stages of primary hypertension (PH) are characterized by hyperkinetic circulation. However, there are no data regarding the relationship between blood pressure (BP) status from normotension to severe ambulatory hypertension and hemodynamics in childhood PH. The aim of the study was to characterize markers of hemodynamics such as cardiac index (CI) and total peripheral resistance index (TPRI) in children with primary hypertension (PH).

Material and methods: 95 patients (pts) (14.9 ±2.5 years; 23 girls) referred as PH were included to the study. Pulse wave velocity (PWV), CI and TPRI were calculated from pulse wave analysis by oscillometric method using Vicorder device. BP status was determined according to recent classification based on 24hour ambulatory blood pressure monitoring.

Results: 95 pts referred with elevated BP underwent full diagnostic process. Ultimately normotension was diagnosed in 32, prehypertension in 12, ambulatory hypertension in 7 and severe ambulatory hypertension in 44 pts . The comparison of pts divided into four groups according to BP status revealed significant increase of CI from normotensive group to severe ambulatory hypertensive group (2.7±5.6 in normotensive group vs 3.4±0.96 in prehypertensive group vs 3.34±1.6 in ambulatory hypertension group vs 3.49±1.0 l/min/m2 in severe ambulatory hypertension group, p=0.01). It was accompanied by the nonsignificant decrease of TPRI (1.0±0.22 vs 0.97±0.24 vs 0.97±0.22 vs 0.91±0.23 PRU respectively, n.s.). CI correlated with 24h systolic BP load (p=0.005; r-0.520) and PWV (p=0.006, r=0.306).

Conclusions: Children with PH present hemodynamic abnormalities characterized by hyperkinetic circulation. However, increased CI is accompanied only by nonsignificant decrease of TPRI. This pattern of hemodynamic abnormalities explains elevation of BP.

P124

Cardiac Geometry In Children With Ckd

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Introduction: Cardiovascular disease is the most important risk factor (RF) for morbidity and mortality in adult patient with chronic kidney disease (CKD). One of the main RF is left ventricular hypertrophy (LVH). The aim of study was to evaluate prevalence of LVH in children with mild CKD.

Material and methods: In the last six months we performed echocardioghraphy in 24 children (15 males), mean age of 11±3.9 (range 5-16) years. A control group of 20 children, comparable for age and sex, was enrolled in the study. We registered weight, height, BMI, systolic (PAS) and diastolic (PAD) blood pressure. We also analyzed biochemical assessments. LVH was obtained using Deveraux methods. We also evaluated left ventricular mass index (LVMI) and relative wall thickness (RWT).

Results: We documented higher values of LVMI (29,99±9,2) and RWT (0,36±0,07) in our CKD children. LVH was present in 12,5% and concentric remodelling (elevated RWT, normal LVMI) in 25% of our patients. LVMI was correlated with creatinine levels.

Conclusions: In our study prevalence of LVH in children with mild CKD was lower than concentric remodelling. This alteration of cardiac geometry, in our experience should be investigated in all children with CKD.

P125

Familial Aldosteronism Type 3 (fa3)- Effective Treatment Of Recalcitrant Hypertension In Twins Following Identification Of A P.e147k Kcnj5 Mutation

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Introduction: Objectives: To characterise the utility of KCNJ5 sequencing in the assessment and management of hypertension secondary to FA3

Material and methods: We present identical twin boys diagnosed at 10 years with FA3 and hypertension, refractory to multiple antihypertensive agents. Investigations in both boys, including angiography, proved inconclusive except for a substantially raised aldosterone level. MRI Abdomen showed normal adrenal glands in both boys.

Results: Genetic analysis of both boys proved positive for a variant (p.E147K) that is a registered single nucleotide polymorphism and a putative missense mutation in the KCNJ5 gene. In silico analysis (mutation t@ster and PolyPhen2) supports the assumption of a mutation. This gene encodes a ubiquitous potassium channel which is of crucial physiological importance in the zona glomerulosa of the adrenal cortex in controlling aldosterone secretion. Blood pressure was normalised in both boys following conversion of treatment to Eplerenone, a second generation aldosterone antagonist and loop diuretics.

Conclusions: The particular KCNJ5 gene mutation identified here has been previously noted but this is the first report of a clinical association. There is a paucity of literature reporting the link between resistant hypertension and FA3 in children. We believe this is the first report in the paediatric literature of a clinical association between this SNP KCNJ5 mutation and resistant hypertension and only the second report of KCNJ5 mediated FA3. Aldosteronism should be considered in the differential diagnosis of secondary hypertension in children with particular focus on children with resistant hypertension. Investigation of aldosteronism should include analysis of the KCNJ5 gene. Positive identification allows for focused pharmacological therapy to optimise blood pressure control.

P126

Quality Of Life, Resilience And Psychiatric Symptoms In A Pediatric Series Of Pre-dialysis Chronic Kidney Disease

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Introduction: Children and adolescents with chronic kidney disease (CKD) present with compromised daily life activities and perception of

quality of life compared with their healthy peers. Compromised behavior is common in this population, especially adjustment disorders; however there are evidences that the promotion of resilience can reduce the recurrence of psychiatric symptoms. This study aimed to analyze the quality of life, psychiatric symptoms and resilience of children and adolescents with CKD in comparison to controls and to correlate psychological variables with clinical/laboratorial findings of CKD.
Material and methods: This study included 28 healthy age and sex matched controls and 28 children and adolescents between 12 to 18 incomplete years-old which were followed-up at the Pediatric Nephrology Unit. CKD patients and healthy controls were submitted to questionnaires and scales to evaluate quality of life, resilience, anxiety and depression.
Results: Children and adolescents with pre-dyalisis CKD had a higher frequency of inadequate age-grade relation (p<0,001), interruption of school attendance (p= 0,004) and school grade failure (p<0,001), and also higher previous history of evaluations by mental health professionals (p=0,002). They also had an overall worse quality of life score and worse scores in psychological, educational and psychosocial domains. The frequency of depressive symptoms was 14.3 % among children and adolescents with CKD and anxious symptoms were identified in about half of patients and controls. Anxious and depressive symptoms were negatively correlated with all domains of quality of life, and the latter were associated with suicidal ideation (p=0,040). There was no significant association between clinical and laboratory variables of CKD and psychological variables.
Conclusions: Perception of quality of life is compromised in children and adolescents with CKD in comparison to controls. However, no associations were found between psychological variables, clinical characteristics and laboratorial findings.

P127
Primary Hyperaldosteronism By Bilateral Adrenal Hyperplasia: Case Report

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Introduction: Primary aldosteronism is a rare disease in children characterized by autonomous excess production of aldosterone.
Material and methods: A 10-year-old girl presented to the pediatric emergency department with headache, abdominal pain, dizziness and muscular weakness. The initial evaluation showed a slim girl with normal examination and severe hypertension (BP 210/160 mmHg), pulse 110 bpm. She had a past medical history of urinary tract infections, renal asymmetry with scars, normal VCUG and a family history of hypertension. Labs showed hypokalemia (2.6 mmol/L) with metabolic alcalosis, serum sodium 135 mmol/L, creatinine 0.61 mg/dL (eGFR bedside Schwartz formula 90 ml/min/1.73m2), urea 33 mg/dL, TTKG 12. Electrocardiogram and echocardiogram showed left ventricular hypertrophy. Renal ultrasound revealed renal asymmetry previously known and low resistance intrarenal index in doppler examination. MR abdominal angiography showed neither adrenal masses nor arterial renal stenosis. 24 hours urinary catecholamines, thyroid function and cortisol values were normal. The lying / standing aldosterone level was elevated [315 ng/l (normal 10-150) / 926 ng/l (normal 35-300)] with suppressed plasma renin activity and high aldosterone to renin ratio (51, normal <20). A dexamethasone suppression test failed to suppress aldosterone levels excluding the possibility of glucocorticoid-suppressible hyperaldosteronism. Adrenal scintigraphy under dexamethasone suppression was consistent with bilateral adrenal hyperplasia.
Results: Hypertension was initially difficult to treat, requiring labetalol infusion and up to five antihypertensive drugs. Once the diagnosis was done we increase spironolactone dose and the patient is currently well-controlled with spironolactone, nifedipine and labetalol.
Conclusions: Primary hyperaldosteronism should be suspected in all hypertensive patients with spontaneous hipokalemia. The treatment for hyperaldosteronism depends on the underlying cause. In patients with a single benign tumor (adenoma), surgical removal may be curative. For patients with hyperplasia of both glands, successful treatment is often achieved with spironolactone or eplerenone, drugs that block the effect of aldosterone.

P128
Posterior Reversible Encephalopathy Syndrome In Children With Nephrotic Syndrome: A Report Of 2 Cases

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Introduction: Introduction: Posterior reversible leukoencephalopathy syndrome (PRES) clinically can present with seizures, headache, mental and visual changes. We report two cases of nephrotic syndrome who developed clinical and neuro-imaging signs of PRES on high dose steroids. Both cases had some additional renal disease. One had single kidney and renal dysfunction where as other one had pyelonephritis.
Material and methods: Case 1: An 11-years old boy with Steroid dependent nephrotic syndrome on high dose steroids since 6 months presented in Pediatric Emergency with seizures and altered sensorium since one day. He had edema over feet and face, easy bruisablity, short stature. Blood pressure was 170/110 mm Hg with raised creatinine and hypoalbuminemia. Metabolic profile was normal. Ophthalmological examination revealed posterior subcapsular cataract and Grade 4 hypertensive retinopathy. MRI Brain was suggestive of PRES. Renal Ultrasound revealed left single kidney. DMSA scan showed non-functional/ non visualised right kidney with no scars on left kidney.
Results: Case 2: A 9 years old boy diagnosed as a case of first episode of nephrotic syndrome 3 weeks back and was on full dose steroids. Child presented in Pediatric Emergency with seizures and altered sensorium since one day. There was no edema. Blood pressure was 140/100 mm Hg with normal renal functions. Ophthalmological examination and metabolic profile was normal. Urine routine showed 1+ albumin and 20-25 pus cells/hpf. Leucocytosis was present and CRP was positive. Renal Ultrasound revealed enlarged kidneys with renal parencymal disease. MRI brain was suggestive of PRES. Urine culture was positive for E coli. He also developed features of Steroid induced psychosis for which anti-psychotic medications were started.
Conclusions: Conclusions: We suggest that PRES should be suspected in children with Nephrotic syndrome with sudden onset of neurological signs and symptoms on high dose steroids and underlying cause for hypertension should be evaluated.

P129
Crescentic Glomerulonephritis In An Infant With Congenital Nephrotic Syndrome: A Case Report.

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Introduction: We present a two and half old infant with congenital nephrotic syndrome who on histopathology had features of crescentic glomerulonehritis in addition to its classical findings.
Material and methods: Case: A two and half month old male infant presented with increasing swelling all over body since 1 month, abdominal distension and decreased urine output since 7 days. History of 2nd degree consanguinity was present. Growth and development was normal. On examination had significant edema and ascitis and had hypertension. Fundus examination showed a hypoplastic retina with pale disc. Urine

routine showed massive protienuria and microscopic hematuria. Blood investigation showed normal renal functions, hypoalbuminemia, hypercholesterolemia, hypocalcemia along with high TSH levels. Renal Ultrasound showed bilateral bulky kidneys. Neurosonography showed asymmetric ventricular enlargement.
Results: HIV rapid test, HBsAg, VDRL test were negative. TORCH profile and ANA were also negative. Renal Biopsy done showed 18 glomeruli, 8 of which show cellular crescents (45%) which was not classical of the congenital nephrotic syndrome (CNS). Rest of the glomeruli showed mesangial hypercellularity, with dilatation of proximal tubule. Infant was treated with diuretics, repeated albumin infusions, enalapril along with thyroxin replacement but succumbed to severe sepsis.
Conclusions: We present a rare histopathological association of crescentic glomerulonephritis in a infant with congenital nephrotic syndrome.

P130
A Case Of Refractory Systemic Lupus Erythromatousis With Acute Psychosis

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Introduction: clinically severe neuropsychiatric involvement is rare in systemic lupus erythromatousis . For refractory neuropsychiatric SLE , intravenous immunoglobulin (IVIG), plasmapheresis, and rituximab have been recommended .We present a case of SLE which was refractory not only to standard treatments, but also he didn't respond to therapeutic options that are used in refractory SLE such as IVIG infusion and plasmapheresis.
Material and methods: A case of refractory systemic lupus erythromatousis was admitted by repeated tonic colonic seizure, intractable vomiting, diarrhea and headache
Results: Neurologic examinations, lumbar puncture analysis, electro encephalogram were normal, whereas magnetic resonance imaging of the brain showed dilated ventricles and sulci. Despite standard induction therapies he gradually entered a confusional state, disorientation that changed to abnormalities in verbal and working memory, and finally no verbal communication for several days and avoiding to eat food and the oral drugs. Patient reached partial remission of disease (improved symptoms of psychosis and renal function despite high titer of anti double strand DNA and positive anti nuclear antibodies) with plasmaphresis, intra-venous immunoglobin and anti psychotic drug.
Conclusions: Plasmaphresis and intra-venous immunoglobins can induce partial remission in refractory SLE and should be considered as therapeutic options

P131
Clinical Characteristics And Laboratory Features Of Nephrotic Syndrome In The Adolescents: A Tertiary Medical Center Experience From 1998-2013

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Introduction: Though commonly seen in children ages 2-6 years, cases of Nephrotic Syndrome is also seen at the adolescent period. Various studies have shown that the clinical progression and prognosis of Nephrotic Syndrome in the adolescent period varies as compared to the younger age group. The objective of this study is to determine the clinical and laboratory profile of adolescents with Nephrotic Syndrome admitted at a tertiary institution in the Philippines
Material and methods: A 15 year review of all pediatric patients between the ages of 10 to 18 years old seen at a tertiary medical center in the Philippines from July 1998 to June 2013 with a diagnosis of Nephrotic Syndrome was done. Demographic data, clinical and laboratory features of all the adolescents included in this study were tabulated and analysed. Mean, percentages and/or standard deviation were utilized to summarize the data.
Results: A total of 17 adolescents were included. Majority of the patients seen were males (58.7%) with a male to female ratio of 1.4:1. Edema remained the most common chief complaint. Nephritic features such as hypertension and hematuria were noted. Laboratory features were consistent with the features of Nephrotic Syndrome except for hematuria. Decreased serum C3 was also seen in some subjects.
Conclusions: Presence of nephritic features in adolescent patients diagnosed with Nephrotic Syndrome was observed which may require further investigation for prognostication and clinical response to therapy.

P132
Characteristics Of Human Podocytes In Developing, Healthy Postnatal And Nephrotic Kidneys

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Introduction: Morphological and immunohistochemical characteristics of human podocytes were analyzed during normal kidney development, and during postnatal period in healthy and nephrotic kidneys.
Material and methods: Tissue pieces were dissected from embryos and fetuses (8th to 22nd postovulatory weeks), and from postnatal healthy and nephrotic kidneys, including nephrotic syndrome of the Finnish type (CNF) and focal segmental glomerulosclerosis (FSGS). Glomerules were analyzed by immunohistochemical and double immunofluorescent techniques, applying proliferation marker Ki-67, differentiation marker Oct-4 and α-tubulin marker for detection of primary cilia. Ultrastructural characteristics of podocytes were analyzed by transmission electron microscopy.
Results: Between the 8th and 22nd developmental week, S-forms of immature nephrons were characterized by presence of the short primary cilia at the luminal surfaces of differentiating glomerules and strong Oct-4 expression. During further progression of development, in glomerules of fetal kidneys and in healthy postnatal kidneys, the primary cilia gradually disappeared from the surfaces of the podocytes, while they retained on the parietal layer of Bowmans capsule. Oct-4 expression gradually decreased during development as well. Ultrastructurally, healthy postnatal podocytes had characteristic foot processes, forming part of the glomerular filtration barrier (GFB). In contrast, podocytes of postnatal nephrotic kidneys displayed numerous cilia on their surfaces, while their Oct-4 expression remained strong. At places, increased proliferation characterized parietal cells of Bowmans membrane. Ultrastructurally, podocytes of nephrotic kidneys showed absence of foot processes, but had numerous microvili on their surfaces.
Conclusions: Differentiation of healthy human podocytes during development and postnatal life is characterized by disappearance of primary cilia from their surfaces, decrease of Oct-4 expression and appearance of podocyte foot processes. In nephrotic kidneys, podocytes are not completely differentiated as some of them retain primary cilia on their surfaces, showing also increased Oct-4 expression and depletion of foot processes.

P133

Post-vaccine Glomerulonephritis In An Infant With Hereditary C2 Complement Deficiency: Case Study

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Introduction: Nephritic syndrome may occur at any age, but is an uncommon finding in infants. Patients with C2 deficiency have an increased risk for recurrent pyogenic infections with encapsulated bacteria and for rheumatological disorders, particularly a lupus-like illness. They can also develop glomerulonephritis particularly when triggered with an environmental factor.

Material and methods: We describe a case of a post vaccine immune-complex mediated glomerulonephritis in an infant with compound heterozygous mutations of C2 complement component gene, which is the first such case in the literature.

Results: The three and a half months old boy presented with clinical and laboratory signs of nephritic syndrome two weeks after vaccination. On renal biopsy an immune-complex mediated GN, most probably an atypical post-infectious GN (post-vaccine GN) with predominant IgA and C3 deposits in immune-complexes and no humps on electron microscopy. He was successfully treated with methylprednisolone. Such clinical picture can be explained by an interaction between C2 deficiency and vaccination.

Conclusions: A post vaccine immune-complex mediated glomerulonephritis in an infant with compound heterozygous mutations of C2 complement component gene is described for the first time. Interplay between C2 deficiency and vaccination seems a reasonable explanation for the clinical picture developed by our patient.

P134

Expression Of Thymosin Beta 4 On Renal Tissues With Mesangial Proliferation And Tubulointerstitial Fibrosis

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Introduction: To investigate the expression and significance of Tβ4 on children renal tissue with mesangial proliferation, on folic acid induced nephropathy (FAN) with tubulointerstitial fibrosis. The role and the possible underlying mechanism are also researched in this study.

Material and methods: (1)36 children confirmed by renal biopsy with main historical changes of mesangial proliferation were selected from Childrens Hospital Affiliated to Soochow University in the past half a year. They were divided into three groups according to the degree of mesangial proliferation and two groups based on whether or not they had tubulointerstitial fibrosis. Immunohistochemistry stain (IHC) was used to detect the expression of Tβ4. Based on the clinical data of mAlb,UCr,α-MG,β-MG and 24hUTP, correlations were discovered among proteinuria, renal pathological changes and Tβ4. (2)CD1 mouse were randomly assigned to two groups: normal control group and FAN group. The model of interstitial fibrosis was induced with two times of 240mg/kg folic acid (FA) by intraperitoneal injection. Four mice in each group were sacrificed on the 14th and 21th day. Samples of kidneys were processed for hematoxylineosin stain (HE), Masson trichrome stain. Tβ4 was semi-quantified by immunohistochemical stain (IHC). All data were analyzed with SPSS17.0 by T test, F test and Rank Sum Test.

Results: (1) The expression of Tβ4 between mild & moderate and severe mesangial proliferation had significant difference ($P<0.05$). The expression of Tβ4 was higher in tubulointerstitial fibrosis group than non-tubulointerstitial fibrosis group ($P<0.05$). The level of mAlb,α-MG,β-MG and 24hUTP among groups of mild, moderate and severe mesangial proliferation had significant difference ($P<0.05$). (2) Compared with the control group, the expression of Tβ4 in FAN group was increased at day 14 and day 21 ($P<0.05$), while no significant difference between their time point in FAN group ($P>0.05$).

Conclusions: (1) The expression of Tβ4 was upregulated in severe mesangial proliferation . Tβ4 expression was increased with appearance of tubulointerstitial fibrosis. All these indicate that its expression may be responsed to mesangial proliferation and tubulointerstitial fibrosis. (2) The expression of Tβ4 on renal tissue of tubulointerstitial fibrosis was more dominant than control group in FAN mice. Tβ4 might play in the process of tubulointerstitial fibrosis. (3) The level of mAlb,α-MG,β-MG and 24hUTP may be indicator for the evaluation of mesangial proliferative.

P135

Levels Of Activation Peptide Factor Xiii In Children With Henoch-schönlein Purpura And Its Clinical Significance

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Introduction: To explore the correlation between changes in plasma activation peptide factor XIII(AP-FXIII) levels in children with Henoch-Schönlein purpura(HSP) during active stage and involvement important organs, and other coagulation fibrinolytic dysfunction, to provide theoretical basis for effective treatment.

Material and methods: A total of 117 children hospitalized with HSP from Nov.2012 to Mar.2013 in the First Affiliated Hospital of Anhui Medical University were divided into 3 groups: general HSP group (59 cases), gastrointestinal bleeding HSP group (21 cases), and HSP nephritis (HSPN) group (37 cases).Twenty-three healthy children were included as healthy control. The plasma AP-FXIII levels of the 117 patients with HSP during active stage and 21 HSP sufferers with gastrointestinal bleeding during recovery stage were detected by using enzyme-linked immunosorbent assay. Fully automatic hematology analyzer and fully automatic blood coagulation analyzer were used to detect blood leukocytes and other coagulation fibrinolytic indexes.

Results: Lathe levels of plasma AP-FXIII in gastrointestinal bleeding HSP group during active stage were significant lower than those in other groups ($P < 0.05$), and mean of AP-FXIII returned to normal during recovery stage ($t=2.17$, $P<0.05$).There was no significant difference in levels of AP-FXIII among general HSP group, HSPN group and healthy control ($P>0.05$). 2. The levels of Fibrinogen degradation products (FDP), D-dimer, fibrinogen and PLT in all HSP groups were significant higher than those of healthy control (all $P<0.05$).The levels of FDP and D-dimer in gastrointestinal bleeding HSP group and HSPN group were significant higher than general HSP group ($P<0.05$). 3. In patients with gastrointestinal bleeding, AP-FXIII levels decreased over 20 days. There was a significant negative correlation between AP-FXIII and 24h urinary protein excretion in HSPN group ($r =-0.618$, $P < 0.05$).

Conclusions: Serious coagulation and fibrinolytic dysfunction exists in HSP with gastrointestinal bleeding and renal involvement. The levels of plasma AP-FXIII were correlated well with the severity of gastrointestinal bleeding and renal involvement in children with HSP, and anticoagulant therapy should be performed according to clinical types and in the different stages.

P136

Is Determination Of Urinary Annexin V And Uromodulin Useful In Children With Idiopathic Nephrotic Syndrome Treated By Cyclosporin A?

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Introduction: Therapy with cyclosporine A (CsA), a calcineurin inhibitor, is effective in children with difficult idiopathic nephrotic syndrome (NS). Prolonged CsA treatment can result in several adverse effects, the most significant being nephrotoxicity (CsAN). The serum and urine levels of proteins: annexin V (AnV) and uromodulin (UM) were investigated in order to assess their usefulness as indicators of early stages of CsAN. UM is considered as distal tubular damage marker. AnV is present in distal tubules.
Material and methods: The prospective study included 30 patients with steroid-dependant or steroid resistant NS and 22 healthy children (reference group). Serum and urinary AnV and UM were determined by ELISA in NS patients three times: before CsA treatment, after 6 and after 12 months of therapy, in the reference group - once.
Results: Urinary AnV and UM were significantly higher in NS patients before CsA therapy in comparison to reference group. Afterwards, we observed the progressive increase of urinary AnV after 6 and 12 months of therapy (despite the remission of NS). Urinary UM increased after 6 months; next its level was stable. Serum concentrations of AnV and UM were changed similarly. No significant correlations were found between serum and urinary concentrations of investigated parameters. The significant correlation between AnV and UM in urine was noted. Urinary AnV and UM were not associated with urinary protein.
Conclusions: Increased urinary excretion of annexin V and uromodulin in children with NS treated with CsA may suggest the usefulness of their determination as early markers of subclinical CsA nephrotoxicity. Annexin V seems to be a more sensitive indicator of tubular damage in the course of CsA therapy than uromodulin; however, large multicenter studies are needed to confirm these observations.

P137
Long-term Outcome Of The Nephrotic Syndrome In Children; One Center Experience

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Introduction: To determine the long-term outcome of nephrotic syndrome (NS) in children, we studied 33 patients with the NS aged six months to 10 years at onset and followed for a long period (2-12 years). We examined long-term adverse effect of NS and medications focusing of renal function, growth, obesity, osteoporosis, hypertension and ocular complications.
Material and methods: We reviewed all medical records of children with NS admitted at our institute from January 2000 to December 2012 and followed-up for a minimum period of two years.
Results: Consanguinity was in 15.2%. Among 11 biopsied patients 5 (45%) had focal segmental glomerulosclerosis, 1(9%) revealed C1q nephropathy and 1(9%) revealed membranous nephropathy. Outcome of two years presentation showed 18.2% patients as steroid resistant, 15.2% frequent relapsers and 12.1% steroid dependent. Four-teen (42.4%) patients had complete remission, 5 (15%) were steroid dependent and 2 (6%) were chronic renal failure. 3 (9%) patient had osteoporosis, 1 (3%) had insulin resistance, 2 (6%) had short stature and 2 (6%) had cataract. The patients who are chronic renal failure had hypertension, hematuria, consanguinity and histopathology of focal segmental glomerulosclerosis at the presentation.
Conclusions: Children with NS are at risk for hypertension, cataract, short stature, osteoporosis and renal failure in long-term follow-up. The patients who had hypertension, hematuria and consanguinity at the presentation could be at risk for chronic renal failure. Our study underscores a need for more effective and less toxic therapies for NS.

P138
Tacrolimus Efficacy In A Boy With Fsgs Associated 47, Xyy Syndrome

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Introduction: Children with genetic and chromosomes abnormality associated FSGS have the highest risk unresponsiveness to immunosuppressive treatment and progression to CRF. We report our experience of tacrolimus (TAC) therapy in a boy with FSGS-associated 47, XYY karyotype.
Material and methods: A 8-year-old boy from related family is a product of extracorporeal fertilization and preterm delivery from the triplet. He was referred for evaluation of nephrotic-range proteinuria 3.8-13.6 g/L detected at age 5. The boy also had hypoalbuminemia 28.9 g/L, normal BP and eGFR 109.4 mL/min/1.73m2. Renal ultrasound showed normal-sized kidney with increased renal echogenicity and loss of cortex-medullar differentiation. Due to revealed mild mental retardation and variety of dysmorphic features chromosomal analysis of the peripheral blood lymphocytes was performed and the constitutional karyotype of 47, XYY was identified. Kidney biopsy revealed FSGS with 17 glomeruli out of 23 (73%) tested with global and focal sclerosis, foci of interstitial fibrosis and tubular atrophy. Immunofluorescence study showed IgM fixation in 6 glomeruli.
Results: Treatment with TAC was initiated in a dose of 0.10 mg/kg/day combined with prednisolone (1 mg/kg on alternate days later tapered off and stopped). Then the TAC dose was increased to 0.12 mg/kg/day to attain a trough level of 5.0–10.0 ng/ml. On the 3rd week following the initiation TAC was noted a reduction in proteinuria to 0.5 g/24h with increasing of serum albumin level to 33.2 g/L and stable eGFR 117.2 mL/min/1.73m2. By the 12th month of TAC treatment the boy was still in partial remission with proteinuria 0.5-1.4 g/24 h, normal serum albumin levels and renal function, and TAC was stopped. ACE inhibitors treatment in a dose of 0.2 mg/kg/day was continued.
Conclusions: Our data indicate a positive effect of TAC treatment in obtaining of partial remission in a boy with FSGS-associated 47, XYY syndrome.

P139
Evaluation Of The Mdr1 Polymorphisms (c3435t, G2677t, C1236t) In Relation To Initial Prednisone Treatment In Paediatric Patients With Idiopathic Nephrotic Syndrome

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Introduction: Multidrug resistance gene 1 (MDR1) is the most notable gene encoding the efflux pump P-glycoprotein (P-gp), which is involved in the transport of a wide range of substrates including glucocorticoids (GC). Recent studies have demonstrated that single nucleotide polymorphisms (SNP) of MDR1 gene can contribute to interindividual differences in P-gp levels and/or P-gp function. The main aim of the study was to determine the role of MDR1 polymorphisms: C3435T, G2677T, and C1236T in relation to therapeutic response (TR) to GC in paediatric patients with idiopathic nephrotic syndrome (INS).
Material and methods: 46 patients with INS (14 girls, 32 boys, mean fragment length polymorphism (PCR-RFLP) method was used for genotyping. Patients were divided into two groups according to the initial

standard steroid therapy: initial responders = steroid-sensitive patients (n = 33; attainment of complete remission within the initial 4 weeks of corticosteroid therapy), and initial non-responders = steroid-resistant patients (n = 13; failure to achieve complete remission after 8 weeks of corticosteroid therapy). Different genetic models (dominant, recessive, codominant and overdominant) were used for testing of genotype frequencies. Statistical analyses were determined using logistic regression.
Results: Risk of steroid resistance was significantly lower among NS patients carrying CT genotype of MDR1 C3435T polymorphism in overdominant model (crude OR (95% CI): 0.20, (0.04-0.85) p=0.019; OR adjusted by gender: 0.19, (0.04-0.84) p=0.018). On the other hand we did not find significant differences in the haplotype distributions of the analysed MDR1 polymorphisms.
Conclusions: According to our preliminary results, C3435T polymorphism of MDR1 gene can be responsible for differences in therapeutic outcome of initial GC therapy in children with INS. Further data are needed to confirm our findings. The project was supported by a grant through the EEA Financial Mechanism and the Norwegian Financial Mechanism, VEGA 1/0715/11 and by VVGS UPJS, grant No. 5/2011.

P140

Rickettsiosis As Cause Of Acute Postinfectious Glomerulonephritis?

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Introduction: Acute glomerulonephritis (AGN) is produced through immunological damage secondary to different etiologies (frequently streptococcal infection). It presents oedema, haematuria and hypertension. However there are multiple causes, some of them almost anecdotal such as the Rickettsial infection. Rickettsiosis is transferred by ticks and, apart from its typical manifestations, it can produce AGN, described previously only in animals.
Material and methods: The case is described of a 4-year-old child who goes to the Emergency Room for occipital swelling, weakness, arthralgia and an isolated febrile peak. Arterial hypertension (>p95) is detected and an increase of 2 kg of weight in the last week. He presents bilateral palpebral oedema, erythematous macular exanthem in thorax and limbs, and a scabby lesion on the scalp. They reported oliguria in recent days and a tick bite in the occiput. Proteinuria is detected in nephrotic range (55mg/m^2/h) and glomerular haematuria for which he was admitted. During his stay, the hypertension, oliguria and oedemas persisted, beginning water restriction and treatment with furosemide. The study was completed observing a decrease of the complement (C3:18mg/dl), and low positive antistreptolysin antibodies. In view of the clinical picture and the history of the tick bite, serologies of Borrelia and Rickettsia were requested which were negative.
Results: The patient presented favourable evolution and was released with mild proteinuria (20mg/m^2/h) and microhaematuria. After four weeks, he had normal blood pressure, complete resolution of oedemas and normalisation of C3 (83mg/dl). Nonetheless, given the compatible clinical picture, serologies were repeated, being positive for Rickettsia conorii (Total Antibody:1/128) at one month from the onset of the symptoms.
Conclusions: The most common cause of AGN is postinfectious, with the most frequent causal agent being group A beta-haemolytic Streptococcus; however, one must not forget other less frequent etiologies that may require specific handling.

P141

Childhood Membranoproliferative Glomerulonephritis - Single Center Experiences

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Introduction: Objectives. The prognostic factors, the outcome and the most favorable treatment regimen are not entirely known for children with membranoproliferative glomerulonephritis (MPGN). MPGN is a rarely observed disease more prevalent in adolescents, so we aimed to review the clinical and histological properties, treatments and the outcome of our patients who were diagnosed as MPGN.
Material and methods: Methods. Fifty-one children -diagnosed with MPGN- were selected from biopsy records in Dr. Sami Ulus Maternity and Children's Hospital Pediatric Nephrology Department from January 1999 to January 2011. A retrospective analysis was made of 33 regularly followed children.
Results: Results. Thirty-three patients were identified, 13 female and 20 male. Their age groups at presentation ranged from 4-15 years. The following duration was 26-144 months. Following the initial treatment, twenty (60%) patients achieved complete remission. Six patients with nephrotic syndrome and one with non-nephrotic proteinuria showed partial remission. The condition of one patient with nephrotic syndrome was unchanged with the persisting symptoms. The one patient with nephrotic syndrome and four others with non-nephrotic proteinuria did not respond to initial treatment as their renal functions decreased gradually.
Conclusions: Conclusion. We concluded that only degree of tubulointerstitial damage on the initial biopsy is determinative for prognosis of childhood MPGN. If the patient receives high doses of steroid therapy in the early stages, their treatment is more likely to be successful. The effect of immunosuppressive treatment on MPGN is not clear.

P142

Evaluation Of Relapses In Steroid Sensitive Nephrotic Syndrome In Children

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Introduction: Author evaluated triggering events, time to achieve remission with daily corticosteroid therapy and sedimentation rate (SR) in children with idiopathic steroid sensitive nephrotic syndrome (SSNS).
Material and methods: 40 episodes (9 first episodes and 31 relapses) of idiopathic SSNS in 9 children were evaluated (2 had FSGS, 5 minimal change disease). Data are presented as average +/- standard deviation. Different subgroups were compared with Students t-Test and equality of variance tested with F-test.
Results: All 9 first episodes of SSNS (100 %) and 18 out of 31 relapses (58.1 %) were triggered by acute, mostly afebrile upper respiratory tract infections whereas 2 out of 31 relapses (6.5 %) were triggered by mosquito bites and 1 (3.2 %) by vaccination. Average time to achieve remission in all 40 episodes of SSNS was 18.3 +/- 14.1 days. It was shorter in patients with steroid-dependent nephrotic syndrome (SDNS) compared to other patients (14.5 +/- 7.6 vs. 24.7 +/- 6.8 days, p=0.071) and shorter in small children with body surface area (BSA) < 1 m2 compared to children with BSA > 1 m2 (14.8 +/- 9.8 vs. 26.7 +/- 18.9 days, p = 0.058) but with only borderline statistical significance. Average SR was 71.6 +/- 30.5 mm/h in first episodes compared to 20.5 +/- 23.8 mm/h in relapses (p<0.05). The difference in average SR between patients with SDNS and other patients as well as the difference between small and big children was not statistically significant. The correlation coefficient between time to achieve remission and SR was 0.09.
Conclusions: Children with first episodes of SSNS had significantly higher fraction of triggering events as well as higher SR compared to relapses.

There was no correlation between time to achieve remission and SR nor between histology result of renal biopsy and clinical course of SSNS.

P143
Long Term Evolution Of Childhood Steroid-sensitive Idiopathic Nephrotic Syndrome.

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Introduction: Idiopathic steroid-sensitive nephrotic syndrome (SNSS) usually relapses during childhood, although long-term prognosis and the risk of relapse in adulthood remain unclear. Our objective is to describe adulthood outcome of paediatric patients with SSNS.
Material and methods: Review of medical records of patients diagnosed and followed up in our unit with current age over 18. Adulthood information was obtained from telephonic contact or e-mail, and patients were asked about relapses, co-morbidity and treatment-related complications.
Results: 249 children with SSNS were followed up between 1966-1996. 137 patients (55%) were contacted. 90 men, 47 women. Mean age at onset: 4.09±2.2 years. 60 patients (43.8%) had a steroid-dependant clinical course. Kidney biopsy performed in 51 patients (96% minimal change disease). 35.7% received immunosuppressive drugs other than steroids: everyone received alkylating agents, 20% received also cyclosporine and 12% levamisol. Mean follow-up was 30.4±8.5 years, with mean age at the end of follow-up of 34.4±8.4. 26 patients (19%) relapsed in adulthood, with mean age at last relapse of 25.4±6.4 years (range 18.5-41). Adulthood-relapsers were more often diagnosed of steroid-dependant nephrotic syndrome (77% vs 36%; p=0.002), and they had significantly more relapses in childhood than non-relapsers: 12.6 vs 5.7 (p<0.001), 0.96 relapses/patient/year vs 0.56 (p=0.001). Mean age at last relapse in childhood was also significantly older (14.0 vs 9.1; p<0.001). Most of adulthood-relapsers patients had received immunosuppressive drugs (77% vs 26.1%; p=0.001). No differences were found concerning sex, age at onset or clinical status at discharge. One patient developed end-stage kidney disease in adulthood and received kidney transplantation. No major side-effects of treatment were found. Although there were no differences in offspring, 4 patients treated with ciclophosphamide developed oligo-azoospermia.
Conclusions: SSNS is a chronic condition that does not always stops after puberty. Patients with more relapses are more likely to relapse during adulthood. Long-term adverse consequences of treatment should be considered.

P144
Urine And Serum Ghrelin, Scd80 And Sctla-4 Levels In Adriamycin Induced Experimental Nephrotic Syndrome

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Introduction: Nephrotic syndrome (NS) is an immune-mediated disorder associated with hyperlipidemia. CD80 related T cells immune response which could be blocked by soluble cytotoxic T-lymphocyte-associated s(CTLA)-4 has been proposed as mechanism of NS. Although ghrelin is a hormone that modulates lipid metabolism and suppresses immune system, the role of ghrelin in NS is unknown.
Material and methods: We evaluated serum and urinary ghrelin, soluble CD80 (sCD80) and sCTLA-4 levels in a rat model of adriamycin-induced NS. We also investigated their relationship with serum total cholesterol (TC), triglyceride and albumin and urine protein levels.
Results: Urinary ghrelin levels in nephrotic rats were significantly lower compared with those observed in control rats. Serum ghrelin levels were similar in nephrotic and control rats. Serum and urinary sCD80 and sCTLA-4 levels were higher in nephrotic rats than controls. The urinary ghrelin levels were negatively correlated with the levels of serum triglyceride, TC and urine protein, sCD80 and sCTLA4. The urine sCD80 levels were correlated with the TC, urine protein and urine sCTLA4 levels, and negatively correlated with the serum albumin. The urine sCTLA4 levels were correlated with the TC and urine protein levels and negatively correlated with the serum albumin levels. In linear regression analysis, the urine ghrelin levels significantly relate to urine sCD80 levels.
Conclusions: Low urine ghrelin could be relevant to pathogenesis of adriamycin-induced NS. The reduction in urine ghrelin is associated with increased levels of urine sCTLA-4 and sCD80. Low urine ghrelin levels may be contribute to the development of proteinuria due to inadequate suppression of sCD80 related inflammation by ghrelin. Hyperlipidemia in NS is not related to serum ghrelin levels.

P145
Eculizumab Treatment For Rescue Of Renal Function In Iga Nephropathy

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Introduction: IgA nephropathy is a chronic glomerulonephritis with excessive glomerular deposition of IgA1, C3 and C5b-9, which may lead to renal failure.
Material and methods: We describe the clinical course of an adolescent with rapidly progressive disease leading to renal failure in spite of immunosuppressive treatment. Due to refractory disease he was treated with eculizumab (anti-C5), for three months, in an attempt to rescue renal function.
Results: Treatment led to clinical improvement with stabilization of the glomerular filtration rate and reduced proteinuria. Discontinuation of treatment led to rapid deterioration of renal function. This was followed by a single dose of eculizumab, which again reduced creatinine levels temporarily.
Conclusions: Early initiation of eculizumab in patients with progressive IgA nephropathy may have a beneficial effect by blocking complement-mediated renal inflammation.

P146
The Role Of Glucorticoid Receptor Gene (nr3c1 Gene) Polymorphism On Relapsing Of Idiopathic Nephrotic Syndrome In Children.

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Introduction: The objective of this study is to investigate the effect of glucocorticoid receptor gene (NR3C1) polymorphism on steroid response and development of relapses in childhood idiopathic nephrotic syndrome (iNS).
Material and methods: Forty patients with idiopathic NS and 20 healthy control with no history of NS or kidney disorder in their family were included in this study. The patients were divided into two groups: 20 patients were in the frequent relapsing group and 20 patients were in the group with no relaps after the diagnosis of NS. Three known single nucleotide

polymorphisms (SNPs) (N363S, ER22/23EK, 1559N) of glucocorticoid receptor gene (NR3C1) were analyzed in pts and control groups.
Results: The genotype distribution and allele frequencies of NR3C1 gene N363S, ER22/23EK, 1559N SNPs analyzed and revealed that ER22/23EK SNPs genotype distribution was GG, N363S SNPs genotype distribution was AA and 1559N SNPs genotype distribution was TT in all of the pts and healthy control groups (100 %). For each SNPs, allele frequencies in both groups were the same (p=1.0). The study revealed no NR3C1 gene polymorphism for all pt and control groups.
Conclusions: These findings suggest that NR3C1 gene polymorphism seems to play no role on relapse frequencies of NS. Further studies with large samples are needed to clarify these findings.

P147
A Winters Tale

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Introduction: Paroxysmal cold haemoglobinuria (PCH) is characterised by intravascular haemolysis mediated by the Donath-Landsteiner (D-L) antibody. Although rare, it accounts for up to 40% of all cases of autoimmune haemolytic anaemia in children, with incidence of <3: 100,000. Autoantibody activation against the P-antigen on the red blood cell membrane causes activation of complement resulting in red blood cell membrane perforation and intravascular haemolysis. Acute kidney injury (AKI) in association with PCH however is very rare, with only two published case reports in the paediatric literature. We report the case of a 9-year-old boy who developed AKI secondary to PCH.
Material and methods: The patient presented in December with angio-edema and dark coloured urine immediately following ingestion of an ice-lollipop. He had a preceeding upper respiratory tract infection. Initial renal function and haemoglobin were normal and apparent haematuria was confirmed to be haemoglobinuira. Over 48 hours he developed anaemia and acute kidney injury with evidence of haemolysis. The diagnosis of PCH was made due to the presence of erythrophagocytosis on the blood film in association with haemoglobinuria and positive anti-C3d on direct Coombs test. Rhinovirus was detected on respiratory secretions.
Results: Supportive treatment was initiated with active warming and strict fluid management. Haemolysis continued with haemoglobin falling to 3.8g/dl and his renal function continued to deteriorate with maximum urea of 39.8mmol/L and creatinine of 873μmol/L. Two sessions of haemodialysis were required along-with two warm packed red cell transfusions and continued supportive therapy. The patient gradually recovered with completely normal renal profile and haemoglobin on discharge at two weeks. At 14 months he remains disease-free.
Conclusions: This case adds to the paediatric literature describing acute kidney injury in the setting of PCH. Although AKI is an extremely rare complication, careful monitoring of fluid status and renal function is advised in the setting of acute intravascular haemolysis.

P148
Bone Mass In Children With Steroid-dependent Nephrotic Syndrome. What Does It Depend?

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Introduction: Children with steroid-dependent nephrotic syndrome or frequent relapsing (SDNS) may be at risk for bone metabolic disease. Cumulative dose of steroids; calcium, phosphorus and vitamin D levels are associated with bone mineral density (BMD). Our objective is to study BMD in children with SDNS who had received treatment with steroids for a long time and to look for factors that may influence.
Material and methods: Design: retrospective study. Patients: those with SDNS treated with steroids for a long time. We performed densitometry (Norland DEXA) to evaluate BMD. We recorded at the first episode and in the follow-up at the same time of densitometry: calcium, phosphorus, tubular reabsorption of phosphorus, alkaline phosphatase, albuminuria, calcium/creatinine urinary index, height, weight and cumulative dose of steroids. We did a descriptive and analytical statistical study.
Results: We included 14 patients. Mean age 49+6 months. Mean value of phosphorus, calcium, alkaline phosphatase and tubular reabsorption of phosphorus were in normal range. Z-score in densitometry was under -2 in four patients. The calcium/creatinine urinary index was higher (0,24 vs 0,11) in the first episode in patients with pathological Z-score in densitometry (p<0,05). We found correlation R = - 0,671 (p=0,009) between index at the first episode and Z-score at first densitometry. The adjusted R square was 0,559 and regression equation was: DZ= -0.73-6.07 x Index Calcium/creatinine at first episode. We did not find relation with cumulative dose of steroids at that moment but in the follow-up, at second densitometry, although the number of patients is low (3 vs 5) we found correlation with cumulative dose of steroids.
Conclusions: Children treated for a long time with steroids have a high incidence of bone mineral loss (28%). High basal calciuria may be a predictor of pathological densitometry in the follow-up. Children with calcium/creatinine urinary index superior than 0,20 must be monitor with densitometry. Cumulative dose of steroids may influence in BMD.

P149
Unexplained Nephrotic-range Proteinuria In A Consanguineous 2-year-old Boy

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Introduction: We report a case of a consanguineous 26-month-old boy with a chromosome 2q35 deletion. He presented with unexplained nephrotic-range proteinuria from a single right mildly dysplastic kidney (crossed renal ectopia with fusion). He was born at 25/40 with a bicuspid aortic valve and developed short stature and developmental delay. At the age of 17 months he underwent a left groin exploration for an impalpable left testis. Removal of the left testis revealed a preserved vas with an absence of normal testicular parenchyma.
Material and methods: We performed a DNA microarray.
Results: Genetic investigation revealed regions of long contiguous stretches of homozygosity in chromosomes 1, 2, 3 and 4 with microdeletions in exons 13 and 14 of the SMARCAL1 gene. The proteinuria did not relate to podocin, WT1 or LMX1B mutations.
Conclusions: This is consistent with Schimke immunoosseous dysplasia, an autosomal recessive multisystem disease characterised by focal segmental glomerulosclerosis, immunodeficiency, azoospermia and spondyloepiphyseal dysplasia.

P150
Acquired Partial Lipodystrophy (barraquer-simons Syndrome) And Iga Nephropathy

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Introduction: Acquired partial lipodystrophy (APL) is a rare disease characterized by progressive loss of subcutaneous fat tissue in a cephalocaudal fashion, sparing the lower extremities. In approximately 20% of the patients, type II dense-deposit membranoproliferative glomerulonephritis will develop some years after the onset of lipodystrophy. The etiology of APL is unknown but its pathogenesis is related to alterations of the alternative complement pathway.
Material and methods: We report a case of APL with 8 years of evolution associated with low serum levels of C3. She developed an episode of gross hematuria with proteinuria. Percutaneous renal biopsy was performed showing pathological anatomical features of IgA nephropathy (IgAN).
Results: A 13 year old girl was diagnosed at age 5 years with APL with slow progressive loss of facial fat. During this period she had a normal renal function but persistent low serum levels of C3 complement. At 13.5 years she presented an episode of gross hematuria on the third day of a fever due to gastroenteritis. Coinciding with hematuria, in addition to low serum levels of C3, elevated serum IgA and C3NeF levels were observed. Renal biopsy revealed the presence of one cellular crescent in addition to a focal and segmental mesangial hypercellularity. Immunofluorescence study demonstrated marked diffuse deposition of IgA and complement C3 in the mesangium. Electron microscopy confirmed electron-dense deposits in the glomeruli, ruling out the presence of dense deposit disease. A diagnosis of IgAN was made. In the following months the patient achieved clinical remission but with persistent low C3 and high levels of IgA.
Conclusions: To our knowledge, a relationship between APL and IgAN has not been described. Although it is not possible to completely rule out a possible relationship, we suspect that this concurrence in our patient was coincidental and not a consequence of shared autoimmune mechanisms.

P151

Proliferative Glomerulonephritis With Monoclonal Igg Deposits (pgnmid) In Young Chidren. -an Experience Of A Case And Investigation For The Possibility Of Undiagnosed Cases-

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Introduction: Renal biopsy in a 4-year-old girl with proteinuria/hematuria but without dysproteinemia revealed the diagnosis of proliferative glomerulonephritis with monoclonal IgG deposits (PGNMID) in our institution. PGNMID was recently proposed by Nasar et al. However, most of the cases were adult, with limited information on its occurrence in young children. As IgG subclass staining has not been routinely performed, the possibility of undiagnosed pediatric cases remains. We aimed to see if there were pediatric cases of possible PGNMID.
Material and methods: Children who underwent renal biopsy in the last 5 years were reviewed. In the cases diagnosed as endocapillary proliferative glomerulonephritis (ECPGN), membranoproliferative glomerulonephritis (MPGN), or non-IgA mesangioproliferative glomerulonephritis (non-IgA GN), the findings of immunofluorescence (IF), IgG subclass staining, and kappa/lamdaλ staining were reviewed for the possibility of PGNMID.
Results: Eighty four renal biopsies were performed in these 5 years in our pediatric department. There were 4 cases of ECPGN, 3 of MPGN, and 11 of non-IgA GN. In our case of PGNMID, concomitant pathological features of ECPGN, MPGN, and non-IgA GN were all present. Among the cases of non-IgA GN, 3 cases had IgG dominant staining on IF. One was our current case with monoclonal deposition of IgG1κ. Another case was so-called full-house nephropathy. In the remaining one case with IgG dominant deposition, IgM deposition was weak, suggesting the possibility of PGNMID. Unfortunately, IgG subclass staining has not been performed in this case. Among the cases with ECPGN or MPGN, none of the cases showed IgG dominant staining except for our current case.
Conclusions: We experienced the first case of PGNMID in young children. PGNMID may be rare in pediatric field. However, IgG subclass staining and kappa/lamdaλ staining are warranted for further investigation of PGNMID in children.

P152

Occurance Of Hypertension In The Czech Registry Of Renal Biopsies (crrb) In The Years 2001-2012

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Introduction: To analyze the occurence of arterial hypertension (HT) at the time of renal biopsy (RB). The National CRRB includes 2197 RB in children and adolescents ≤18 years performed in the years 1994-2012. CRRB has been run since 1994. Eleven pediatric centres performing practically all RB of native kidneys in the Czech Republic (country´s population 10.5 mil).
Material and methods: This report describes date of 540 RB obtained in the years 2001-2012. Beginning 2001, our blood pressure data are given in absolute values.
Results: At the time of RB, 146 (27.5%) of the children were hypertensive (based on the Second Task Force, Pediatrics 1996) and 136 of them (93.2%) were treated for HT. Boys were 59.6%, girls 40.4%. The mean age of patients with HT was 11.5±5.5 yrs vs. normotensive children 12.5 ±4.8 yrs, $p< 0.05$. The highest occurrence of HT was found to be associated with FSGS (46.7%), minimal change disease (41.4%), minimal proliferative changes without nephrotic syndrome (33.3%), Henoch-Schönlein purpura nephropathy (31.8%), membran. prolif. glomerulonephritis (27.3%) and IgM nephropathy (26.3%). Those with HT had lover GFR (Schwartz formula, 1.40±0.65 vs. 1.58±0.55 /ml/s/1.73m2/, $p<0,01$) and had significantly higher proteinuria (118.1±124.2 vs. 61.9±107 /mg/m2/h/, $p<0.001$). The highest incidence of nephrotic proteinuria (>40mg/m2/h) in HT was found to be associated with FSGS (40% children), minimal change disease (37.1%), membran. prolif. glomerulonephritis (27.3%), Henoch-Schönlein purpura (22.7%) and minimal change disease without nephrotic syndrome (19%). Clinically serious complications were in 1.4% of HT and 1.8% of normotensives (gross hematuria, hematoma etc.) (n.s.).
Conclusions: Arterial hypertension is associated with known risk factor of progression of biopsy-proven GN such as GFR or proteinuria. Registry of RB provides us important information about the epidemiology of glomerulonephritis in our region, about indications for performing RB and represents a base for co-operation in this field.

P153

Leflunomide, An Effective And Interesting Second-line Agent For Idiopathic Nephrotic Syndrome And Recurrent Fsgs

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Introduction: Half of children with idiopathic nephrotic syndrome (INS) receive second-line agents for frequent relapses (FR), glucocorticoid dependence (GCD-NS) or GC resistance (GCR-NS). Limitations are

adverse effects (AE) or costs. Leflunomide (LEF) promotes anti-inflammatory Th2-cells and suppresses T and B-cell expansion and production of pro-inflammatory cytokines, incl. TNFα and IFNγ. We therefore hypothesized that LEF may be effective in NS. Here we report our initial experience with LEF in pediatric NS.
Material and methods: Observational study/retrospective review of clinical and laboratory data. Results are described as medians (and ranges).
Results: Eleven children age 11.5 (4.7-18.4) years received LEF over 9.3 (0.5–36) months: nine with FR/GCD-NS (n=5 minimal change disease [MCD], n=2 FSGS, 2 without biopsy), one with collapsing glomerulopathy (CG), and one with recurrent FSGS (rFSGS) post-kidney transplantation (KT). LEF starting dose 20mg/d was titrated to trough levels 40-80mg/L. 6/7 INS-MCD and two GC-responsive FSGS patients were in remission with LEF monotherapy over 8 (0.5-30) months at a dose of 20 (15-50) mg/day (18; 11-51 mg/m2) and steady-state drug levels of 55 (29-68) mg/L. Four patients discontinued treatment due to lack of response or relapse associated with inadequate trough levels (CG and GCD-NS, respectively), and oral ulcers or palmar eczema (n=2). The rFSGS patient achieved stable, partial remission (Upc <1.5g/g, GFR 110mL/min/1.73m2) with LEF added to conventional post-KT immunosuppression. 3/11 patients experienced a transient rise of ALT or indirect bilirubin <2fold upper normal; all resolved spontaneously after <4weeks without dose change. Average costs for LEF in this population is <5% of costs for tacrolimus or MMF, comparing Canadian wholesale and retail generic drug prices.
Conclusions: LEF is an effective, mechanistically and economically appealing therapeutic agent in GC-sensitive INS and potentially, rFSGS. Its clinical efficacy and absence of important AEs need be independently corroborated, and indications refined in view of its teratogenicity, long half-life and high protein-binding.

P154
Variable Complement Comsumption And Coombs Test Positivity In Pneumococcal Hemolytic Uremic Syndrome

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Introduction: Hemolytic uremic syndrome is a rare, but serious complication of invasive pneumococcal infection (pnHUS). Its pathogenesis is poorly understood, and treatment remains controversial. The emerging role of complement in HUS warrants a new look at this "old" disease. The objectives of this presentation is to examine evidence of complement activation and the nature of antibodies against the Thomsen-Friedenreich (T) antigen in children with severe pnHUS.
Material and methods: Retrospective analysis of clinical and laboratory features of three sequential cases of pnHUS since 2008 associated with pneumonia/pleural empyema, two due to Streptococcus pneumoniae serotype 19A.
Results: Profound depletion of complement was observed in two of the three patients affecting mainly C3 and CH50/AH50. Consumption of C3 was transient, during the first week of HUS. One patient was Coombs test positive. ABO blood group compatible donor serum and monospecific anti-C3d antibody strongly agglutinated the patient's RBC at 0°C, but not at 37°C. All patients received hemodialysis, packed RBCs, and platelets. Patient 2 received frozen plasma for hepatic failure with depletion of liver-dependent coagulation factors. Patient 3 was treated with intravenous immunoglobulin intended to neutralize pneumococcal neuraminidase. Two of the patients recovered without sequelae or disease recurrence. The second patient died within 2½ days of admission due to complicating Pseudomonas aeruginosa sepsis and multiorgan failure.
Conclusions: We demonstrate that pnHUS can be associated with profound complement depletion, mainly via the alternative pathway. Complement activation is variable, possibly associated with a more severe course and limited to the early phase of the disease. Lack of RBC agglutination at 37°C argues against a role of anti-T antibodies in the pathogenesis of pnHUS. Detailed mechanistic studies are needed to elucidate the biological roles and cellular effects of bacterial neuraminidase and complement activation in pnHUS, and to explore rationale treatment approaches for this rare, but potentially fatal disease.

P155
Successful Rituximab Therapy In Life-threatening Lupus: Case Report

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Introduction: Systemic Lupus Erythematosus (SLE) is an autoinflammatory disease which is likely to result in death due to life-threatening complications unless the active disease treat aggressively.
Material and methods: Our aim is to share our experience with a patient with severe complications of SLE treated successfully with Rituximab unresponsive to other immunosupressive therapy.
Results: A 10 year-old boy with constitutional symptoms, skin lesions and Class II lupus nephritis (LN) was admitted to our hospital. He had been followed up in another hospital during 18 months and had received intravenous pulse methyl prednisolone followed by oral corticosteroid and ramipril. Besides active clinical symptoms, he had nephrotic range proteinuria, hypocomplementemia, positive anti-nuclear antibody (ANA) and anti-double stranded DNA antibody (anti-ds DNA) at the time of admission. Mycophenolate mofetil was added to his therapy. Six months later, second renal biopsy was performed because nephrotic range proteinuria continued. Class IV LN was detected in the second renal biopsy. Mycophenolate mofetil was stopped and intravenous Cyclophosphamide pulse therapy was initiated. He received eight doses of intravenous Cyclophosphamide pulse. In spite of this therapy, severe proteinuria proceeded and pleural effusion along with myocarditis emerged accompanied with hypocomplementemia, seropositivity of ANA and anti-ds DNA. Intravenous pulse methyl prednisolone and plasmapheresis was started. Since there was no improvement after 5 sessions of plasmapheresis, Rituximab therapy was initiated. He received 4 weekly doses of Rituximab. Rapid clinical improvement was achieved after 1th dose of Rituximab. Pleural effusion and myocarditis were improved in a few days, hypocomplementemia and positivity of auto-antibodies were improved at the first month and urine protein excretion became negative at the second month. A year after Rituximab treatment, he is clinically well, complement C3, C4 levels were normal, ANA and anti-ds DNA were negative and urine protein was negative. There was no side effect due to Rituximab therapy.
Conclusions: Rituximab may be a treatment of choice the patients who has life-threatening complications of SLE when they are unresponsive to other immunosuppressive therapy.

P156
Tacrolimus In The Treatment Of Myh9-related Disorders: Case Report

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Introduction: MYH9-related disorders (MYH9RD) belong to a group of autosomal dominantly inherited diseases caused by mutations of the MYH9 gene, which encodes the non-muscle myosin heavy chain IIA.

Macrothrombocytopenia, Döhle like bodies in leukocytes, deafness, cataract and glomerulopathy are common symptoms of the disease. Whilst there are some observations of favorable effect of ACE inhibitors (ACEi) and angiotensin receptor blockers (ARB) on proteinuria (PU), the effect of immunosuppressive therapy is unknown.
Material and methods: We report a girl with MYH9RD. She has had continually increasing proteinuria since 4 years of age reaching nephrotic level with edemas at the age of 15 years.
Results: The girl has been treated with ACEi (Ramipril 0.1 mg/kg/d) and ARB (Losartan 1.0 mg/kg/d) since the age of 10 years. Despite this therapy, PU has been progressively worsening. After manifestation of nephrotic range PU (5.4 g/24h), the therapy with TAC has been started (3 mg/d, 0.03 mg/kg/d, TAC through level 2.8-4.0 ug/l) and has led to partial remission (PU 1.9±1.1 g/24h). After 3 month of therapy with TAC, ACEi and ARB, the ACEi had to be reduced (0.05 mg/kg/d) due to hypotension. This has led to a relapse of PU (6g/24h), which prompted the re-increase of ACEi to the initial dosing (0.1 mg/kg/d); this combination therapy has then improved PU to 2.1±0.59 g/24h. The slopes of PU were significantly different when analyzed before TAC, on TAC+ACEi+ARB before PU relapse and on TAC+ACEi+ARB after PU relapse (+0.03,-0.74, -0.54 g/24h/month; respectively, p=0.019) suggesting a favorable effect of the combination therapy with TAC and higher dose of ACEi and ARB. At the same time periods, the slopes of eGFR were not significantly different (-0.001, 0.037, 0.026 ml/s/1.73m2/month; respectively, p= 0.75).
Conclusions: The combination therapy with ACEi, ARB and TAC may lead to a significant improvement of proteinuria while preserving renal function in children with MYH9RD.

P157
Is Acute Heart Failure As A Result Of A Postinfectious Glomerulonephritis Complication So Unusual?

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Introduction: Heart involvement in the acute phase of acute postinfectious glomerulonephritis (APG) is an unusual complication in children.
Material and methods: We describe a pediatric patient with acute heart failure as a complication of APG.
Results: A 4-year-old male was brought to hospital referring to a 24-hour evolution of edema and decreased urinary flow. The child had flu-like symptoms the previous week. Physical Examination: Palpebral edema, BP 133/97 mmHg (>p99+5), HR 90 bpm. Analytical findings: serum creatinine (sCr) 0.7 mg/dL, Sodium 131 mmol/L, albumin 2.9 g/dL, C3 20 mg/dL. Urinary systematic: microscopic hematuria. Proteinuria 21 mg/kg/d. FENa 0.003%. ASLO titers were normal. Pharyngeal swabs showed saprophytic flora. Water and sodium restriction was established and boluses of furosemide were administered. The third day after entry, sCr decreased to 0.46 mg/dL, urinary flow get improved and patient weight decreased. However, DBP remained high. The fifth day, the patient complained of dyspnea and chest pain. Chest radiography showed fluid overload and echocardiography showed evidence of ventricular dysfunction with EF 49%. NT-ProBNP was high (13701 pg/mL). Furosemide was increased and captopril and hydralazine were added, with a fast clinical recovery. 48 hours after this treatment started, EF was 61%. Treatment was gradually decreased to zero. The patient fully recovered ventricular function. C3 rose to a normal value and, currently, he has normal BP and glomerular filtration without proteinuria.
Conclusions: Acute heart failure is an uncommon but severe complication of APG. Fluid overload and hypertension used to be the causes of its development, although other etiologies have been described. Intensive treatment is essential to prevent its development. However, it is described in the literature as a subclinical ventricular dysfunction. We recommend to perform an echocardiography in patients with APG as a complementary study, because there are a subgroup of patients who should receive more aggressive treatment.

P158
The Effect Of 13-valent Pneumococcal Vaccine On Incidence Of Idiopathic Nephrotic Syndrome Relapses And Respiratory Tract Infections.

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Introduction: It is recommended that children with idiopathic nephrotic syndrome (INS) should be immunized with pneumococcal conjugate vaccine (anti-PV) because of increased risk for pneumococcal infections. Our aim was to determine the effect of 13-valent anti-PV on incidence of INS relapses and respiratory tract infections (RTI).
Material and methods: A retrospective analysis of 28 children with INS who were vaccinated with 13-valent anti-PV was performed. Nasopharyngeal cultures for S. pneumoniae were obtained before vaccination. The number of relapses and respiratory tract infections (RTI) was evaluated during 2 year period (1 year before and after vaccination). Patients were divided into two groups of frequently ill children (FIC) (with 4 or more RTI/year) and not frequently ill (NFIC) (less than 4 RTI/year).
Results: 17 boys and 11 girls were included in the study, mean age 8,64 ± 4,37 (3 to 17 years). 25 in remission (4 – on low dose steroids, 5 – on cyclosporine and 16 no treatment); 3 in partial remission (3 on cyclosporine, 1 on high-dose prednisone). Frequency of RTI and number of relapses after vaccination decreased (p = 0,001 and p = 0,032 respectively). Seventeen patients were considered as FIC and 11 as NFIC; with no significant difference between the groups and before or after vaccination was found (p = 0,529 and p = 0,685 respectively). The number of relapses decreased significantly in FIC group (p=0,038) but not significantly in NFIC group (p=0,332).
Conclusions: Vaccination decreased the number of RTI. It did not trigger relapses of INS and had an opposite effect – the incidence of relapses decreased. For more accurate evaluation of anti-PV vaccine for children with INS the immune response should be evaluated.

P159
Effects Of Leflunomide On The Expression Of Transforming Growth Factor-β1 In The Focal Segmental Glomerulosclerosis Rats

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Introduction: To explore the possible mechanisms of the protective effect of leflunomide on the kidneys by observing the effects of leflunomide on rat kidney tissue of focal segmental glomerulosclerosis (FSGS) expression levels of TGF-β1
Material and methods: 24 SD rats were randomly divided into three groups: normal control group (n = 8)、FSGS model group (n = 8) and leflunomide treatment group (n = 8). Unilateral nephrectomy one week after repeated injection of doxorubicin established FSGS model. Since 2 weeks after surgery, the treatment group had been given the leflunomide suspension 5mg/kg • d-1 orally, the control group, the model group had been given the same amount of solvent orally. In the eighth week of the experiment, the rats were sacrificed and the specimens are collected, recorded serum creatinine, blood urea nitrogen, total cholesterol, albumin and 24 h urinary protein excretion; renal tissue for pathological examination and calculation of glomerular sclerosis index (GSI); immunohistochemical detection of TGF-β1 expression in the kidney; The expression of TGF-β1 were examined by Western blot.

Results: Results Compared with the normal control group , model group and treatment group rats 24h urinary protein excretion, serum creatinine, blood urea nitrogen, cholesterol significantly increased serum albumin significantly reduced severe renal pathological changes and TGF-β1 protein expression was significantly increased, and the differences were statistically significant ($P < 0.05$); compared with the model group, in experiments 9 weekend, the treated rats 24h urinary protein excretion, relevant serum biochemical indicators of renal pathological changes varying degree of improvement in renal tissue TGF-β1 protein expression was decreased, the above differences were statistically significant ($P < 0.05$)
Conclusions: Conclusion Leflunomide may reduce the FSGS kidney tissue fibrosis by inhibiting the expression of TGF-β1, and thus protect the kidneys.

P160
A 17-year Clinical Review Of Children With Severe Henoch–schönlein Purpura Nephritis

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Introduction: Henoch–Schönlein purpura nephritis (HSPN) determines the long-term morbidity of this common childhood vasculitis. Clinical course and renal sequelae of HSPN is very individualized.
Material and methods: We conducted a retrospective review of HSPN patients with severe renal manifestations (SRM) from January 1997 to December 2013. SRM is defined as acute renal impairment/ nephritic or nephrotic syndrome or heavy proteinuria ≥20mg/m2/hr. We analysed the timing of SRM in relation to disease onset, clinical and biopsy features, and factors associated with renal impairment.
Results: Fifteen patients with SRM were identified, with a median age of 6yrs (range 3-13yrs), followed up for a median of 7.5 yrs (1-17 yrs). Two patients had renal impairment at last follow-up. SRM occurred at onset in 8/15 patients, and within the subsequent 4 months in 6/15 patients. One patient with isolated haematuria at onset developed nephritic/nephrotic syndrome 6 yrs afterwards. Relating the type of SRM and renal status at last follow up, 9/10 patients with heavy or nephrotic-range proteinuria (but not nephrotic syndrome) had resolution of proteinuria by 10 months, either spontaneously or with ACEI. The remaining patient with nephrotic-range proteinuria defaulted follow-up shortly after diagnosis, re-presented with nephrotic syndrome 1.5yrs later, and despite immunosupppressives, developed Stage III Chronic Kidney Disease. All 5 patients with nephrotic and/or nephritic syndrome were treated with immunosuppressives. The one with delayed nephritic/nephrotic syndrome developed Stage II Chronic Kidney Disease despite immunosuppressives, the rest have normal urinalysis at last follow up.
Conclusions: Conclusions Our finding is consistent with the observation that late deterioration can occur in those with mild renal involvement at onset, confirming the need for long-term follow-up in such patients. Most SRM resolve in the medium term. Renal impairment occurred in 2/15 patients, one with nephritic/nephrotic syndrome and one related to delayed treatment, suggesting that early aggressive treatment may be warranted when proteinuria persists.

P161
Cryoglobulinemic Glomerulonephritis Induced Acute Kidney Injury In A Three Month Old Infant

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Introduction: To our knowledge there are very few reports of cases presented during the first 3 months of age as acute kidney injury secondary to cryoglobulinemic glomerulonephritis. We present 3-months male infant referred to us with oliguria, vomiting, minimal lower limb edema & hypertension & was found to have AKI. He had two previous episodes of AKI that also needed acute peritoneal dialysis, at one and two month of age respectively & each time his serum creatinine returned normal. Our patient is the 4th in order to first cousin marriage, born by NVD with birth weight 3.5 Kg with unremarkable antenatal, natal and post-natal history. Family history was unremarkable.
Material and methods: CBC with blood film, renal, bone & liver panel, S. Mg, iron profile, S. Ferritin, sickling test, G-6-PD enzyme assay, urine examination and culture, S. C3, S. C4, ANA, anti-Ds-DNA, serum & protein electrophoresis & immunofixation, serum free Kappa to Lambda ratio, serum cryoglobulins, virology study, pelviabdominal U/S & renal biopsy were done for the patient. The mother was also evaluated for autoimmune disorders including C3, S. C4, ANA & anti-Ds-DNA, serum & protein. electrophoresis & immunofixation, serum free Kappa to Lambda ratio, serum cryoglobulins.
Results: Renal biopsy showed diffuse endocapillary proliferative glomerulonephritis with membranoproliferative features & numerous intracapillary hyaline thrombi, in addition to mild to moderate tubulointestitial inflammation composed of mainly lymphocytes & monocytes. The findings on light microscopy, immunofluorescence, & electron microscopy are most consistent with cryoglobulinemic glomerulonephritis. According to the result of renal biopsy we tried to find out the underlying cause of cryoglobulinemic glomerulonephritis. Unfortunately all etiology targeted workup of the patient came to be negative. All workup for the mother also came negative except for high free kappa light chain and normal kappa to lambda ratio with negative serum immunofixation. The patient was managed by acute peritoneal dialysis for 2 days, correction of electrolyte abnormalities, pulse methylprednisolone therapy for 3 days and the maintained on oral prednisolone, low molecular weight heparin. Renal function normalized after one week of therapy & the patient was discharged from hospital after 4 weeks from admission with normal renal function & kept on daily steroids & regular OPD visits. The patient continued to have normal renal function & normal GFR during follow up and shifting of steroid therapy to be every other day was initiated.
Conclusions: Cryoglobulinemic glomerulonephritis in this patient could be due to passively transferred cryoglobulins from the mother or due to underlying autoimmune disease, infection, or immunodeficiency disorder. Of note, patients with characteristic histological features of cryoglobulinemic glomerulonephritis not uncommonly have a negative serum cryoglobulin test. Although the exact cause of cryoglobulinemic glomerulonephritis in our patient is not known, yet, the late referral of the patient to us might explain the clearance & trapping of passively transferred maternal cryoglobulins in his kidneys so, serum testing came negative. Still secondary cryoglobulinemic glomerulonephritis especially due to viral infection could be a possibility. In spite of the his normal renal function & GFR during a month of follow up from hospital discharge, yet, long term follow up of the patient might shows recurrence, evidence of chronic kidney injury or disclose the underlying cause for his cryoglobulinemic glomerulonephritis.

P162
Regulatory T-cells In Tubulointerstitial Nephritis And Uveitis Syndrome

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Introduction: Tubulointerstitial nephritis (TIN) is an inflammatory disease with unknown pathogenesis. In order to evaluate a possible role of regulatory T cells (Treg) in pathophysiology of TIN without and with uveitis (TINU), we investigated the presence and quantity of FOXP3+ T helper lymphocytes in the diagnostic kidney biopsies.
Material and methods: A total of 15 patients (7 TIN and 8 TINU) were enrolled. The quantity of CD4+, FOXP3+ and double-positive T cells in formalin-fixed kidney biopsies was determined using double label immunohistochemistry with anti-human CD4 and FOXP3 antibodies. The areal density of positive cells was determined with high magnification (x 40 objective) and a graticule corresponding field size of 0.063 mm2. Cells were counted in 5 random fields and the mean value was calculated.
Results: The median lymphocyte density in all biopsy samples was 512 cells/mm2 (218-709). The median density of CD4+ and CD4+FOXP3+ positive cells was 256 cells/mm2 (19-1051) and 96 cells/mm2 (3-381), respectively. There were no statistically significant difference between TIN and TINU patients.
Conclusions: FOXP3+ T cells are commonly present in kidney biopsy samples from TIN(U) patients. Majority of these cells are FOXP3+CD4+ double-positive cells indicating Treg phenotype. These findings suggest that FOXP3 protein and/or Treg cells might have a role in the immunopathogenesis of TIN(U) syndrome.

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Posterior Reversible Encephalopathy Syndrome (pres) In Children With Nephrotic Syndrome

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Introduction: Posterior Reversible Encephalopathy Syndrome (PRES) is a rare, but potentially serious complication of the nephrotic syndrome in children. This clinical condition presents with sudden loss of consciousness, seizures, severe headaches and visual disturbances. Brain MRI revealed characteristic changes of brain angioedema mostly localized in parietal and occipital regions.
Material and methods: We present three female patients with nephrotic state who developed PRES.
Results: In last two years, we recognized and treated two girls with corticosteroid resistant idiophatic nephrotic syndrome and one girl with lupus nephritis, who had serious complication classified as PRES. At the time of the diagnosis of PRES, the average age of our patients was 7 years. In one girl with idiopathic nephrotic syndrome, this condition was expressed during the initial corticosteroid treatment and in other, three days after the initiation of cyclosporin therapy. In girl with lupus nephritis we initially suspected central nervous system (CNS) lupus, but brain MRI revealed PRES. Clinical manifestations were strong headaches, impairment of consciousness and development of convulsions. The occurrence of PRES in our patients has been associated with hypertension, the development of acute renal insufficiency and cyclosporin therapy. All our patients were treated with Mannitol, intensive antihypertensive and diuretic therapy, while the renal replacement therapy was conducted in one patient. The average time to complete clinical recovery was 2.5 days. None of our patients did not developed recurrence of PRES. Control MRI performed six months latter, showed resolution of MRI brain hyperintensities.
Conclusions: Early detection of PRES and adequate therapy, lead to complete recovery of this highly serious complication of the nephrotic syndrome in children.

P164
Outcome Of Childhood Lupus Nephritis In Egypt; Single Center Study

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Introduction: Renal involvement occurs in up to 70% of cases with juvenile onset systemic lupus erythematosus (SLE).The objective of this study was to analyse clinical and pathological characteristics as well as the outcome of childhood lupus nephritis in Egypt
Material and methods: We retrospectively reviewed the medical records of children and adolescents with lupus nephritis(LN), followed-up in Lupus Clinic, Pediatric Nephrology Unit, Mansoura University Childrens Hospital between January 1997 and December 2012.
Results: Of 194 patients diagnosed with Systemic Lupus Erythematosus (SLE), LN was reported in 136 (70%) patient, they were 27 males (20%) and 109 females (80%). The mean age at presentation was 12.5 ± 2.9 years, the mean duration of follow up was 4.1 years (range 2 months – 12 years). Hematuria was present in 79 patients (58%), proteinuria in 126 (92.6%), 38 of them were in nephrotic range, while renal impairment was documented in 20 patients (15%). Renal biopsy was done in 132 patients; diagnosis of class II, III, IV, V were 23%, 25%, 39%, and 2% respectively. 2nd renal biopsy was indicated in 58 patients (insufficient first biopsy 2, follow up in 45, lupus flare in 8, no response to therapy in 3 patients), while the third one was needed in only 8 patients. Steroids were the commonest initial medications; used in 128 patients (63 alone and 65 with others) and cyclophosphamide was used in 64 patients. At the last follow-up visit; 19% of patients lost follow-up, 45% had complete remission, 21% still had active disease, 1% had end-stage renal disease, and 11% died. Univariate analysis revealed a significant association of unfavourable outcome (death or progression to ESRD) with an elevated serum creatinine level, increased proteinuria, low platelet count, and increased activity index in initial renal biopsies.
Conclusions: childhood SLE in Egypt is associated with frequent and severe nephritis at presentation.

P165
Rituximab-induced Remission Of Refractory Membranous Lupus Nephritis

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Introduction: The treatment of membranous (type V) lupus nephritis remains unsatisfactory. An important advance is B cell targeted therapy with rituximab, which is a chimeric monoclonal antibody specific for human CD20 that depletes circulating B cells and has been shown to be beneficial in childhood and adulthood SLE case series.
Material and methods: We here report on a difficult case of SLE , now 21 year old girl.
Results: She presented initially at the age of 8 with neurological symptoms suggestive for multiple sclerosis. Subsequently she developed severe membranous glomerulonephritis. Despite extensive immunosuppressive treatment during the disease course (cyclophosphamide, prednisolone, azathioprine, cyclosporine and mycophenolate mofetil), the nephrotic syndrome persisted in our patient and was further complicated by infectious complications and progression to renal failure. At that time rituximab was given in combination with methylprednisolon pulses and infusions of cyclophosphamide with 7 years-standing beneficial results- remission of nephrotic syndrome and normalisation of creatinine values.

Conclusions: The outcome of our patient strengthens the view that depletion of B-cells with rituximab may be a new therapeutic option in patients with severe therapy-resistant membranous lupus nephritis.

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The Risc Factors For Atherosclerosis In Nephrotic Children

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Introduction: The aim of this study is to evaluate the traditional and new risk factors for the development of atherosclerosis in children with nephrotic syndrome.
Material and methods: 41 children with nephrotic syndrome (25 males, 16 females) and 33 healthy children (17 males, 16 females) were included in the study. Patients demographic and anthropometric characteristics, biochemical tests, serum homocysteine, serum asymmetric dimethylarginine (ADMA) and ultrasonographic measurement of carotid intima-media thickness (CIMT) were assessed. The study subjects were divided into three groups: group 1: steroid-free remission (n=18), group 2: steroid-induced remission, stil on steroid therapy (n=11), group 3: active proteinuria (n=12).
Results: Mean age of the patients was 9,2±4,2 years (3-17,8 years), mean age of the control group was 10,3±3,2 years (3-15,5 years). Two groups were similar for age, sex, weight, height, body mass index and systolic blood pressure ($p>0.05$). Systolic blood pressure SDS, diastolic blood pressure, and diastolic blood pressure SDS were significantly higher in nephrotic children than controls. There were no significant differences in ADMA levels between the patient and control groups (0,197±0,218 umol/L vs 0.178±0.106 umol/L). Serum homocysteine and CIMT measurements were not different between the two groups ($p>0.05$). There was a positive correlation between diastolic blood pressure, and diastolic blood pressure SDS and carotid IMT measurement in patients with nephrotic syndrome. In addition, in group 3, a positive correlation was shown between serum levels of ADMA and serum total cholesterol and LDL cholesterol.
Conclusions: Our findings showed that patients with nephrotic syndrome do not have an increased risk for cardiovascular disease. Nephrotic patients should nevertheless be followed up for these risk factors for a long time because the risk may develop in later years especially in those frequently relapsing or unresponsive to therapy.

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Proteinuria Induces Renal Phosphate Retention In Idiopathic Nephrotic Syndrome (ins) Independent Of Glomerular Filtration Rate

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Introduction: Proteinuria and hyperphosphatemia are major cardiovascular risk factors independent of renal function. iNS is characterized by proteinuria with normal renal function. Albumin that escapes the glomerule is internalized by the megalin/cubulin system in the proximal tubule and degraded in the lysosome. Phosphates are reabsorbed in the proximal tubule through the NaPi-IIa cotransporter. PTH and FGF23 inhibit phosphates reabsorption by stimulating NaPi-IIa endocytosis. An interaction between phosphates and proteinuria is possible either trough a competitive effect for endocytosis or trough FGF23 signaling. Objectives: To determine if proteinuria modifies phosphate excretion.
Material and methods: Prospective study. Six children with iNS. Measurement of renal function, Phosphates, Vitamine D, PTH, FGF23 and klotho during the proteinuric (P) and the remission (R) phase of the disease under the same immunosuppressive treatment and the same phosphate diet. Results analyzed by student paired t-test.
Results: six children 3 girls, 3 boys M: 9.5 years old (3-17) Creatinine normal in all children in P (M= 44μmol/l, I: 26-73) and R (M= 43.2μmol/l, I: 24-69). In P, phosphatemia (M= 1.45mmol/l, I: 1.14-1.73) is higher than in R (M=1.35mmol/l, I: 1.1-1.63) in all patients but one. The fractional excretion of phosphates (FePO4– (%)) is lower ($P<0.05$)* in all patients in P (M= 4.08 I: 2.9-6.6) than in R (M= 6.2 I: 3.7-11.2) despite an increased FGF23 ($P<0.05$)* in P (M= 56.69, I:25.069-75.12) than in R (M= 44.68, I: 25.24-63.403). PTH remains the same. Vitamin D is deficient in P (M= 29nmol/l, I: 8-51), and increases in R after substitution (M= 42.5nmol/l, I: 15-70).
Conclusions: We demonstrate an effect of proteinuria on phosphate excretion with an increased phosphatemia in the proteinuric phase independent of renal function and despite an increased FGF23. The cardiovascular impact of these results should be assessed in children and adults.

P168

The Efficiency Of Cyclosporin A Treatment In Children With Idiopathic Nephrotic Syndrome

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Introduction: There are contradictory results about the Cyclosporine A (CsA) treatment in idiopathic steroid nephrotic syndrome (INS). The aim of the study was to evaluate the efficiency of CsA treatment in INS children and it's side effects.
Material and methods: Thirty one child with different histologic entities - minimal changes (MC) and focal segmental glomerulosclerosis (FSGS) was treated with CsA. The definitions and criteria for remission and relapse were those used by the International Study of Kidney Disease in Children. The efficiency of CsA treatment was assessed as remission, partial remission and no responce. Frequency of side effects were evaluated.
Results: There were 18 patients in MC group and 13 in FSGS group with normal GFR. The mean age at the beginning of CsA therapy was 8 ± 4,1 years. There were 45 INS treatment episodes in 31 patient for a mean of 24,7 ± 24,7 months. Twelve children were taking ACE inhibitors additionally, all the others received CsA. Remission was obtained in 80 % (MC 88,5 %, FSGS 68,4 %); partial remission in 15,6 % (MC 11,5 %, FSGS 21,1 %) and there was no responce in 4,4 % (MC 0 %, FSGS 10,5 %) of all cases with no difference between the groups. In MC group remission for boys was achieved in 100 % vs. in 66,7 % of FSGS group, p = 0,05. All girls of the FSGS group responded to treatment with CsA. Mean remission time was 3,6 ± 1,97 months with no significant difference between the groups. Forty five percent of patients had arterial hypertension, 32 % hypertrichosis and 29 % gingival hyperthrophy.
Conclusions: CsA was more efficient for girls in both groups as well as for boys in MC group than in FSGS although all had high number of side effects.

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Infantile Galactosialidosis Presenting With Steroid Resistant Nephrotic Syndrome

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Introduction: Nephrotic syndrome is defined by severe proteinuria with low serum albumin and edema. In the past few years, the molecular genetic bases of several conditions that may cause a nephrotic syndrome have been identified. Galactosialidosis is a rare lysosomal storage disorder caused by deficiency of the protective protein/cathepsin A (PPCA). Patients with galactosialidosis present a combination of clinical and biochemical findings that are typical of those found both in GM1-gangliosidosis and sialidosis types I/II.
Material and methods: We report a patient with galactosialidosis complicating with steroid resistant nephrotic syndrome.
Results: A 9-month-old boy was admitted to hospital with abdominal distention and limb edema. He was born at 37 weeks of gestation as a second child of consanguineous parents and had had inguinal hernia operation at the age of 2 months. He didn't hold his head and eye-tracking had just begun. He had muscular hypotonia, hypertelorism, bilateral epicanthus, abdominal distention, ascites, hepatosplenomegaly and scrotal edema on physical examination. Hypoalbuminemia (1,9 gr/dl), massive proteinuria (urine protein/creatinine ratio of 3,5 mg/mg) and hypertriglyceridemia (521 mg/dL) was detected; serum creatinine was within normal limits. There was no hematuria. Increased urinary sialoligosaccharide excretion was detected together with decreased β-galactosialidase and neuraminidase activities in leukocytes and cultured skin fibroblasts, compatible with galactosialidosis. Renal biopsy was performed, but, unfortunately no glomeruli was seen. Furosemide and albumin infusions in addition to prednisone therapy (2 mg/kg/d) were given. After four-week treatment with prednisone, as massive proteinuria was continued, prednisone was stopped and ACE inhibitors were started. Cyclosporine could not be started as he had severe infection. He died because of sepsis and heart failure four months after application
Conclusions: To our knowledge, this is the first case of galactosialidosis co-existing with nephrotic syndrome. In the literature, only isolated cases of galactosialidosis with IgA nepropathy, renal insufficiency and renal transplantation were reported.

P170
Analysis Of Single Nucleotide Polymorphisms In Minimal Change Nephrotic Syndrome

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Introduction: The genetics behind minimal change nephrotic syndrome (MCNS) and steroid responsiveness continue to be insufficiently understood. Polymorphisms in several genes have been implicated, but the results of various studies remain inconclusive and inconsistent. In this study we wanted to look further into the association of genotypes and alleles to disease status and clinical aspects of the disease.
Material and methods: We analysed eleven polymorphisms from eight genes (angiopoietin-like-4 (ANGPTL4), glypican-5 (GPC5), IL13, macrophage migration inhibitory factor (MIF), neural nitric oxide synthase (nNOS), multidrug resistance (MDR1), glucocorticoid induced transcript 1 (GLCCI1) and glucocorticoid receptor (NR3C1)) from a Finnish cohort of MCNS patients. The direct sequencing analysis was carried out in 100 MCNS patients and 100 control individuals.
Results: 1) ANGPTL4 SNP c.797C>T C allele was more frequent in patients who received other immunosuppressive drugs (IS) in addition to steroids. 2) GPC5 c.325+102637G>A GG genotype and G allele were less frequent in patients with disease onset less than three years of age. 3) IL13 SNP c.4793C>A CA genotype was increased in patients compared to the control cohort. 4) The genotype and allele distribution of all three MDR1 SNPs (c.1236C>T, c.2677G>T/A, c.3435C>T) showed significant difference between patients who received only steroids and those who also received IS. Also, c.3435C>T CC genotype was less frequent in patients with a disease onset less than three years of age. 5) GLCCI1 rs37073 A allele was more frequent in patients with multiple relapses and in those who received IS. 6) NR3C1 c.1184+646C>G heterozygous CG genotype was overrepresented in patients with frequent relapses.
Conclusions: While the genotype distribution of SNPs showed little difference between patients and controls, especially the SNPs in genes involved in glucocorticoid processing showed association to various clinical aspects of the disease.

P171
The Use Of A Low-dose Prednisolone Regimen To Treat A Relapse Of Steroid Sensitive Nephrotic Syndrome (ssns) In Children

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Introduction: 70-80% of children with nephrotic syndrome develop relapses and about half become frequent relapsers. Relapses are typically treated with a course of high dose prednisolone of 2mg/kg or 60mg/m2 until remission which is then weaned in a variable manner. Treatment with steroids is associated with major adverse effects including diabetes, hypertension and behavioural problems. Due to these concerns regarding long-term steroid toxicity, in 2012 we started using low dose prednisolone to treat a relapse of SSNS. This is a retrospective review assessing the success of such a regimen and its effect on subsequent relapse rate.
Material and methods: We included any child with SSNS that presented with a relapse (3+ proteinuria for atleast 3 days) during January 2012 to July 2013 and was treated with a low-dose prednisolone regimen of < / = 1mg/kg for a maximum of 7 days. Thereafter, if the patient failed to go into remission or symptoms progressed, the prednisolone dose was increased to the standard dose of 2mg/kg.
Results: 50 patients were included with a total of 87 episodes. Patients were between 3 and 17 years of age (mean age 10.08 years). 61 of 87 patients (70.1%) responded within a week. 22 of 87 (25%) patients were on no medication at the time of relapse. 44 (50.5%) were on alternate day prednisolone, with or without another agent (21 of 79 and 23 of 79 respectively). The remaining 21 were on 1 other agent. For those on alternate day prednisolone, the average dose was 0.32 mg/kg. We compared the mean number of relapses in the 6 months preceding the current relapse and the 6 months following (1.01 v 0.86). Using a paired t-test comparison of the means gave a p value of 0.217.
Conclusions: A low-dose prednisolone regimen was successful in achieving remission in 70% of children with SSNS without compromising the relapse rate.

P172
Microalbuminuria In Children And Adolescents With Type 1 Diabetes Mellitus

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Introduction: Microalbuminuria (MA) is an early predictor for potential progressive diabetic nephropathy. Screening for MA should be performed yearly, starting 5 years after diagnosis of type 1 diabetes mellitus (DMT1) or earlier in prepubertal children. Our aim is to determine occurrence of MA in children and adolescents with DMT1 and its association with risks for diabetic nephropathy (glycemic control, duration of illness, gender, hypertension, dyslipidemia…).
Material and methods: We studied 48 patients with DMT1, age 7 to 18 years and divided into three groups according to duration of illness (I group up to 5 years, II 5-10 years, III 10-15 years of illness). In all patients we evaluated basic metabolic panel, HbA1C, 24h proteinuria. We measured MA in single urine sample, urinary albumin excretion rate (mg/l) and urine albumin/creatinine ratio (mg/mmol) over a 24h period. Estimation of glomerular filtration rate (GFR) was based on cystatin C value.

Results: MA was detected in 11 children with DMT1 (22,91%). MA in the III group was the highest (63,63%). In the II group MA was detected in 8,33% of children and in two children (15,38%) with less than 5 years duration of illness. In these two children GFR showed hyperfiltration. In all patients with MA we detected poor glycemic control. We found diabetic retinopathy in two children. Three children had MA and in one child low GFR and hypertension were detected. There were no differences in the presence of MA by gender.
Conclusions: MA is an early predictor of diabetic kidney disease. The measurement of MA is a simple, quick, and non-invasive technique. Detection of MA in children with DMT1 and early treatment can delay progression of diabetic nephropathy. Moreover, assessment of MA helps evaluate treatment effects.

P173
Spontaneous Bacterial Peritonitis: A Severe Complication Of Nephrotic Syndrome

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Introduction: Spontaneous bacterial peritonitis (SBP) is defined as an infection of ascitic liquid without evidence of intra-abdominal source of contamination. Appears as a uncommon complication of nephrotic syndrome in children and may arise during a relapse or as first presentation of the disease.
Material and methods: Case report: This is the case of a three year old boy, followed up in Pediatrics and Pediatric Nephrology consultation due to steroid-dependent nephrotic idiopathic syndrome with multiple relapses, with starting presentation in May, 2012. In January 2013, under steroids reducing process, he went to the Emergency Department on his fourth relapse with proteinuria lasting for one week and generalized edemas without other associated symptoms or objective examination findings. Due to absence of response to rising steroid doses, hospitalization was decided and albumin perfusion was started. In D3 cough and rhinorrhea appeared, with posterior edema aggravation associated with fever and severe diffuse abdominal pain with defense, so antibiotics were started for suspected SBP. Due to progressive aggravation of clinical status he was transferred to a reference Pediatric Surgery and Pediatric Nephrology center and an exploring laparotomy was performed in D9, which revealed peritonitis with purulent content. He maintained 10 days of broad spectrum antibiotics, albumin perfusions until D16 and prednisolone administration. At discharge time (D19), he presented a good status, without edemas or proteinuria.
Results: –-
Conclusions: SBP is a severe complication of nephrotic syndrome associated with high morbidity and mortality rates, with its incidence in children ranging from 2 to 17%. Its pathophysiology in nephrotic syndrome patients is complex and should be suspected due to infection risk in children under immunosuppression. With this case report the authors want to highlight the severity of a relatively uncommon complication which demands an adequate vigilance of the underlying disease, leading to an early diagnosis which is crucial in preventing a fatal ending.

P174
Focal Segmental Glomerulosclerosis In Children – A 19-year Center Experience

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Introduction: Primary focal segmental glomerulosclerosis (FSGS) is a severe glomerular disease characterized by destabilization of podocyte foot processes. FSGS is a frequent cause of steroid-resistant, nephrotic-range proteinuria and is the primary cause of childhood nephrotic syndrome (NS) leading to end-stage kidney disease. Objectives: To study the epidemiology, clinical presentation, histology, treatment and evolution in children with primary FSGS at our institution in northern Portugal.
Material and methods: We retrospectively reviewed the medical records of pediatric patients with biopsy-proven primary FSGS, over a 19-year period (from 1995 to 2013).
Results: FSGS represented 8% of renal biopsies performed during this period. We identified a total of 18 patients, of which 13 were male (72.2%). Seven patients (38.9%) were admitted between 1995 and 2004, and 11 (61.1%) after 2004. The mean age at presentation was 10.1 ± 5.0 years. The mean period from presentation to renal biopsy was 11.3 ± 13.6 months and the mean duration of follow-up was 6.2 ± 4.7 years. Regarding clinical presentation 10 patients (55.6%) presented with NS (9 steroid resistant), 6 patients (33.3%) with nephrotic range proteinuria and 2 (11.1%) with non-nephrotic proteinuria. Eleven patients (61.1%) presented with hypertension, 8 patients (44.4%) with hematuria and 3 (16.7%) with renal insufficiency. Histology immunofluorescence studies revealed deposition of C3 and IgM in eight cases (44.4%). The clinical status at the last medical visit showed that 6 patients (33.3%) had achieved partial remission and 2 (11.1%) complete remission. Five patients (27.8%) maintained nephrotic range proteinuria despite immunosupression agents other than steroid and 5 patients (27.8%) evolved to chronic renal insufficiency (4 were submitted to renal transplant and 1 suffered of disease recurrence).
Conclusions: The principal clinical manifestation of primary FSGS in our study was steroid resistant NS. FSGS can progress to chronic renal insufficiency in a significant number of cases, similar to data reported in other studies.

P175
Unexpected Tacrolimus Pharmacokinetics In Children With Nephrotic Syndrome

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Introduction: Tacrolimus (Tac) is a therapeutic option for children with steroid dependent or resistant idiopathic nephrotic syndrome (INS). Although Tac pharmacokinetics has been extensively investigated in pediatric solid organ transplant recipients, no data on Tac exposure has been reported in pediatric INS patients. This retrospective study evaluated steady-state Tac PK parameters in INS children treated with Tac twice daily (Tac-BID).
Material and methods: Eighteen intensive PK profiles were performed as a standard of care among 12 INS children (median age 4.1 years (1.6 to 15.8)). Tac whole blood concentrations were determined using a validated immunoassay. Although a therapeutic drug level has yet to be defined in INS children, Tac doses were adjusted to achieve trough values (Cmin) between 5 and 7 ng/mL. Tac PK parameters in INS children were compared with those observed in 19 pediatric renal transplant recipients (median age 15.3 years (7 to 18.9)). For all patients, AUC0-12h (ng.h/mL), Cmin (ng/mL) and Cmax (ng/mL) were normalized for Tac daily dose (D) (mg/kg/day).
Results: Results are expressed as the median and range. A decrease in Tac exposure (AUC0-12h/D) was observed in INS patients (554.5 (139.9-1363) compared to the transplanted recipients (878.7 (517.6-2738) ($p = 0.01$). It was associated with a severe decrease in Tac

Cmax/D (70.27 (16.2-203.3) versus 151.6 (63.2-449.6), p=0.0003), Tac (Cmax-Cmin)/D (27.4 (6.3-88.8) versus 97.1 (26.9-332), p=0.0001), and Tac Cmin/D (38.2 (6.7-108.2) versus 52.7 (29.7-117.6), p=0.046) with an increase in tmax (180 (60-480) versus 60 (60-180), p=0.002). Prednisone dose was significantly higher and albumin level was significantly decreased in INS children.

Conclusions: These findings are consistent with a significant delay and decrease in Tac absorption in INS patients compared to transplanted recipients resulting in Tac underexposure. Further studies are necessary to better understand the causes of these unexpected findings. In light of these results, Tac PK monitoring with AUC0-12h should be consider to optimize Tac therapy in this population.

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Protocol Of An Open, Randomized, Controlled, Multicenter Trial On The Initial Treatment Of Idiopathic Steroid-sensitive Nephrotic Syndrome In Children With Mycophenolate Mofetil Vs. Prednisone: The Intent Study

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Introduction: Glucocorticoids have been the cornerstone of initial treatment of idiopathic nephrotic syndrome (NS) in children for decades. This treatment, however, is associated with glucocorticoid-associated toxicity such as obesity, disturbances of the carbohydrate and lipid metabolism, striae, hypertrichosis, cataract, glaucoma, arterial hypertension, psychological disturbances and growth failure. Mycophenolate mofetil (MMF) has been shown to be effective in sustaining remission in patients with frequently relapsing or steroid-dependent NS. MMF is characterized by a more favorable side effect profile. We hypothesize that a regimen including MMF in the initial treatment of steroid-sensitive NS (SSNS) in children is not inferior regarding maintenance of initial remission compared to a standard prednisone regimen.

Material and methods: Children aged ≥1 and ≤10 years with a first episode of NS in remission induced by prednisone 60 mg/m2 body surface area (BSA) per day are randomized into control and experimental group. Control group: Therapy according to the GPN recommendation (60 mg prednisone/m2 BSA per day for 6 weeks followed by alternate day prednisone 40 mg/m2 BSA for another 6 weeks). Experimental group: MMF 1200 mg/m2 BSA per day is added for the rest of the initial 12 week treatment period; prednisone is reduced to 40 mg/m2 BSA administered every other day for two weeks and then stopped. Primary efficacy endpoint is occurrence of relapse requiring prednisone therapy within 24 months after end of initial treatment. Key secondary endpoints are course of the disease, prednisone-associated and MMF-associated toxicity.

Results: The INTENT Study is an investigator-initiated trial funded by the German Federal Ministry of Education and Research. The number needed to be screened for eligibility is 400 patients; the planned recruitment period is 36 months.

Conclusions: The INTENT Study has the potential to establish a novel treatment for the first episode of nephrotic syndrome by a MMF-based regimen with the aim of reducing glucocorticoid-associated toxicity.

P177

Can Urinary Ngal Level Be A Predictive Marker Of Diabetic Nephropathy

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Introduction: Indicators other than microalbuminuria are required in order to establish early renal damage in children with type 1 diabetes mellitus. In this study we aimed to investigate whether neutrophil gelatinase-associated lipocalin (NGAL) is a biomarker of early diabetic nephropathy.

Material and methods: One hundred ninety-one (98 boys, 93 girls) adolescents with type 1 diabetes mellitus and age and sex matched 50 healthy controls were included in the study. The mean age was 12.91 ± 3.71 years; duration of diabetes 3.5 years (2.6 - 5.7) for patients. Patients were divided into three groups according to: 1-microalbuminuria status (positive or negative), 2- glycemic control (good or poor), 3- duration of diabetes (0 - 36 months/ 37 - 96 months/ > 97 months). Urinary NGAL levels and some biochemical parameters (HbA1C, fasting lipid profile, microalbuminuria) known as risk factors in diabetic nephropathy were measured in study population.

Results: The relationship between urinary NGAL levels and clinical-laboratory characteristics of patients were evaluated. Altough the urinary NGAL levels were significantly high in the diabetic patients compared to the control group, there was no difference in urinary NGAL levels between diabetic subgroups.

Conclusions: Our findings suggest that the urinary NGAL levels may be used as an early biomarker before microalbuminuria occurred in diabetic nephropathy. New and comprehensive studies are required.

P178

Genetic Mutations And Response To Treatment In The Patients With Steroid Resistant Nephrotic Syndrome

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Introduction: Genetic mutations can be observed in a third of the cases with steroid resistant nephrotic syndrome (SRNS). Hereditary SRNS are usually insensitive to immunosuppressive interventions. Hence it is suggested that children with hereditary SRNS must be spared from immunosuppressive treatment.

Material and methods: This study is comprised of 31 patients diagnosed as SRNS. Nephrotic syndrome (NS) has been identified as SRNS, if there was no remission with 8 weeks of 60 mg/m2/day oral steroid, or 4 weeks of 60 mg/m2/day oral steroid and then iv pulse MPZ 3 days 30 mg/kg/day.

Results: Of 31 patients with SRNS, 17 patients were male, 14 girls. The first NS attack was often observed between 13 months and 5 years. There were consanguinity in 13 patients and familiar kidney disease story in 5 patients. Follow-up time was 63,06±60,12 months (3-204 mos). Renal biopsy could be performed in 29 patients; 18 patients had FSGS, 8 mesangial proliferation, 2 MLH and 1 DMS. Genetic analysis was done in all patients and 9 patients (29%) had mutations: 7 NPHS2 (2 homozygote), 1 WT1 and 1 LAMP2. Four patients with congenital NS (CNS) (2 mutation negative) were not given immunosupressive treatment. Of 27 patients who were administered immunosuppressive, 14 had complete remission (CR) (2 heterozygote NPHS2), 4 had partial remission (PR) (2 heterozygote NPHS2) and 9 patients were nonresponsive (1 heterozygote and 2 homozygote NPHS2). Eight patients taken cyclophosphamide were

nonresponsive. Of 24 patients taken cyclosporin, 10 had CR, 4 had PR, 10 were nonresponsive. Of 9 patients taken MMF, 2 had CR, 1 had PR, 6 were nonresponsive. While 4 of 7 patients with mutation responded to immunosupressive, 12 of 20 patients without mutation responded ($p>0.05$). In the last visit, while 16 patients had CR or PR, 15 patients were nonresponsive (6 NS, 9 CKD). While 33.3% of the patients with mutation developed CKD, 27.3% of the patients without mutation developed CKD ($p>0.05$).

Conclusions: In the patients with SRNS, the most important factor affecting prognosis is patients response to immunosuppressive treatment. The studies, similarly to our study, indicate that while SRNS patients with heterozygote mutations can benefit from immunosuppressives, the patients with CNS and homozygote mutations can't benefit. It is also shown that calcineurin inhibitors are more effective in the treatment. However, more comprehensive randomized and controlled studies will be needed to evaluate the effectiveness of immunosuppressives in SRNS patients.

P179

Possible Influence Of Tnf-alpha Gene Polymorphism On The Course Of Idiopathic Nephrotic Syndrome

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Introduction: Some studies have documented an increase of the serum and urinary TNFalfa levels in nephrotic syndrome (NS). Aim of study: the TNFalfa gene polymorphism may influence the response and the course of the NS.

Material and methods: We studied 44 idiopathic steroid-sensible NS children, excluding focal glomerulosclerosis and membrane-proliferative glomerulonephritis . After >2 years of follow-up: 20 are "non- frequent recurrences" and 24 steroid-dependent (SD) NS. Of these 24, 16 patients had to take other immunosuppressive drugs over the steroid. The remission onset was considered "early " if the proteinuria was absent within 10 days from the start of steroid therapy (29 children; 66%), "late " if it occurred after 10 days (15 children; 34%). The patients were genotyped for the presence of the polymorphism – 308G>A in the promoter TNFalfa gene in RT-PCR, compared with 55 healthy subjects the same age and sex.

Results: The NS children with response "late" onset are at increased risk of developing SDNS than "early" (OR 26.6; 11.539; $p<0.000$) and to take other immunosuppressive drugs (14.181; $p<0.000$). The frequency of polymorphisms of TNFalfa gene in NS patients was 33 GG (75%), 9 GA (20%) and 2 (5%) AA, not significantly different from the controls. The different genotypes (GA and AA) do not affect the response "early" or "late" onset of the disease (OR 1.143, chi-square 0.034, p ns) but seem to lead to an increased risk of SD compared to GG patients, although not significant (OR 1.65; 0.122; p ns).

Conclusions: In conclusion, NS children with "early" onset have a better course of the disease compared to those "late". The TNFalfa gene polymorphism does not affect the steroid response at the onset but could influence the NS course. This hypothesis could also induce the attempt to use anti-TNFalfa drugs in NS.

P180

Risk Factors Of Frequent Relapses Of Steroid-sensitive Nephrotic Syndrome In Children.

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Introduction: Children with nephrotic syndrome (NS) who respond to corticosteroids have relapses in 80–90% cases and become frequently relapsing (FR) and/or steroid-dependent (SD). Early identification of children at high risk of relapses NS may be useful for the decision of the therapeutic strategy. Aims: to identify risk factors of frequent relapses in children with SSNS.

Material and methods: We performed retrospective analysis of 44 children with SSNS (33M/11F), mean age 8.8±3.8 years (1.7; 17.3) and disease duration median 3.2 years (range 0.5-15.5). Twenty-three children were with FRNS (18M/5F) and 21 children - with IFRNS (15M/6F). The median age at onset of NS was 3.1 years (range 1.5-12.2). We analyzed relationship between frequency of relapses and sex, age and prednisolone therapy duration in the initial episode of SSNS.

Results: Relationship between gender and frequency relapse of NS was not found (OR 1.4; 95 % CI 0.4-5.7, $p>0.05$). The risk of frequency relapsing of NS was significantly higher in children with age of onset younger than 6 years (OR 11.5, 95% CI 2.1-62.3, $p=0.002$). We did not find statistical significantly differences in frequency of relapses in children treated with daily oral prednisolone for 4–6 weeks (2 mg/kg/24h) and less than for 4 weeks in the first episode of NS (OR 1.1; 95% CI 0.3-3.5, $p>0.05$). The total duration of prednisolone treatment at the onset of NS less than 12 weeks has increased the risk of frequent relapses in children (OR 2.6; 95 % CI 0.8-8.9, $p> 0.05$).

Conclusions: Age of children younger than six years at the first episode of NS is a risk factor of frequent relapses. This may be the indication of using steroid-sparing agents at an earlier date to prevent side effects of prednisolone therapy. The total duration of oral daily prednisolone in children less than 12 weeks in onset of NS increases the risk of frequents relapses which are confirmed with literary data.

P181

Relapse Of Steroid Dependent/steroid Resistant Nephrotic Syndrome – Can We Avoid Steroids In Patients On Maintenance Calcineurin Inhibitor Therapy?

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Introduction: Patients with steroid resistant (SRNS) and steroid-dependent (SDNS) nephrotic syndrome (NS) are usually exposed to long-term high dose corticosteroid (CS) treatment. An important goal in the management of these patients is to minimize CS exposure. The goal of the study was to review our experience with increasing the dose of calcineurin inhibitors (CNI) without concomitant CS therapy.

Material and methods: All of our patients with SRNS and SDNS, with biopsy proven minimal change disease, who were on long-term CNI treatment and had developed relapse of their NS, were retrospectively analyzed. The target trough level (TL) for the treatment of NS relapse was 190- 200 ug/l for cyclosporine A (CyA) and 8-10 ug/l for tacrolimus (TAC) until remission. The dose was then decreased to the pre-relapse TL within 1 month. The time period until remission, along with changes in GFR were analyzed.

Results: Four patients (2 SRNS and 2 SDNS) were treated for 5 episodes of relapse. Two patients were on maintenance CyA (TL 60 – 100 ug/l) and two were on TAC (TL 3 – 5 ug/l) prior to the relapse. The dose of CyA was increased by 30% in order to achieve TL of 190 ug/l in CyA patients whereas the TAC dose had to be increased by 60% to achieve TL of 7-8 ug/l in TAC patients. All patients achieved complete remission with normalization of S-albumin and U-protein after an average of 15 days, (range 12- 21 days) with an increased CNI dose. The average cystatin C GFR at the beginning of relapse treatment was 135 ml/min/1.73m2 (range 103 – 169) and 144 ml/min/1.73m2 (97-195) one month after achieving remission. No other adverse effects were noted.

Conclusions: A temporary (short lasting, ± 1 month) increase of the CNI dose (target trough level of 190-200 ug/l for CyA and 7-8 ug/l for TAC)

without concomitant CS treatment, was successful in inducing remission in stable patients on maintenance CNI therapy, who developed NS relapse. This approach can reduce the cumulative steroid exposure in patients with SRNS/SDNS.

P182

Inappropriate Arginine Vasopressin Secretion In Childhood Idiopathic Nephrotic Syndrome

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Introduction: Sodium retention is a hallmark of nephrotic syndrome (NS) and yet low plasma sodium is frequently reported in children with NS. The underlying mechanism behind this observation is not fully understood but arginine vasopressin (AVP) has been proposed to play a role. The aim of the present study was to investigate the correlation between concurrent plasma levels of AVP and sodium in children with NS.
Material and methods: A total of 20 (7 girls) children with NS were included. Plasma and urine samples were collected during debut or relapse of NS and at remission. Plasma AVP concentration was determined by RIA. Plasma and urinary osmolality was determined by freezing-point depression method. Sodium concentration was measured using direct potentiometry to avoid the risk of pseudohyponatremia induced by hyperlipidemia.
Results: Mean age was 9.1±3.2 yrs of the patients. The mean plasma concentration of AVP was 1.16±1.23 pg/ml during active NS compared to 0.90±0.49 pg/ml at remission, p=0.26. Mean plasma sodium concentration was significantly lower during NS compared to remission 135±3.8 mmol/L vs. 138±2.7 mmol/L, p=0.008. A linear regression analysis revealed a significant negative relationship between p-AVP and plasma sodium (r2=-0.45, p=0.001). Plasma osmolality was similar comparing NS to remission (293±12 mOsm/kg vs. 290±4 mOsm/kg, p=022). Urinary osmolality did not differ comparing NS to remission 671±58 mOsm/kg vs. 703±44 mOsm/kg, p=0.62.
Conclusions: During active NS, patients exhibit an abnormal relationship between p-AVP and plasma sodium with inappropriately high levels of p-AVP during hyponatremia. Further studies are needed to investigate if AVP contributes to a positive free water balance in NS and whether this is caused by hemodynamic mechanisms.

P183

Changes In Body Weight In Children With Idiopathic Nephrotic Syndrome

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Introduction: Aim of the study was to assess changes in body weight and factors influencing it in children with idiopathic nephrotic syndrome (INS).
Material and methods: We evaluated 31 children (22♂, 9♀) aged 3.6±1.8 years with initial bout of INS, treated with prednisone (2 mg/kg/24h), tapered during 6 months, and 31 healthy children (18♂, 13♀) aged 4.0±1.8 years (control group - C). 25 children had INS relapses. Following parameters were evaluated: changes in body weight and BMI Z-score after 6 and 12 months, gender, age, birth weight, Hbd, mean prednisone dose, initial BMI Z-score, parents age and BMI, time spent at TV/computer and on physical activity. All children with INS obtained professional dietetic consultation.
Results: In children with INS mean initial BMI Z-score was 0.4±1.1, after 6 months 0.8±1.2 (p=0.13), after 12 months 1.0±1.3 (p=0.008). There were no significant differences between children with INS and C in 6-month body weight gain expressed as percentiles: (11.47±10.99 vs. 9.50±7.93, p=0.42), and in BMI Z-score: (0.36±1.28 vs. 0.18±0.66, p=0.50). In children with INS Δ0-12BMI Z-score was higher in girls vs. boys (1.33±1.38 vs. 0.31±0.98, p=0.03), Δ0-6 and Δ0-12BMI Z-score correlated with initial BMI Z-score (r=-0.52, p=0.002; r=-0.38, p=0.035), and mean prednisone dose (r=0.40, p=0.025; r=0.49, p=0.005). Additionally, Δ0-6BMI Z-score correlated with Apgar score (r=-0.47, p=0.009) and mother's age (r=0.38, p=0.04); Δ0-12BMI Z-score with time spent at TV/computer (r=0.34, p=0.055) and father's BMI (r=0.38, p=0.034). In C only negative correlation between Δ0-6 BMI Z-score and Hbd was found (r=-0.39, p=0.03).
Conclusions: 1. Professional medical and dietetic care may prevent extensive weight gain in children with INS during initial 6-month glucocorticoid therapy. 2. Risk factors of weight gain in children with INS in first year of the disease are: female gender, low initial BMI, high glucocorticoid dose, older age of mother, low Apgar score, sedentary lifestyle, and fathers obesity.

P184

Congenital Nephrotic Syndrome Of The Finnish Type – A New Mutation Enters The Scene

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Introduction: Nephrin was first identified in 1998. The Congenital Nephrotic Syndrome of the Finnish type is an autosomal recessive transmitted disease caused by a mutation in the NPHS1 gene that codifies nephrin. The clinical manifestations appear in the first three months of life and progress to end stage renal failure.
Material and methods: We present a clinical case of Congenital Nephrotic Syndrome of the Finnish type with the expected outcome. Information was acquired by consulting his medical file.
Results: A seven weeks-old boy with normal grow and psycho-motor development was admitted to the emergency room with vomiting, diarrhea and mild bilateral pretibial edema. Laboratory data revealed anemia, thrombocytosis, normal serum creatinine and urea, normal Na+, K+, pH and HCO3-, hypoalbuminemia and proteinuria (263 mg/m2/day). The renal biopsy suggested a Congenital Nephrotic Syndrome of the Finnish type or mesangial sclerosis. The patient was treated with indomethacin and captopril for proteinuria without response. The genetic study confirmed the presence of the IVS9+4 (A>G) variant in homozygosity in the NPHS1 gene. His parents, first-degree cousins, had the same mutation in heterozygosity. The renal disease progressed to end stage renal failure at the age of four years-old. He was supported by continuous ambulatory peritoneal dialysis until the age of six, when he was successfully transplanted with a cadaveric kidney graft.
Conclusions: The role of nephrin in the glomerular filtration and stability of the podocytes is unequivocally established. The Congenital Nephrotic Syndrome of the Finnish type, initially found in Finnish families, is present in other areas of the world. The identification of a new mutation in the NPHS1 gene reflects the great variability in the mutations associated with the disease.

P185

A Retrospective Study Of Treatment With Levamisole In Children With Nephrotic Syndrome

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Introduction: Levamisole is a low-toxicity drug used on treatment of steroid-dependent nephrotic syndrome with multiple relapses.

Material and methods: Retrospective study performed by consultation of clinical records of all our patients with nephrotic syndrome treated with levamisole for at least 6 months, from May/1990 until January/2013. Number of relapses and cumulative dose of steroids were evaluated. Statistical analysis was performed with SPSS17® (T student´s test), with a significance level of $p<0.05$.
Results: 22 of our patients were treated with levamisole, but 5 were excluded (clinical records not available/incomplete, incomplete adherence to treatment). Of the patients included, 58.8% were male. The median age of inaugural episode of nephrotic syndrome was 51 months. Median interval between diagnosis and initiation of levamisole was 25 months. All patients were medicated with prednisole alone before starting levamisole (median: 11months). Cyclosphosphamide (35.5%) and mycophenolate mofetil (5,9%) were other therapeutics tried before levamisole. The median duration of treatment with levamisole was 13 months (6-39). In the year before levamisole, there was an average of 0.29 relapses/patient/month; with one year of treatment there was a decline to 0.26($p=0.04$) and after two years of treatment to 0.01relapses/patient/month ($p=0.01$). In the year after suspension of levamisol there was 0.06 relapses/patient/month. The interval between onset of levamisole and recurrence was 1.2 months and after suspension of levamisole was 7.3 months. In the year before levamisole cumulative prednisolone dose was 556.4mg/m2/month, one year after starting treatment was 52.4mg/m2/month ($p=0,005$) and after two years of treatment was 4,5 mg/m2/month ($p=0,045$). Complications of treatment occurred in two children: asymptomatic neutropenia and leukopenia
Conclusions: Levamisole showed a steroid sparing effect and on the reduction of the number of relapses. This effect was more apparent after a longer treatment. After stopping levamisol there was a worsening trend, but with a better evolution than in the year before the start of treatment.

P186
Influence Of Birth Weight On The Course And Outcome Of Nephrotic Syndrome In Children

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Introduction: Low birth weight (LBW) is associated with reduced nephron endowment. The nephrotic syndrome (NS) can therefore be expected to have a more severe course in LBW.
Material and methods: We performed a retrospective chart review of 59 children NS, with follow-up >2 years, average age 134+/-64 months (range 35-324), with a mean age of NS onset of 51.5+/-34 months (range 21-157). Congenital NS were excluded. We considered the cortico-resistance (CR), cortico-sensitivity (CS) and cortico-dependence (CD). Children are defined with LBW when the birth weight <2500g and small for gestational age (SGA) if the weight is <10th percentile for gestational age (GA).
Results: We found no differences on blood pressure levels and dimensions of kidneys among the groups. Of the 59 children enrolled, 52 had weight >2500g: 3 show focal glomerulosclerosis (FSGS) with 1 CR, 30 (58%) are CD but only 16 (31%) have taken other immunosuppressive drugs (CDIS). Of the 7 children with LBW: 2 show FSGS with 1 CR, 4 (57%) CDIS. Of the included 59 patients, 51 had a weight appropriate for GA (AGA): 3 show FSGS 2CS and 1CR, 27 (53%) are CD but of these only 14 (27%) CDIS; 8 were SGA: 2 show FSGS with 1 CR, 6 (75%) are CDIS ($p<0.05$ vs. CDIS AGA). A total of 10 children had LBW and/or were SGA: 2 (20%) show FSGS and 7 (70%) are CDIS. Of the remaining 49: 3 (6%) show FSGS, 27 (55%) are CD and of these only 13 (27%) CDIS ($p<0.05$ vs CDIS LBW and/or SGA).
Conclusions: LBW and SGA children show a worse NS course, with increased risk of FSGS and CD, and, moreover, increased use of other immunosuppressive drugs. Probably, the haemodynamic changes and possible alterations of podocytes may be the basis for a more severe NS course in these patients

P187
The Role Of Immunoadsorption In The Treatment Of Juvenile Systemic Lupus Erythematosus; Starring Or Guest?

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Introduction: Systemic lupus erythematosus (SLE) is an autoimmune, inflammatory systemic disease characterized by inflammation and remission of pathogenic autoantibodies and immune complexes. Pathogenic autoantibodies can be removed with conventional treatment, such as immunosuppressives. On the other hand; conventional treatment in patients with the severe SLE- combined with plasma exchange (plasmapheresis) or immunoadsorption (IAS) as extracorporeal methods and intravenous immunoglobulin (IVIG) is beneficial and recovers from the deadly state of affairs.
Material and methods: Despite the supportive and immunosuppressive treatment, clinical signs of 15 years old girl with severe SLE had worsened. Therefore IAS (immunosorbent PH-350) had been started, 2 cycle / 2 days per week, a total of 6 cycles were performed. Follow-up of the 6 th month of IAS and immunosuppressive therapy, complements were normal, antids-DNA was negative. Massive proteinuria was declined in 24-hour urine. With available clinical and laboratory findings, the case was evaluated in partial remission in the 6 th month of treatment.
Results: This case was presented to emphasize that multi-organ involvement of SLE at adolescent age, small number of cases of juvenile age which IAS applied and benefit of IAS in addition to immunosuppressive therapy.
Conclusions: It is difficult to say that immunoadsorption is starring or guest in Juvenile SLE. In this regard, more clinical experience and studies are needed.

P188
Membranous Glomerulonephritis Evolving After Diffuz Proliferative Glomerulonephritis. A Rare Assocation. A Case Report

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Introduction: Membranous glomerulonephritis (MG) rarely plays role in etiology of childhood nephrotic syndrome, but due to less clinical response to standart nephrotic treatment, still remains an important clinic. Diffuse proliferative glomerulonephritis (DPGN) associated with crescent may be started with primary or secondary causes, but also may occur in the course of primary nephrotic syndrome. In the literature the association of these two entities are reported in a small number of cases and of all cases the onset clinic is primary MG, cresenteric DPGN secondary developed.
Material and methods: A patient with cresenteric glomerulonephritis onset, after long-term follow up evaluation developed MG presented due to it's a rare association.
Results: Eight years old male patient admitted to our clinic with tea-coloured urine. There were pretibial and bufissur edema, stage I hipertension on his physical examination. Macroscopic hematuria, nephrotic proteniura, increased serum urea and creatinin detected with laboratory tests. Both C3 and C4 were in normal ranges. ANA and Anti Ds-DNA were negative. Due to existin proteinuria after metilprednizolone treatment kidney biopsy performed and the result was consistent with DPGN with crescents. Treatment changed to cyclophosphamide. After cyclophosphamide proteinuria and other clinic manifestations disappeared. After 4.5

years during his follow-up proteinuria repeated with absence of other clinic findings. Due to existin proteinurea after metilprednisolone kidney biopsy performed again. And the new biobsy consistent with MG. Treatment changed to cyclosporine. Proteinuria disappeared and follow-up of the patient resumes.

Conclusions: A male patient with the cresenteric glomerulonephritis at onset, and good response to the treatment, and membranous glomerulonephritis evolving in follow-up presented in this case report. We think that his rare combination of two nephrotic syndromes will contribute to the literature. We also believe that this case report will show the clinicians importance of long-term follow up of the patients with proteinuria and other clinical findings after treatment.

P189

Prediction Of B Cell Recovery In Idiopathic Nephrotic Syndrome Patients Treated With Rituximab

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Introduction: Rituximab has been shown to be an efficient treatment for steroid dependent and calcineurin inhibitor dependent idiopathic nephrotic syndrome. However, relapses at the time of B cell recovery are frequent and have motivated several teams to re-inject RTX as soon as B cells re-appear in peripheral blood. This strategy often fails to avoid relapses as they occur earlier than a RTX re-injection can be performed, despite monthly CD 19/20 monitoring. Aim: If the time of B cell recovery could be predicted we might be able to avoid B cell recovery by pre-emptive RTX injections or individualized monitoring. This strategy may reduce relapses.

Material and methods: Thirteen patients (mean age 6 (1.6-14.6) years) with high degree steroid and calcineurin inhibitor dependent INS have been retrospectively included. Minimum follow up after RTX start-up was 6 months.

Results: Total B cell depletion period was 25 (6-41) months. Mean B cell depletion after each injection was 5.6 (3-14) months. Despite a heterogeneity of this interval among all patients we found a relative constant B cell depletion period for each individual patient with a variability of 0.5 (0-1.5) months. In three patients RTX has been maintained for >2 years. In these patients the interval from RTX injection to B cell recovery decreased slightly by 1 to 2 months after the first 18 treatment months. No severe side effect has been noted.

Conclusions: Once the individual time interval until B cell recovery determined, the monitoring could be individualized by targeting the expected date of B cell recovery or by performing pre-emptive RTX injections.

P190

Genetic Congenital Nephrotic Syndrome: A Study Of 14 Cases

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Introduction: Congenital nephrotic syndrome (CNS) is a rare kidney disorder. The majority of cases are caused by genetic defects in the components of the glomerular filtration barrier, especially nephrin and podocin.is a diagnostic and therapeutic challenge for the pediatricians as well as pediatric nephrologists. Objectives: The aim of the study was to analyze the clinical, genetic and histopathological aspect of genetic congenital nephrotic syndrome.

Material and methods: We retrospectively reviewed the clinical data, mutational analyses, histopathological features, treatment modalities, and outcome of patients presenting with CNS assessed in 5 different pediatrics departments during 18 years (January 1994 – December 2011).

Results: 14 patients (11 families) were included. There were 3 girls and 11 boys. Mean Age at diagnosis was 45 days. Consanguinity was found in 72,7 % of the families. The main clinical feature was edema. The Finnish type of CNS was seen in 63,6 % and diffuse mesangial sclerosis in 36,4 % of the studied cases. 7 out of 11 families have had genetic analysis. 6 mutations were identified, 3 of which were new. NPHS1 mutation analyses were positive in 3/6, LAMB2 mutations in 2/5, and no mutations were identified in NPHS2, WT1 or PLCE1. The majority of patients, had serious adverse events related to the nephrotic status, and 41% reached end-stage renal failure at a median age of 5 months and 22 days. The mortality rate of patients was 92,8 %.

Conclusions: Genetic forms of nephrotic syndrome are rare with a high infant mortality without aggressive treatment. The progression toward end-stage renal failure is the rule.

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The Combined Role Of Galactose-deficient Iga1 And Streptococcal Iga-binding M Protein In Inducing Il-6 And C3 Secretion From Human Mesangial Cells: Implications For Iga Nephropathy

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Introduction: IgA nephropathy is characterized by mesangial cell proliferation and extracellular matrix expansion associated with immune deposits consisting of galactose-deficient polymeric IgA1 and C3. We have previously shown that IgA-binding regions of streptococcal M proteins co-localize with IgA in mesangial immune deposits in patients with IgA nephropathy.

Material and methods: In the current study, the IgA-binding M4 protein from group A streptococcus was found to bind to galactose-deficient polymeric IgA1 with higher affinity than to other forms of IgA1, as shown by surface plasmon resonance and solid-phase immunoassay. The M4 protein was demonstrated to bind to mesangial cells not via the IgA-binding region but rather via the C-terminal region, as demonstrated by flow cytometry. IgA1 enhanced binding of M4 to mesangial cells, but not vice versa. Co-stimulation of human mesangial cells with M4 and galactose-deficient polymeric IgA1 resulted in a significant increase in IL-6 secretion compared to each stimulant alone. Galactose-deficient polymeric IgA1 alone, but not M4, induced C3 secretion from the cells and co-stimulation enhanced this effect. In addition, co-stimulation enhanced mesangial cell proliferation compared to each stimulant alone.

Results: These results indicate that IgA-binding M4 protein binds preferentially to galactose-deficient polymeric IgA1 and that these proteins together induce excessive pro-inflammatory responses and proliferation of human mesangial cells.

Conclusions: Thus, tissue deposition of streptococcal IgA-binding M proteins may contribute to the pathogenesis of IgA nephropathy.

P192

Heterogeneous Genetic Alterations Predict Resistance To Immunosuppressive Treatments In Sporadic Steroid-resistant Nephrotic Syndrome

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Introduction: In children, nephrotic syndrome can be related to a genetic cause, but to which extent genetic forms influence response to steroid and immunosuppressive treatments in sporadic patients is still unknown. In this study, we specifically analyzed the prevalence of genetic defects in children with sporadic forms of nephrotic syndrome and we hypothesized that genetic alterations in podocyte genes may significantly contribute to determine resistance to steroid and immunosuppressive treatments in these patients.

Material and methods: To this aim, we designed a custom sequencing array to target 19 genes reported as possible causes of nephrotic syndrome in a cohort of 31 children affected by sporadic steroid-resistant nephrotic syndrome using next-generation sequencing. To eventually identify novel genes associated with this disorder, 27 other candidate genes expressed by podocytes and in the glomerular filtration barrier were also included in the array. Patients that exhibited extra-renal symptoms, that had a familial history of the disease or of consanguinity, and that had a congenital onset were excluded. As controls, 38 patients matching the same criteria but that were sensitive to steroids were analyzed.

Results: We identified a genetic cause in 32.3% of cases that were steroid-resistant, but in none of the 38 steroid-sensitive children (chi-squared test, $p<0.001$). Genetic alterations also predicted lack of response to immunosuppressive agents in steroid-resistant children (0% in mutated vs. 57.9% in not mutated patients; chi-squared test, $p<0.05$), while clinical features, age at onset and even pathologic findings were similar in the two groups.

Conclusions: These results suggest that heterogeneous genetic alterations are present in about one third of children affected by sporadic forms of steroid-resistant nephrotic syndrome and predict resistance to immunosuppressive treatments. In these patients, a comprehensive screening using such an array is required for genetic counseling to the family and may help clinical decision making, in a fast and cost-efficient manner.

P193

Idiopathic Nephrotic Syndrome - Deflazacort, An Alternative?

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Introduction: Prednisolone has been the first-line therapy in the treatment of idiopathic nephrotic syndrome (INS) in children since the mid-twentieth century. Relapses are frequent in childhood and the need of large and repeated doses of prednisolone alone or in combination with cyclophosphamide, cyclosporine and mycophenolate mofetil can induce significant side effects. Deflazacort has been used in recent years as an alternative for maintenance therapy. Objective: To compare the efficacy and safety of maintenance therapy with deflazacort versus prednisolone in INS of childhood.

Material and methods: Retrospective review of patients with steroid-dependent INS treated with deflazacort. All had received prior therapy with prednisolone and were under deflazacort for at least one year. Was defined corticodependence when relapses occured during reduction of corticosteroid or even two weeks after its discontinuation. We evaluated the number of relapses, the corticosteroid dose at relapse, the period until remission, time without relapses, the use of other therapy (cyclophosphamide, cyclosporine, levamisole, mycophenolate mofetil), weight and height SDS and side effects of therapy in the twelve months before and after the introduction of deflazacort. We compared the results with Excel® 2007 and SPSS® 17.

Results: Were included 24 patients, 71% males. At diagnosis, the median age was 3.3 years and deflazacort was added an average of 3.7 years after diagnosis. After one year of therapy with deflazacort, we found a significant reduction in the number of relapses (mean 2.2 vs 0.8, $p<0.01$) and side effects of corticosteroids ($p=0.03$). There were no significant differences in the remaining variables, including weight and height SDS.

Conclusions: In this sample, deflazacort was associated with fewer relapses and side effects compared with prednisolone. No significant impact on the stat-weight growth, possibly by the short observation period. The deflazacort proved to be a safe and effective therapy in the maintenance treatment of INS in children.

P194

Atypical Histopatholgical Findings In A Child With Membranous Nephropathy

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Introduction: Idiopathic membranous nephropathy (IMN) is uncommon cause of childhood nephropathy. The typical histopathological findings are; presence of subepithelial spikes on light microscope (LM) and granular capillary wall staining for IgG on immunofluorescence (IF). There is no standardized treatment for the disease. However, steroids and angiotensin converting enzyme inhibitors (ACEI) remain the first line of management. Mycophenolate mofetil has been used successfully.

Material and methods: A 2 year old girl with unremarkable medical history, presented with periorbital swelling and gross hematuria. Clinical examination revealed a normal looking child with facial swelling. Blood pressure was 91/63 mmHg. Urinalysis showed heamaturia (+4) and proteinuria (protein excretion 1.3 gm/24hr). Serum albumin, 15 g/L, serum creatinine was 34 umol/L. Serology was negative for ASOT, IgA, complements, ANA, and ANCA. Viral study for HIV, hepatitis profile, and syphilis was negative. A Kidney biopsy was performed.

Results: LM showed mesangial proliferation and prominence of immature podocytes over the surface of glomeular tufts and no spikes were seen on silver stain. IF was positive only for granular IgG and C3. EM showed unusual aggregates of subepithelial microspheric particles. The child failed to achieve remission with daily prednisolone for 6 weeks, hence MMF was added. On follow up, there was partial remission and prednisolone was tapered slowly. The child achieved a complete remission after an almost 8 months of initiating MMF.

Conclusions: IMN is rare in children. However it should be considered in children with atypical presentation and negative serology. Histopathological findings in young children may differ from the typical features seen in adults IMN. Presence of subepithelial microspheric particles on biopsy may indicate alloimmune MN as it was reported previously. Finally, treatment with steroids alone may not be effective and addition of a second immunosuppressant therapy is warranted to control proteinuria.

P195

Development Of A Next Generation Sequencing (ngs) Assay For Steroid Resistant Nephrotic Syndrome (srns)

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Introduction: Steroid Resistant Nephrotic Syndrome (SRNS) is a disorder of the glomerular filtration barrier in children and adults with genetic involvement in 20-50% of cases. It is characterised by massive proteinuria, and although managed by heavy immunosuppression, the majority of patients suffer irreversible kidney failure. A rapid genetic diagnosis is key for therapy and intervention, as genetic SRNS is non-responsive to immunosuppression, and has much lower rate of post transplant recurrence. A genetic result enables appropriate family counselling including choice of transplant donor and has the potential to avoid invasive renal biopsy. SRNS is heterogeneous, associated with mutations in >30 genes expressed by glomerular podocytes. Current UK diagnostic testing is limited to Sanger sequencing test for WT1 and NPHS2. Next Generation Sequencing (NGS) is an ideal rapid diagnostic screening approach for SRNS.
Material and methods: We have developed a target enriched custom designed 37 gene NGS panel test using the Haloplex capture approach (Agilent) and MiSeq sequencing (Illumina). Analysis is performed using an open source in-house pipeline (alignment: BWA; alignment modification and variant calling: GATK; variant annotation: Annovar).
Results: Assay validation included a cohort of seven renal registry patients (RaDaR), tested on a research basis, and showed 98% coverage at 30X. 186 variants (100%) were identified, including pathogenic mutations in PLCE1, COQ2, NPHS1 and NPHS2.
Conclusions: A gene dossier has recently been approved to allow for testing as a clinical service. Testing is comprehensive, cheap and rapid (4 week turnaround). We present results and interesting cases from almost 100 patients tested to date using the new test, highlighting the clinical benefit of rapid genetic testing in this devastating disease.

P196

The Effect Of Alternate Day Corticosteroids On Linear Growth In Childhood Nephrotic Syndrome

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Introduction: Corticosteroids remain the mainstay treatment of childhood nephrotic syndrome (NS). Its deleterious effects on linear growth are well documented. However published data indicate that alternate-day dosing has minimal effects on growth. This is contrary to observations made in our patient population. This study was undertaken to ascertain the effects of alternate-day corticosteroids on linear growth in a Sri Lankan population of patients with steroid dependent nephrotic syndrome (SDNS).
Material and methods: The growth velocity of 40 patients (age 3.6-14.5yrs) with SDNS on alternate-day prednisolone was compared with that of an age and sex matched control sample comprising 40 patients with NS who were off steroids. Both populations were followed up for one year. Height velocity was calculated from the respective heights at the onset and conclusion of the study. Height velocities were compared using the Mann-Whitney U test.
Results: The average alternate-day prednisolone dose was 0.51mg/kg. The height velocity was 3.9 cm/year (SD 1.17) in the prednisolone treated group and 6.45cm/year (SD 1.44) in the control group. The difference was statistically highly significant (U=134, z= -6.4, p<0.001). The dose of prednisolone did not have a significant bearing on growth, with those on an average dose less than 0.5mg/kg (n=15) being equally affected as those on more than 0.5mg/kg (n=25). (U=152, z= -.994, p0.332)
Conclusions: These findings are contrary to what has been reported in the literature. The control population also comprised patients with NS. Therefore no bias could be attributed to the underlying disease. The population studied is from the developing world where dietary protein content is low. This could negatively affect IGF1 levels. The high protein diet in western populations may masking the negative effects of steroids on growth. This could explain the difference in observations between our population and studies from the developed world.

P197

Mediastinal Adenopathies Associated With Membranous Nephropathy: A Diagnostic And Therapeutic Challenge

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Introduction: Membranous nephropathy (MN) is a rare histologic entity in children and secondary causes appear to be more frequent in the paediatric population than in adults. Identifying the cause is important in order to initiate a specific treatment.
Material and methods: We report the case of an 8 year-old boy presenting a membranous glomerulopathy probably associated to mediastinal tuberculosis.
Results: An 8 year-old boy presented with nephrotic-range proteinuria with oedema, macroscopic hematuria and hypertension. He had no renal failure. The renal biopsy showed an important mesangial proliferation with granular deposits of immunoglobulin G and complement component 3, compatible with secondary MN. According to the fact that his aunt had a positive tuberculin skin test and before initiating a probable immunosuppressive treatment, a tuberculin skin test was performed: it was strongly positive. The chest X-ray was normal. Acid-fast bacilli were negative in his sputum and urinary sample. The computed tomography (CT) scan showed mediastinal adenopathies with hypodense (necrotic-like) center, but no biopsy could be performed because of their localisation. No lesion was identified in bronchoscopy and the bronchoalveolar lavage was normal. No other cause of secondary MN was found. We decided to initiate an anti-tuberculosis treatment (isoniazide, rifampicin, ethambutol and pyrazinamide) associated to enalapril. The oedema disappeared, the serum albumin improved and the blood pressure normalised in 2 weeks. After 3 months of treatment, the size of the adenopathies significantly decreased on CT scan and the proteinuria disappeared completely.
Conclusions: The treatment of secondary MN is difficult in children – especially in case of nephrotic proteinuria - and depends on the identification of the cause. We concluded that our diagnostic hypothesis was right because of the improvement under anti-tuberculosis agents and angiotensin-converting enzyme inhibitor.

P198

Are Treg Cells A Prognostic Factor For Idiopathic Nephrotic Syndrome?

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Introduction: Idiopathic nephrotic syndrome (INS) is common in childhood. The cause of the INS remains unknown. It is known that Treg cells control the immune system in a suppressing way. It is stated that over expression of CD80 plays a role in the development of podocyte fusion in SSNS, and inhibitory effect of some cytokines (IL10, TGF B) may

disappear. In this study, we investigated the levels of Treg cells, which circulate as an indicator of T cell disorder in patients with INS and its value of determining the treatment success.
Material and methods: The study was performed prospectively. Patients symptoms, physical examination findings, albumin, total protein and 24-hour urine protein were recorded. Blood was taken for Treg cells during the acute period and after the treatment. Patients who were syndromic, congenital nephrotic syndrome, and detected to have genetic mutations were excluded from the study.
Results: A total of 91 patients and 16 control group were included in the study. Before the treatment, Treg cell values of all patients with INS (5.14±0.9) were low ($p<0.05$) compared to the control group (7.1±1.2). Patients were divided into two groups steroid-resistant and steroid sensitive nephrotic syndrome. 44 patients were evaluated to have steroid-sensitive nephrotic syndrome was evaluated in, while 47 patients were found to have steroid-resistant nephrotic syndrome. Treg levels in patients with steroid-sensitive nephrotic syndrome (5.65±1.1) were detected to be significantly lower compared to the control group (7.1±1.2) ($p<0.05$). Treg levels in steroid-resistant patients (4.5 ± 0.8) were significantly lower compared to the control group (7.1±1.2) ($p<0.05$).
Conclusions: Circulating Treg levels in patients with acute period of INS support T cell lymphocyte dysfunction. Circulating low Treg levels play a role in pathogenesis of patients with SRNS or SSNS, and it may be useful to guide the treatment of INS.

P199
Efficacy Of Immunoadsorption In Pediatric Nephrotic Syndrome

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Introduction: Childhood steroid and multi drug resistant nephrotic syndromes are known to progress to end-stage renal disease and have recurrence after kidney transplantation. Thus, achieving a complete resolution of proteinuria, and thereby preserving kidney function is a challenging goal. However, there is no currently optimal therapy. Immunologic involvement in the pathogeny of the disease has been clearly demonstrated. Several studies hinted the role of immunoglobulin and the efficacy of immunoadsorption (IA). We therefore treated our patients with a combination of IA, intravenous immunoglobulin (IVIg) and B cell suppression with rituximab.
Material and methods: 12 patients have been treated in our center (median age 14 years (9-20)). 5 had steroid resistant nephrotic syndrome on native kidneys (all received multiple immunosuppressive therapy). 7 had recurrence of proteinuria after kidney transplantation. Patients have been treated by IA (Therasorb®), at an initial frequency of 4-5 sessions per week, with IVIg following each session.
Results: In the native kidneys group : 4/5 patients obtained a complete resolution of proteinuria (proteinuria/creatininuria < 0,05 g/mmol) after undergoing a median number of 4 sessions (2-7), within 6 days (2-9). All received B cell depletion with rituximab. 3/4 patients maintained a sustained remission after IA discontinuation. 1/5 patient did not respond to intensive IA–IVIg-rituximab therapy. In the post transplant recurrence group : All patients obtained remission after undergoing a median number of 5 sessions (3-11), within 10 days (6-24). All received rituximab (2 before transplantation). 4/7 patients maintained a sustained remission after IA discontinuation (median number of sessions : 10 (7-14)). 3/7 patients need to received a minimal weekly session.
Conclusions: Combination of IA, IVIg and rituximab has been efficient in most of those patients who have resisted a more conventional therapy.

P200
Expression Of Antibodies And Mest Classification In Children With Iga-nephropathy In Belarus

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Introduction: Morphological and clinical features of IgA- nephropathy vary largely. Now there is no the uniform classification, allowing to choose an individual approach to treatment and to predict a disease outcome. One of the most applicable last years classifications is Oxford MEST classification. The aim of the present study is to reveal the correlation between class IgA-nephropathy according to MEST classification and kidneys expression of immunoglobulins.
Material and methods: As material for research have served 14 kidneys biopsies patients with IgA-nephropathy, performed at the Republic Center of Pediatric Nephrology and Renal Replacement Therapy in Minsk/Belarus. In all cases it has been executed immunohistochemical research with application of antibodies to immunoglobulins of classes A, M, G and C3, C1q complement with a semiquantitative estimation of expression. In all cases the changes in kidneys biopsies were estimated by criteria of MEST of classification.
Results: Mean age of patients was 14,1±3,5 yrs, boys and girls there were 71,4 % and 28,6 % respectively. Glomerular expression of immunoglobulin A (presence both mesangial deposits, and subendothelial deposits in capillary wall) correlated with mesangial (M) component of MEST classification ($p<0,05$). Co-expression of other immunoglobulin classes and C3, C1q complement in mesangium and glomerular capillary wall also was correlated with more expressed mesangial score (Mann-Whitney Test, $p=0,029$).
Conclusions: Definition in patients with IgA-nephropathy of immunoglobulins expression of various classes and complement can be used as additional criteria in classifications of this disease, however this question demands the further studying.

P201
Protracted Clinical Course Of Postinfectious Glomerulonephritis In A Previously Healthy Child

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Introduction: Postinfectious glomerulonephritis in children is generally a self-limited disease with excellent prognosis. We present a case of acute proliferative glomerulonephritis (GM) with markedly protracted course.
Material and methods: A 4 year old child previously healthy presented with recurrent episodes of macroscopic hematuria, for 3 weeks. There was no low urinary tract symptoms, no edemas and blood pressure was normal. Laboratory investigations revealed reduced S-albumin of 33 g/l (35-47), normal creatinine, carbamide and electrolytes. Urine albumin excretion was 57 mg/day based on 24-urine collection. Compliment C3c was low (0.37 g/l) and C4 was normal. Anti-nuclear and anti-neutrophil cytoplasmic antibody screening was negative. Antistreptococcal antibody titers were moderately elevated (>400 Units). Based on the clinical and laboratory finding, Postinfectious GN was suspected and the child was discharged to outpatient follow-up. During the next months the boy presented with several gross hematuria episodes, fatigue and periorbital edema. Some of the episodes were related to upper respiratory track infections. Laboratory workup revealed gradually increasing proteinuria (up to 2.4 g/d) and decreasing S-albumin (24g/l) but normal creatinine. Compliment C3c varied between 0.40 and 0.66 g/l.
Results: Due to the protracted course and the nephrotic range proteinuria a renal biopsy was performed 6 months after the initial presentation

showing endocapillary proliferation, characteristic sub epithelial deposits (humps) in basement membrane and no crescents. Renal tubuli, interstitium and vasculature were spared. No immune deposits or C3 staining was seen and the overall pathology was consistent with postinfectious glomerulonephritis.
Conclusions: Although generally considered a benign disease in children with excellent prognosis, cases with protracted course exist. Renal biopsy is crucial in ruling out other diseases that lead to similar clinical presentation.

P202
The Risk Factors Of Progression Henoch-schonlein Purpura Nephritis In Children

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Introduction: Nephritis develops in 18-81% of Henoch-Schonlein purpura (HSP) patients and its long-term prognosis is variable. Renal involvement is the principal cause of morbidity and mortality in children with HSP. The aim of our study to clarify the prognostic factors of HSP nephritis (HSPN) and to identify the most appropriate treatment.
Material and methods: We retrospectively analyzed the medical records of 15 patients (9 boys and 6 girls) with HSPN who were treated at the Republic Center of Pediatric Nephrology and Renal Replacement Therapy in Minsk/Belarus (2010-2013 yrs). Renal biopsy with light, immunohistohemistry microscopy was perfomed in all children, electron microscopy in 1 girl. Biopsie finding were graded according to the ISKDC classification.
Results: The median age of the disease onset was 7.4 (6-16 yrs), most of the cases were preceded by infection (39%) and allergy (28%). Skin rash and joints involvement were seen in 11 patients, gastrointestinal bleeding in 2. Only urinary abnormalities (hematuria and low grade proteinuria) were documented in the majority of patients (n=9), grade II on ISKDC. Arterial hypertension (AG) was diagnosed in 4. In 2 boys nephrotic syndrome with hematuria and AG observed, both of them had unfavorable prognosis (ISKDC grade IIIb, chronic kidney disease developed in 1.9 and in 2.4 yrs from disease onset respectively). 3 patients during follow up showed increasing proteiuria levels and corticosteroids (CS) therapy was started (ISKDC grade IIIa and VI (n=1)). All patients as initial therapy received just ACE inhibitors (with daily proteinuria less 1g). CS (n=3) were started after increasing daily proteinuria. In 2 boys with high activity and crescent formation puls therapy with cyclophosphamide and plasmapheresis was made.
Conclusions: Predictors of poor renal outcome was associated with renal pathological findings (grade III), presence of a nephrotic state, AG, duration of increasing mean proteiuria levels during follow-up.

P203
Nephrotic Syndrome In The First Year Of Life : Long-term Trends

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Introduction: Nephrotic syndrome manifesting in the first year of life (NSFL) is a rare, genetically based disease, in most cases resistant to steroids, and progressing to end stage kidney disease (ESKD)
Material and methods: We present the NSFL diagnosed in our hospital from 1986 to 2013, all of them caucasians, with no family history of renal disease. The mean follow-up time was 118 months (9 years and 10 months).
Results: We have diagnosed 5 NSFL, 3 females/ 2 males. The mean age at diagnosis was 6.32 months One patient, had a history of prenatal pathology: gestational diabetes, syphilis in the second quarter with full treatment; large placenta discarding syphilitic infection. Three patients have other anomalies: Tetralogy of Fallot, vesico ureteric reflux and Scimitar syndrome The renal biopsies showed: three diffuse mesangial sclerosis (DMS), one minimal glomerular changes (MCD) and one focal segmental glomerulosclerosis Only the patient with MCD, NPHS2 gene was identified. Four patients were treated with steroids treatment with only one complete remission; three patients received immunosuppressive therapy. All of them received renin–angiotensin system blocking teraphy Bilateral nephrectomy was performed on a patient at the age of eight months, due to the massive proteinuria,.He received a kidney transplant from a cadaver donor at the age of 2 years . Three have normal glomerular filtration rate, one has received a kidney transplantation and now has ESKD stage2, One patient died at 17 months, receiving peritoneal dialysis.
Conclusions: NSFL is a complex disease, difficult to manage, with a worse outcome at minor presentation. The use of steroids and immunosuppressive therapy may be an option in cases with different pathology to diffuse mesangial sclerosis (DMS), without identified genetic alteration.

P204
Vitamin D Deficiency In Children With Persistent Nephrotic Syndrome (pns) Is Not Associated With Radiological Bone Changes.

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Introduction: Patients with PNS have very low serum 25(OH)D3 levels due to its urinary loss with binding proteins. Severe vitamin D (VitD) deficiency in children usually causes rickets. The appropriate dose of VitD needed to replace urinary losses in PNS is unclear. This study was aimed at characterizing biochemical and radiological manifestations of vitD deficiency in children with severe PNS, and to determine the adequate dose of vitD for its correction.
Material and methods: Eight children with severe PNS due to podocin or nephrin mutations were followed for 7 months. Serum 25(OH)D3 levels and parameters of calcium-phosphorus metabolism were assessed before and during therapy with increasing doses of vitD. Hand and wrist X-ray was performed. None received 1,25(OH)2D3 or steroids. Variables are presented as medians unless otherwise specified.
Results: The age was 4.9 years (0.4-14). Mean UTP/Cr was 17.4±9.7, serum albumin-1.9± 0.23g/dl. Six children had hyperfiltration or normal kidney function, and two had mild, stable renal failure. Initial 25(OH)D3 levels were undetectable (<4 ng/ml) in 4 patients, and 6 ng/ml in others. VitD treatment increased 25(OH)D3 levels to 19 ng/ml. Initial and last doses of vitD were 48 and 200/IU/kg, respectively. The effective dose was 158 IU/kg. Albumin-corrected serum calcium and alkaline phosphatase levels were normal throughout the study, initial and last serum phosphorus levels were mildly elevated (5.9 mg% and 6.0 mg%), PTH-borderline (57 and 68 pg/ml). None had hypercalciuria. Surprisingly, radiological signs of rickets were absent in all patients despite 25(OH)D3 deficiency.
Conclusions: In children with severe PNS, vitD deficiency was not associated with hypocalcemia, hypophosphatemia, increased alkaline phosphatase activity and clinical or radiological signs of rickets. High doses of vitD are needed to obtain even small increase in 25(OH)D3 levels. Further studies are required to explain these observations and address the question whether replacement treatment is mandatory.

P205
Plce1 Protects Podocytes From Fibrosis By Limiting Tgfb1 Activation Via Smad2 Phosphorylation

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Introduction: Most genetic causes of nephrotic syndrome affect proteins involved in actin dynamics. Mutations in PLCE1 cause Diffuse Mesangial Sclerosis (DMS) and Focal Segmental Glomerulosclerosis (FSGS). However, little is known about the function of PLCE1. A conditionally immortalised human podocyte cell line was generated from the explant of a DMS patient with a homozygous SNP at 321 leading to a premature stop codon. Mutant cells demonstrated a pronounced mesenchymal phenotype. Injured podocytes in FSGS overexpress the pleiotropic cytokine TGF-B1, which is a regulator of Epithelial-Mesenchymal-Transition (EMT) and fibrosis/sclerosis. We hypothesised that PLCE1 affects responses to TGF-B1.
Material and methods: Wild-type and PLCE1 mutant podocytes were treated with human recombinant TGF-B1. The responses of both cell lines were measured using western blotting and motility assays. After establishing the baseline response of each cell line, siRNA knockdown of PLCE1 in the wild-type was performed in order to replicate the mutant phenotype.
Results: SMAD2 and SMAD3 are receptor mediated SMADs that are crucial in TGF-B1 signalling. The wild-type podocytes exhibited SMAD2 phosphorylation, and reduced expression of epithelial markers following 24-hour exposure to doses of TGF-B1, as well as increased motility and loss of viability. The PLCE1 mutant podocytes were protected from TGF-B1 mediated epithelial-mesenchymal-transition, loss of viability and hypermotility. PLCE1 mutant podocytes expressed SMAD2, but no SMAD2 phosphorylation in response to TGF-B1 treatment, and an altered SMAD2/SMAD3 ratio. This altered ratio could be reproduced in the wild-type podocytes by transient knockdown of PLCE1 using siRNA.
Conclusions: Lack of SMAD2 phosphorylation in the PLCE1 mutant podocyte renders the SMAD2 mediated TGF-B1 response inactive. SMAD3 controls the pro-fibrotic response to TGF-B1. Hence the altered ratio could sensitise the mutant podocytes to fibrosis. This suggests that in health, PLCE1 regulates the SMAD2/3 ratio to protect the podocyte from fibrosis, and identifies a tractable target for novel antifibrotic agents.

P206

The Role Of Bioelectrical Impedance Analysis, Nt-probnp And Inferior Vena Cava Sonography In The Assessment Of Body Fluid Volume In Children With Nephrotic Syndrome

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Introduction: Bioelectrical impedance analysis (BIA) has been widely used to evaluate the hydration status in dialysis patients. However, its value in assessment and controlling the hydration status in nephrotic syndrome (NS) is little mentioned. The aim of this study is to determine the volume situations of children with NS by using different techniques and to evaluate the utility of BİA in children with NS.
Material and methods: Nineteen patients with nephrotic syndrome (11 male, mean age: 7.0±2,5 years) and 25 healthy controls (9 male, mean age: 6.4±3,5 years) were enrolled in the study. Renin, aldosterone, plasma NT-proBNP, inferior vena cava (IVC) diameter, left atrium diameter was measured and hydration status were assessed using multi-frequency BIA in patients during attack (Group I), remission (Group II) and control group.
Results: There was no clinical findings of hypovolemia in neither of patients with NS. The values of renin, aldosteron and left atrium diameter between NS patients in attack and control group were not statistically different. NT-proBNP values were statistically higher in the attack period compared to group II and control group (p=0,005 for each). IVC collabsibility index were significantly lower in the attack period compared to control group (p=0,005) while remains same in group II. TBW was significantly higher than the control group (p<0,001). ECW was found to be increased during attack whereas no change in ICW was observed.
Conclusions: Our findings revealed that although TBW is increased, intravascular volume remains normal in pediatric NS cases. BIA, seems to be reliable, easy and practical tool in children with NS. Further studies are warrented to clarifty the utility of BIA to determine the volume status in children with NS.

P207

Expression Of Angptl3 And Angptl4 In Podocyte Injury In Vitro

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Introduction: Angiopoietin-like (ANGPTL) proteins 3 and 4 belong to a family of proteins that share a common modular structure consisting of an N-terminal signal sequence, a coiled-coil domain and a large fibrinogen/angiopoietin-like domain. Recently, ANGPTL 3 and 4 have emerged as important damage factors of nephrotic syndrome and podocyte injury. Aim: To find investigate the relationship between angptl3 and angptl4 in podocyte injury and increase our knowledge concerning the role of angptl3 and angptl4 in podocyte injury.
Material and methods: Puromycin aminonucleoside (PAN) which induces podocyte injury in vitro and is widely used for mimiking the pathophysiology of nephrotic syndrome. MPC5, a conditionally immortalized mouse podocyte cell line in vitro, were induced propagate and passage by 1r-IFN at 33°C which were subsequently cultured at 37°C for differentiation for 14 days. Real time PCR were processed to evaluate the expression of ANGPTL3 and ANGPTL4 in puromycin induced podocyte damage with different doses (10ug/ml,20ug/ml,50ug/ml), collect cells after PAN treated (6, 8, 10, 12, 24, 48, 72 hours).
Results: ANGPTL3 and ANGPTL4 were weakly expressed in normal podocytes. The induction of puromycin upregulated expression of both ANGPTL3 and ANGPTL4 on podocytes. In response to PAN, a time dependent regulation of ANGPTL3 could be observed, and show a obvious upregulation as early as 24h after incubation with 10ug/ml, 20 ug/ml or 50ug/ml PAN; ANGPTL4 also show a obvious increase in podocyte injury. Unlike ANGPTL3's continue increasing, ANGPTL4 reachi the peak after 10 h, and followed by a down-regulation.
Conclusions: Both ANGPTL3 and ANGPTL4 play important roles in podocyte injury. ANGPTL4 tend to play a role in actue phage, and ANGPTL3 tend to aggravate the damage.

P208

Increased Tumor Markers Serum Levels In Children With Nephrotic Syndrome

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Introduction: Increased levels of Ca 125 tumor marker in the absence of malignant disease have been described in the adulthood Nephrotic Syndrome (NS). No data are available in childhood NS. The purpose of our study is the evaluation of main tumoral markers (TM), currently used in cancer diagnosis, in children with Nephrotic Syndrome.
Material and methods: We selected 24 children (15 males), aged 2-10 years, with NS at onset (NS) and 24 healthy children, matched for age and sex, as controls (C); in the entire study population the following TM: Ca 125, Ca 15.3, Ca 19.9 , CarcinoEmbryonic Antigen (CEA) and α-Fetoprotein were evaluated. In the NS group TM were determined both during the nephrotic condition and during the remission of proteinuria;

serum albumin and total proteins, proteinuria, weight gain were also determined in both phases of the disease; moreover, in nephrotic children, ultrasound of the abdomen to search for ascites was performed.
Results: Data are expressed as Mean ± SD : Ca 125: 68,9 ± 12 U/ml (NS) versus 10 ± 2 U/ml (C) p< 0,05; Ca19,9: 30,2 ± 1,5 U/ml (NS) versus 8,2 ± 0,2 U/ml (C), CEA: 1,4 ± 0,1 ng/ml (NS) versus 1 ± 0,2 ng/ml (C), Ca 15,3: 42 ± 2 U/ml (NS) versus 12 ± 2 U/ml (C); α-Fetoprotein : 3,4 ± 0,1 IU/ml (NS) versus 2,5 ± 0,1 IU/ml (C). A significant inverse correlation between serum albumin levels and the serum Ca 125 levels (r: 0.81) was found; all TM were normal when the patients went into remission of NS; 5/ 12 pts with NS showed ascites at the ultrasound examination. Children with NS show increased Ca 125 serum levels, 50% of them also have increased Ca 15.3 serum levels during the nephrotic phase of the disease. TM normalize in the remission phase of NS with the resolution of edema and proteinuria. In the NS group serum Ca 125 levels were significantly higher in patients with ascites versus those without ascites.
Conclusions: Increased Ca125 and Ca 15.3 serum levels are present even in childhood NS, during the nephrotic condition, mainly in those with ascites. This finding suggests to wait for the NS remission to check the TM serum levels before starting an unuseful study protocol required for suspected cancer pathology.

P209

The Evaluation Of Our Percutaneous Renal Biopsy Results; Seventeen Year Single Center Experience

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Introduction: Although percutaneous renal biopsy is a invasive method, it has a very importance in parenchymal diseases, diagnosis, treatment and follow-up. The reasons and frequencies of glomerular diseases varies between countries. Frequency of glomerular diseases and renal diseases caused by systemic illness isn't known exactly in our country. In this work out, clinicopathological evaluation of renal biopsies made in Pediatric Nephrology Department of Uludag University in last 17 years is aimed.
Material and methods: Total 435 percutaneous biopsies practised between January 1997 and December 2013 are evaluated retrospective. All samples of renal biopsy are taken percutaneuos and accompanied with ultrasonography (USG), a bit of sedation and 14 or 16 gauge tru-cut needle. After biopsy all patients are followed with supine position and after 24 hours evaluated with USG for the complications.
Results: The average age of our patients was 9.6 ± 4.4 years, and the age distribution ranged from 2 months to 18 years of age. 198 of 404 biopsied patients (49%) were female and 206 (51%) were male. 375 patients with renal biopsy was performed 1 time, 25 patients was performed 2 times, 2 patients was performed 3 times and 1 patient with renal biopsy was performed 4 times. The most common indication for biopsy was nephrotic syndrome (42.1%). While glomeruli was not detected in 23 (%5.2) biopsy, average glomeruli number was found 23,2±19.8 . Minimal lesion disease was found the most pathological reason (%23) for nephrotic syndrome. In only one patient arteriovenous fistulization occurred after the biopsy as a serious complication. Loss of kidney due to biopsy did not occur.
Conclusions: Nephrotic syndrome is the most common indication for biopsy in our center. Minimal lesion disease is detected as the most histopathological reason that causes nephrotic syndrome. In this work out we result that, percutaneous biopsy accompanied with USG made by pediatrics nephrologists is a very reliable method and it has a very slightly risk of complications.

P210

Massive Parallel Sequencing Doubles Genetic Diagnosis Rate In Steroid-resistant Nephrotic Syndrome (srns)

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Introduction: Sequencing of all known SRNS genes by conventional Sanger sequencing is unfeasible due to financial and time constraints. Hence, current screening algorithms use preselection according to additional phenotypic criteria and include only the most common disease genes. By this strategy mutations are detected in ~15% of patients. Here, we have evaluated the application of targeted NGS screening in SRNS diagnostics.
Material and methods: Molecular analysis of 31 known or plausible SRNS disease genes was performed by NGS using a custom-designed multiplex PCR kit (Multiplicom). The validation cohort comprised 32 various type mutations. The test group consisted of 73 patients negative for mutations in the first-line SRNS-associated genes and 36 not previously tested. The median age at disease onset was 4.8 years (range 0-27 years), positive family history in 34%, parental consanguinity in 15% and chronic renal insufficiency at last observation in 50%. The most common histopathological diagnoses were FSGS (68%), minimal change disease (18%) and DMS (4%).
Results: 31/32 (97%) mutations were detected in the validation cohort. In the test group, 8 patients were diagnosed with hereditary SRNS due to previously described mutations in NPHS2(n=3), LMX1B(n=2), SMARCAL1, PLCE1, and COQ6. In addition, 26 novel sequence variants were classified as pathogenic based on in silico studies and review of reference population databases. Of these, the diagnosis of hereditary SRNS was established in 10 patients (homozygous: NPHS1(n=2), PLCE1, LAMB2, MYOE1, and ADCK4; compound heterozygous: SMARCAL1, ADCK4; heterozygous INF2(n=2)).
Conclusions: We diagnosed hereditary SRNS in 25% of novel consecutive cases and in additional 12% patients already screened negative by conventional selective algorithms. Our findings support the use of targeted NGS in all SRNS patients, regardless of age at diagnosis, extrarenal manifestations or histological subtype. We anticipate that systematic NGS screening will become the new standard of genetic diagnostics in this condition.

P211

Dense Deposit Disease With Autoantibodies Against C3 Convertase And C3 Activation Products In A 7-year Old Girl - Potential Value Of Combined C5-blockade And Immunoadsorption.

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Introduction: Dense deposit disease (DDD) is associated with dysregulation of the alternative complement pathway. In DDD 50-80% of patients

have autoantibodies (AAB) as complement activating agent. Therapeutic options: plasmapheresis (PE), C5-blockade. Patients with AAB may benefit from immunosuppressive therapy. The potential benefit of immunoadsorption (IA) has only been reported in case reports so far.
Material and methods: We report on a 7-year old girl with DDD who responded well to combined treatment with eculizumab, IA and immunosuppression.
Results: 1/2013: Acute renal failure (ARF), severe edema. Significant signs of complement activation. Positive C3 nephritic factor, AAB against complement C3 convertase and C3 activation products (C3b). Genetic analysis unsuspectable. Renal biopsy: DDD. Hemofiltration and daily PE. After 10 x PE: worsening of clinical situation, need of resuscitation. Start with eculizumab. Prompt recovery and resumption of diuresis. Maintenance dose of eculizumab 600 mg/2 weeks. Terminal complement complex (TCC) initial >1000 ng/ml, then drop to 172 ng/ml (normative value <320 ng/ml). 5/2013: Stop of eculizumab (with the idea that IA in combination with concomitant immunosuppression was sufficient). Stop of dialysis due to significant improvement of renal function. Weekly IA (tryptophan column 11 sessions, then 3 sessions synthetic peptid (GAM) ligand column) and mycophenolate mofetil (MMF). Significant decline of AAB levels. Complement suppressed. 6/2013: Pneumonia and exacerbation of the underlying disease, deterioriation of renal function. Restart of dialysis and eculizumab without benefit for renal function. 9/2013: Control biopsy: completely sclerosed glomeruli. Eculizumab, MMF and IA were stopped.
Conclusions: Prompt drop of TCC after start of eculizumab. For DDD associated with complement-activating AAB IA in combination with immunosuppression might be a possible therapeutic alternative. Our patient initially responded well with decrease of AAB titer and complement remained suppressed. Any target value to reflect optimal efficacy is difficult to be assessed. Potential strategy for renal transplantation: Combination of IA, immunosuppression and C5-blockade.

P212
Idiopathic Nephrotic Syndrome In Pediatric Patients: Clinical Course, Risk Factors And Predictive Risk Model To Chronic Kidney Disease Stage Iii Or Higher

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Introduction: The Idiopathic Nephrotic Syndrome (INS) is associated with high morbidity and represents is an important cause of Chronic Kidney Disease (CKD) in pediatric population. Nevertheless, there are still limited data on risk factors related to the progression of CKD among patients with INS. The present study aimed to describe the clinical course of a cohort of children and adolescents with INS, followed-up at the Pediatric Nephrology Unit of Federal University of Minas Gerais between 1970 and 2012. In addition, we developed a prognostic risk score for CKD using demographic, clinical and laboratory variables.
Material and methods: In this study, 294 patients aged 0-18 years admitted to our service from 1970 to 2012 were included. Clinical and laboratorial variables were analyzed at admission and at the end of treatment. The use and effectiveness of the following treatments have been evaluated: corticosteroids, cyclophosphamide and cyclosporin A. The primary outcome was progression to CKD stage III or higher. Survival analysis was used to assess the time until the occurrence of the event of interest. A predictive model for CKD stage III or higher was developed by using the model of failure rates and the Cox proportional statistical C. This predictive model resulted in a risk score classification for INS patients.
Results: This study included 187 males and 107 females, with median age at onset of symptoms of 3.1 years, median age at admission of 5.2 years and median follow-up time of 6.9 years. 38.4 % of patients had a diagnosis of FSGS on renal biopsy. At last visit, 30 patients (10.2 %) developed CKD stage III or higher. In multivariate analysis, we found three variables that maintained as independent predictors of CKD III or higher: age of onset of symptoms (HR 1.17 , 95% CI = 1.07 to 1.28 , $p < 0.001$), hematuria (HR 3.30, 95% CI = 1.48 to 7.35 , $p = 0.003$) and resistance to corticosteroids (HR 3.15, 95% CI = 5.43 to 100.3 , $p < 0.001$). Thus, it was assigned a risk score for each of the 294 patients ranged from 0 for patients without risk factors and age at onset of symptoms less than 3 years, up to 13 for patients with all risk factors and age at onset of symptoms above 12.1 years of age. Based on this score, the patients were stratified into three categories: low risk (0 to 1), medium risk (2 to 7) and high risk (8 to 13). The accuracy of the model was considered good by the c statistic, with an area under the curve of 0.92 (95% CI = 0.87-0.97) in 10 years.
Conclusions: The age of onset after 12 years, the presence of hematuria ad admission and the resistance to steroid therapy are independent predictors for the progression of INS patients to CKD stage III or higher. Further studies will be necessary to validate our predictive model.

P213
Cyclosporin-a Induced Posterior Reversible Encephalopathy Syndrome In An Adolescent With Steroid Resistant Nephrotic Syndrome: A Case Report And Review Of The Literature

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Introduction: Posterior reversible encephalopathy syndrome (PRES) is characterized by abnormalities in cerebral white matter and neurologic symptoms. It can be caused by immunosuppressive drugs, hypertension or autoimmune diseases.
Material and methods: We describe a case of PRES in a patient with focal segmental glomeruloesclerosis (FSGS) with complete recovery after withdrawal of cyclosporine (CSA).
Results: A 16-year-old male presented a corticosteroid-resistant nephrotic syndrome secondary to FSGS. Treatment with CSA was started after a nonresponding course of prednisone. Ten days later, he developed an abrupt elevation of blood pressure (210/120 mmHg), with headaches, mental confusion, visual disturbance and generalized seizures. Magnetic resonance imaging (MRI) showed lesions suggestive of PRES. Cessation of CyA resulted in clinical improvement.
Conclusions: PRES is a rare syndrome that must be suspected in every patient presenting neurologic symptoms in the course of immunosuppression. It can be induced by CSA and is totally reversible when the drug is rapidly withdrawn.

P214
Antioxidant Vitamins In Children And Young Adults Undergoing Dialysis: A Single Center Study

Introduction: Oxidative stresses are increased in dialysis patients. Vitamin C and vitamin E play important roles as antioxidants. Serum vitamin E level is normal or high in majority of dialysis cases, whereas deficiency of vitamin C is common. This study is to evaluate the serum vitamin E and C status in dialysis patients.
Material and methods: 37 dialysis subjects, 15 girls (22.4%) and 22(59.5%) boys aged 19-300 (165.78±78.34) months including 9(24.3%) CAPD, 23(62.2%) hemodialysis and 5(13.5%) patients who received both modalities separately enrolled the study. They were placed on dialysis from 1-128(44.74±32.68) months ago. Low flux membranes were used in hemodialysis subjects. Serum vitamin C levels < 0.6mg/dl and <5mg/dl in age groups <20years and ≥20years respectively defined low. Serum vitamin E was measured in 26 patients. Low serum levels defined as levels <3μ/ ml in patients ≤ 10 years and levels <6 μ/ml in

teenagers (>10years). Eighteen (48.6%) subjects received vitamin C supplements (60-125mg/daily), whereas 11(29.7%) case didnt receive it. Eight patients (21.6%) were not sure about regular drug consumption. No case supplemented by Vitamin E. For data analysis Chi square and student T tests were used and P values <0.05 considered as statistical significant differences.

Results: Serum levels of vitamin E was normal in 4(14.8%), low in 19(70.4%) and high in 3 (11.1%) patients. serum vitamin C levels were low in 11(29.7%) and normal in 26(70.3%) cases. Ten of 11(90.9%) subjects with vitamin C deficiency were hemodialysis patients, while Six CAPD (2/3) and 11 hemodialysis (78.5%) patients had vitamin E deficiency. Vitamin C deficiency was significantly more prevalent in hemodialysis (P=0.017).

Conclusions: Vitamin C deficiency is more common in hemodialysis patients. Vitamin E deficiency is not unusual in dialysis patients, so screening for deficiencies of these vitamins in regular intervals is recommended Key words: vitamin E, Vitamin C, hemodialysis, CAPD

P215
Mild Hyperhomocysteinemia In Children And Young Adults Were Placed On Dialysis

Introduction: Hyperhomocysteinemia is common in end stage renal diseases. We aimed to determine the prevalence of hyperhomocysteinemia in children and young adults who underwent dialysis and define possible factors which might play role as independent risk factor in development of hyperhemocystinemia

Material and methods: The total hemocysteine plasma values in 45 dialysis patients (continuous ambulatory peritoneal dialysis and hemodialysis) aged 19-300 (166.02± 76.09) months were measured and analyzed based on two different reference values for children (age dependent) and adults (cut off point of 15 μmol/L was considered for definition of hyperhomocysteinemia).

Results: Using the reference values for children 25 cases (55.5%) had hyperhomocysteinemia, including 4 of 12 (1/3) peritoneal dialysis and 18 of 27 (2/3) hemodialysis patients with no significant difference based on age, gender, duration and modality of dialysis and dosage of folate supplement (p>0.05 for all).Using cut off point of 15 μmol/L hyperhomocysteinemia was reported in 13 subjects (28.9%) consisted of 11 hemodialysis and no peritoneal dialysis cases (P=0.009) and 9 of 19 girls (47.4%) and 4 of 26 boys (15.4%) (p=0.043), but logistic regression analysis didnt show significant differences in incidence rates of hyperhemocystinemia according to modality of dialysis and gender (P=0.998 and 0.137 respectively)

Conclusions: Mild hyperhomocysteinemia is common in dialysis children and young adults. In addition hemodialysis patients and female gender are more prone for having more intense elevation of homocysteine plasma levels (>15μmol /L). Key words: hyperhomocysteinemia, children, hemodialysis, peritoneal dialysis, adults

P216
Identification Of Factors Associated With Peritoneal Access Failure In Children On Chronic Dialysis

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Introduction: Placing peritoneal dialysis (PD) catheters in children poses unique challenges reflected in the high complication rates, as high as 70% in some series. Mechanical catheter complications including inadequate hydraulic function, omental entrapment or dialysate leaks are emerging as an important cause of technique failure, mainly due to the success in decreasing PD peritonitis rates. As so, the European Best Practice Guidelines for Peritoneal Access suggest that the quality assessment of peritoneal access care is an increasingly important goal to reduce the PD catheter failure. This study proposes to critically identify the risk factors for peritoneal access failure in children on chronic dialysis. Additionally, by applying a systematic outcome analysis, we aim at improving our catheter insertion program in order to enhance our results.

Material and methods: We conducted a retrospective study of all PD catheters placed in patients aged <18 years-old between January 2009 and December 2012 in a tertiary care, pediatric hospital. Medical and surgical data were reviewed based on available records. All patients completed the same routine preoperative preparation and were submitted to an open technique by surgical teams with prior experience in performing PD catheter placement. A partial omentectomy was selectively executed according to the discretion of the surgeon. The statistical analysis was based on the data related to first PD catheter failure to insure that all observations were independent. Suitable nonparametric test and Kaplan-Meier survival analysis were applied.

Results: During the study period, twenty patients were analyzed (fifteen boys, five girls), twelve of which received more than one PD catheter (median 2 PD catheters per patient). The patients who were submitted to catheter replacement were significantly younger (6 years old versus 13 years old, p=0.019) with lower primary PD catheter survival (5 versus 15 months, p=0,011). The primary PD catheter failure was mainly due to inadequate hydraulic function (8/20 primary PD catheters), followed by omental plugging (2/20), leak (1/20), peritonitis (1/20) and exit site infection (1/20). During replacement procedure, five out of twelve patients were additionally submitted to simultaneous omentectomy. This procedure solved the two cases of omental plugging and two cases of the inadequate hydraulic function, but was unsuccessful to treat the case of leak. Therefore, after catheter replacement or revision, the PD catheter survival increased up to 19 months. Indeed, only two children were transferred to hemodialysis (one due to peritonitis and one due to inadequate hydraulic function). The majority (ten boys, three girls) was transplanted and two children died from reasons not related to PD.

Conclusions: According to recent literature, the mechanical PD catheter complications were the main cause for limit longevity of peritoneal access. Omentectomy appears useful in children undergoing peritoneal dialysis catheter placement. Younger children are at increased risk for primary catheter failure and warrant a specific plan management. It is our prospect that these findings bring safety improvement initiatives with continued monitoring of the outcomes.

P217
Hemodiafiltration In A Pediatric Nocturnal Dialysis Program

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Introduction: Intensified hemodialysis programs have been developed to overcome the serious consequences of conventional dialysis. The feasibility of such programs in children has been demonstrated in different settings and modalities. As in the adult setting, dramatic beneficial effects have been shown. To investigate whether such a program can be further improved, we performed a prospective observational study implementing hemodialfiltration within a pediatric in-center, nocturnal hemodialysis program.

Material and methods: After starting on conventional hemodialysis (HD), seven patients were consecutively switched after three months of intermittent nocturnal hemodialysis (NHD) to intermittent nocturnal online hemodiafiltration (NHDF) for three months and then back to NHD. Uremia-associated parameters; albumin, vitamins, trace elements and blood pressure were investigated. The prescribed amount of dialysis

related medication and dietary restrictions were evaluated. Hypotensive episodes during hemodialysis sessions were registered.
Results: In all patients, phosphate and iPTH were reduced after switching from HD to NHD and NHDF ($p<0.001$). Compared to conventional HD, dialysis dose (Kt/V) was increased on NHD and NHDF ($p<0.001$); however, Kt/V was significantly higher with NHDF than with NHD ($p<0.01$). Predialytic mean arterial blood pressure was significantly reduced on NHD and remained in the same range on NHDF despite reducing antihypertensive medication ($p<0.001$). Albumin levels were significantly higher on NHD and NHDF indicating an improved nutritional status. Vitamins and trace elements remained unchanged. All dietary restrictions could be lifted under NHD and NHDF. Intradialytic hypotensive episodes were less on NHD and NHDF than on HD.
Conclusions: The introduction of a nocturnal dialysis program dramatically improves uremia-associated parameters in children. At least during our observational period, hemodiafiltration was able to further improve some uremia-associated parameters. Loss of vitamins and trace elements could not be observed with either treatment, which might be attributed to the lifting of dietary restrictions and the improved nutritional status on NHD and NHDF.

P218
Is Peritoneal Dialysis For Adolescents Still An Equal Option?

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Introduction: In children and adolescents, renal transplantation is the method of choice for end stage renal disease. However, due to the shortage of organs, peritoneal dialysis (PD) or hemodialysis (HD) are used to bridge this period, both offered to the patient as being equally efficient. Here we sought to analyze, whether an intensified, nocturnal hemodialysis program (NHD) is superior to peritoneal dialysis.
Material and methods: 13 patients (age 12.7 – 17.5 years) were prospectively included in to a NHD program (3 x 8 hours per week). We analyzed uremia associated parameters, parameters for nutrition, medication and blood pressure. Their data were compared to 13, gender, age and weight matched PD controls 6 months after being encountered in each program.
Results: Uremia associated parameters, like urea and phosphate levels, improved significantly on NHD ($p<0.001$), on PD levels remained high. Residual diuresis was unchanged after 6 months of either NHD or PD. Arterial blood pressure under NHD was significantly less than at the initiation of dialysis despite reduction of antihypertensive treatment ($p<0.001$); under PD blood pressure levels remained unchanged. Preexisting left ventricular hypertrophy dissolved under NHD. Albumin levels, as a marker for nutrition status, improved under NHD ($p<0.02$), whereas albumin levels under PD did not improve. Dietary restrictions were lifted on NHD, whereas restrictions remained on PD treatment. Hospitalization days were less for NHD patients than for PD patients ($p<0.001$).
Conclusions: Compared to PD, NHD results in significantly improved parameters of uremia and nutritional associated parameters. If individually and logistically possible, NHD should be given preference over PD for older children and adolescents with end stage renal disease.

P219
Peritonitis In Children On Chronic Peritoneal Dialysis: 19 Years Follow Up

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Introduction: Peritonitis remains a frequent complication of peritoneal dialysis in children and is the most common reason for technique failure. The aim of this study was to evaluate the incidence of peritonitis in children undergoing chronic peritoneal dialysis, during January 1995 to mart 2014.
Material and methods: We evaluated gender, age at commencement of PD, incidence of peritonitis, microbiology of peritonitis episodes, antibiotic sensitivity, modality and outcomes of PD during January 1995 to mart 2014.
Results: The incidence of peritonitis were reviewed in 29 (M: F=17:12) children on continuous peritoneal dialysis over a mean period of 38.5 ±31.04 months. Mean age was 9.46±4.41 years. Peritonitis occurred in 23 children. The mean time from starting dialysis to the first episode of peritonitis was 1.9+/-1.0 months. During 1078 patients months we observed 89 episodes of peritonitis. The incidence of peritonitis was 1 episode in 12.11 patients mounts. The children up to 7 years of age develop peritonitis more frequently than older children ($p<0.05$). Gram-positive organisms were cultured in 39% gram-negative were cultured in 19%, and culture remained negative in 31% of episodes. Staphilococcus aureus was the most prevalent pathogens and accounted for 35% of the peritonitis. In vitro evaluation reveled 55% sensitivity to a first-generation cephalosporin and 77% sensitivity to a third-generation cephalosporin. Most patients with dialysis-related peritonitis responded to antibiotic therapy. Peritonitis episodes rarely resulted in relapse, six patients had membrane failure and were shifted to hemodialysis, and no deaths were directly attributable to peritonitis.
Conclusions: Although peritonitis was common complications of chronic peritoneal dialysis in our children, it did not affect the success of the technique. It is possible to improve sterile conditions during procedure with teamwork including nurses, social workers and medical staff, even in patients of very low social status.

P220
Our Expirience With Hernia In Children Treated With Peritoneal Dialysis In R.macedonia

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Introduction: Non-infectious complications in peritoneal dialysis (PD) are usually less common as compared with infectious.
Material and methods: In this retrospective study children treated with continuous ambulatory peritoneal dialysis (CAPD) and continuous cycling peritoneal dialysis (CCPD) was evaluated retrospectively regarding hernia development.
Results: We analyzed 28 children (11 girls and 17 boys, mean age 9.71 ±4.27 years) on PD in the period between January 1996 and February 2014. The cause of ESRD was uropathy in 12 children (43%), chronic glomerular disease in 7 children (25%) and others in 9 children (32%). The mean duration of PD was 38.36±31.28 months (range 4-115 months). 16 children received CAPD and 12 received automated PD. Eight patients (28.5%) developed 10 hernias (one per 108 patient/months): 5 umbilical, 4 inguinal and 1 scrotal. The incidence of hernia development was highest within the first year following initiation of CAPD/CCPD with a subsequent rapid decrease. It was diagnosed with a median duration after catheter insertion of 22.67±15.14 days, respectively. The dialysate inflow volume was not related to hernia development. The complication due to the presence of a hernia was one episode of incarceration of the small bowel that required immediate surgical intervention and leak of dialysate in 4 children. Surgical repair was the treatment performed in 50% of the cases. The remaining hernias were managed with volume reduction, conversion from CAPD to CCPD, discontinuation of the daytime dialysate dwell in patients undergoing CCPD, or transferred to HD.
Conclusions: Prevention, early recognition, and appropriate management of these complications are important because of associated patient morbidity and technique failure.

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A New Dialysis Device Specific For Newborns Successfully Used For Neonatal Sepsis With Multi Organ Failure

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Introduction: Neonatal sepsis due to E. Coli is often severe with multiple organ failure and high mortality risk. We describe the case of a newborn male, admitted for septic shock at 11 days of life, rapidly evolved to MOF with anuric AKI, promptly and successfully treated with CRRT with the new dialysis device CARPEDIEM® Bellco specifically designed for newborns.
Material and methods: After normal pregnancy, caesarean delivery at term after 24h of premature rupture of membranes, negative vaginal cultures, he developed at 11 days of life septic shock requiring immediate resuscitation, transfer to intensive care unit, nasotracheal ventilation, high dosage amine infusion, and volume expansion. At arrival he had extremely severe metabolic acidosis, disseminated intravascular coagulation with diffuse bleeding and unstable hemodynamic status with oliguria progressed within 12 hours to strict anuria unresponsive to diuretics and 30% fluid overload. CRRT was started with the new dialysis machine CarpeDiem Bellco®, available for alpha testing in our Center, after surgical placement of jugular bi-lumen CVC (5F diameter, 6 cm length). Ready for use neonatal kit, bearing a 0.25 m2 medisulphone polisulphone filter, with total priming volume of extracorporeal circuit of 41 ml, allowed prompt dialysis start. Due to bleeding status (INR 9; ACT 400 sec; plts 20.000/μl) the circuit was rinsed without heparin and no anticoagulant was required during treatment. The dialysis parameters were Qb: 26 ml/min, net UF: 40 ml/h, QRf in post dilution 255 ml/h, maximal for this dialysis machine, specifically designed for AKI treatment after cardiosurgery in the neonatal age.
Results: PVC at start was 9 cm H2O; high pressure ventilation due to fluid overload as well as high levels of nor-epinephrine and epinephrine (1 ug/kg/min) were required for persistent hypotension and hemodynamic instability lasting for the first 8 hours of treatment when substitution fluid HFP32® (Bellco, Italy) containing lactate (32 mmol/l) as buffer was used. Net improvement of the hemodynamic condition, resolution of the burst of tachycardia and rapid improvement of acidosis was observed after substitution of reinfusion fluids with Prismasol 2® (Gambro, Sweden), containing bicarbonate 32 mmol/l and lactate 3 mmol/l. CRRT was continuously performed for 48 hrs then intermittently (12 hrs/day) for two more days and interrupted on day 5 for diuresis reprisal. No technical problems and no difficulties in performing the treatment in this critical baby were met during the treatment and after this experience several modifications in the software allowing higher fluid exchange and higher net ultrafiltration were suggested and adopted for the final version of the device.
Conclusions: Progressive stabilization of hemodynamic, better control of acidosis, reduction of amine requirement, gradual control of fluid overload and rapid improving of MOF and DIC were observed, with AKI resolution in 5 days. No neurological damage, normal renal function and normal blood pressure are relevated after nine months of strict follow-up.

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The Impact Of Peritoneal Permeability On Clinical And Biochemical Parameters In Children Treated With Chronic Peritoneal Dialysis

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Introduction: Aim of the study was to assess influence of peritoneal permeability on selected clinical and biochemical parameters in children in the first year of peritoneal dialysis (PD) treatment.
Material and methods: We retrospectively studied 56 children in the mean age of 10.13±4.86 years with end-stage renal disease (ESRD) and preserved residual renal function (RRF) treated with PD: 18 CAPD, 38 APD. Following parameters were analyzed: ESRD etiology, blood pressure, RRF: daily diuresis [mL/kg/24h], residual GFR [mL/min/1.73m2], peritoneal permeability: D/P Crea 4h, D/D0 Glu 4h, volume of peritoneal dialysis fluids (PDF) [mL/kg/24h], glucose load (GL) [mg/kg/24h], ultrafiltration (UF) [mL/kg/24h], adequacy (twKt/V, twCCr), infectious complications of PD, selected biochemical parameters.
Results: Mean D/P Crea 4h was 0.65±0.13, mean D/D0 glu 4h – 0.38 ±0.13. High (H) peritoneal permeability was found in 12 (21.5%), high-average (HA) in 18 (32.1%), low-average (LA) in 18 (32.1%), low (L) in 8 (14.3%) children. Patients with H/HA were significantly: younger (P=0.005), had slower growth rate (P=0.0003), higher systolic blood pressure (P=0.003), worse control of arterial hypertension (P=0.0001), lower GFR at PD onset (P=0.04), slower rates of GFR (P=0,007), twKt/V (P=0.04) and twCCr (P=0.008) loss, higher incidence of peritonitis (P=0.007), lower hemoglobin (Hb) (P=0.049), total protein (TP) (P=0.01) and albumin (ALB) (P=0.005) concentrations after 12 months vs. patients with L/LA. No significant differences between H/HA and L/LA groups were found in: PDF, GL, UF, twKt/V and twCCr values. In whole group of 56 children negative correlations of D/P Crea 4h with ΔSDS for height (R=-0.38, P=0.004), mean annual Hb (R=-0.31, P=0.02), TP (R=-0.34, P=0.01), and ALB (R=-0.41, P=0.002) concentrations were found.
Conclusions: 1. High peritoneal permeability in children treated with chronic peritoneal dialysis is a risk factor for slower growth rate, systolic hypertension, increased incidence of peritonitis, anemia, hypoproteinemia and hypoalbuminemia. 2. Children with high peritoneal permeability have slower rate of GFR loss.

P223

Renal Transplantation In Children Under 3 Years Old. Experience In A Single Center.

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Introduction: We analyze the evolution of a first renal transplantation in children under three year olds.
Material and methods: Between 1987 and 2013 we transplanted 43 children between 0.85 to 2.99 years. 12 transplants were from living donors. The receptors weight was 12.04 ± 2.06 Kg Most cadaveric donors were under 15 years of age (30/31).
Results: 14 grafts (32.6%) have failed at a mean time of 6 ± 5 years, 5 of them (35.7 %) in the first 6 months post-transplantation, two cases with venous thrombosis. The actuarial graft survival at 1, 5 and 7 years is 88.1%, 88.1% and 80.1% respectively. We did not find significant survival differences between the recipients weighting more or less 12 Kg, or the type of donor (living or cadaver), etiology of the primary disease, or the donor's age. Evaluating grafts that survive the first year post-transplant, actuarial survival graft at 5, 7 and 10 years is 100%, 91% and 74% respectively. Although survival has improved in recent decades, the differences are not significant. At the time of transplantation , weight, BMI and height in SD were -0.9 ± 1.1 SD , 0.35 ± 1.37 and -1.7 ± 1.4 SD and at the follow-up -0.5 ± 0.8 SD, 0.08 ± 1.1 SD and -1.09 ± 1.3 SD respectively. At the end of follow up, 29 patients with functioning grafts have an average GFR 101 ± 36 ml/min/1.73 m2, CKD stage 1: 71%, stage 2: 29%.
Conclusions: Graft and patient survival does not differ with other age groups. Reaching transplantation with a good nutritional status seems

essential to achieving good results. In our series we did not find a greater number of surgical complications than in other age groups, with two cases of thrombosis. Differences in donor and recipient size were not a risk factor in our population.

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Use Of Rasburicase In Acute Renal Insufficiency In Transplanted Patients

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Introduction: Hyperuricaemia contributes to the worsening of renal function. Rasburicase is a recombinant urate oxidase enzyme that oxidises uric acid in a soluble and inactive metabolite, allantoin. It is frequently used in the prevention of the tumour lysis syndrome; however, some authors propose its use in acute renal insufficiency (ARI) to prevent the progression of the renal damage.
Material and methods: Two clinical cases are described: Case 1:patient of 20 years of age, kidney transplant nine years earlier, is assessed for diarrhoea, fever and severe dehydration. Stable renal function was maintained previously (creatinine(Cr)1.5mg/dl). In the blood analysis, ARI was noted (Cr15.6mg/dl and Urea (U) 175mg/dl) with metabolic acidosis (pH7.34, EB-8 mmol/L) and high Tacrolimus (24ng/ml). The Doppler ultrasound of the renal graft did not show signs of complication. Fluid therapy was initiated and the Tacrolimus levels were adjusted until normalised. Hyperuricaemia was detected (14mg/dl) for which the patient received a single dose of Rasburicase. Case 2: female of 16 years of age affected with a type 1 autoimmune polyglandular syndrome and kidney transplant two years ago. She was admitted to the Paediatric ICU with septic shock of abdominal/anal origin. She presented evolving ARI (Cr 4.1mg/dl, U 168mg/dl) with hyperuricaemia (13mg/dl) for which reason, as part of the treatment for renal insufficiency, Rasburicase was administered.
Results: In both of them the uric acid values decrease to 0.5mg/dl in the first 24 hours. Afterwards a progressive improvement in renal function was noted until reaching the basal level.
Conclusions: Although the use of Rasburicase is not approved routinely in transplanted paediatric patients with ARI, its use has been successful, without observing adverse effects and helping to prevent the progression of the renal damage produced by hyperuricaemia. We propose its compassionate use for the handling of hyperuricaemia in this type of paediatric patients.

P225

Age Determines Peritoneal Dialysis Outcome In Children

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Introduction: Peritoneal dialysis (PD) is the initial renal substitution therapy for 30% of Spanish children and 85% of those under three-years-old. Excellent mid-term survival makes this an ideal treatment while awaiting transplantation. Given high frequency of infants treated, the aim of this national collaborative study is to ascertain whether age when beginning PD influences patient evolution
Material and methods: 243 children beginning PD between the years 2003 and 2011 were divided by age into two groups in order to study characteristics and evolution. Group A: 74 infants aged 1.36 ± 0.8 years; group B: 169 children 10.34 ± 4.4 years old. Renal residual function and blood albumin were similar in both groups in the course of the study
Results: Excellent patient survival (98%) was observed in both groups. Mean time on PD awaiting transplant was longer in infants than in older children (15 vs.10 months, respectively). PD failure and transfer to hemodialysis was more frequent in older children (40% vs 20% at 36 months of dialysis initiation) PD failure was usually due to inadequate ultrafiltration in older children while the greatest cause in infants was infection or catheter related problems. The following were more frequent in infants than older children: enteral feeding by nasogastric tube (30% vs 6%) or gastrostomy (35% vs 4%); peritonitis (1.13 vs. 0.4 episodes/patient); number of catheter replacements and higher iPTH levels (384 vs. 211 pg/ml). Infants also showed greater weight (delta Z score +0.94 vs. – 0.01) and height (delta Z score 0.01 vs. -0.11) catch up. Infants showed a greater Kt/V: 2.98 vs. 2.74, less hypertonic glucose consumption (27% vs. 31%), less decrease in residual renal function and lower prevalence of hypertension (24 % vs. 43%).
Conclusions: PD outcome is associated with age at begining. Infants and older children have excellent survival. Infants despite higher incidence of infection show a lower risk of technique failure.

P226

Design And Baseline Characteristics Of Cradle: A Study Evaluating The Efficacy And Safety Of Everolimus To Reduce Cni Exposure And To Withdraw Steroids In Pediatric Renal Transplant Recipients

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Introduction: Calcineurin inhibitors (CNI) are associated with nephrotoxicity, and steroids with growth impairment and glucose intolerance in pediatric renal transplant recipients (pRTxRs). The CRADLE study was designed to evaluate efficacy and safety of early everolimus introduction to reduce/avoid CNI and steroids in pRTxRs.
Material and methods: CRADLE (NCT01544491), a 12-month (M), phase III, open-label study for safety and efficacy assessment and a 24M follow-up, will recruit approximately 106 pRTxRs across 42 sites in 16 countries. After a run-in period (4-6 weeks) with standard corticosteroids, tacrolimus and mycophenolate mofetil, pRTxRs (≥1-<18 years) with estimated glomerular filtration rate (eGFR) >40 mL/min/1.73m2 are randomized (1:1) to either continue the same regimen or switch to everolimus + reduced tacrolimus and steroid withdrawal at M6. Primary objectives at M12 are to evaluate: (i) the rate of composite efficacy endpoint of biopsy-proven acute rejection, graft loss, or death and (ii) renal function. Key secondary objectives include: progression of interstitial fibrosis/tubular atrophy, PTLD, growth and sexual maturation.
Results: December 2013 data monitoring committee reviewed data from 33 recruited pRTxRs and agreed to continue the study as designed. Safety analysis included 32 patients; 18 (56.3%) female, 28 (87.5%) Caucasian; with a median (range) age of 11.0 year (2.0-17.0); weight, 29.7 kg (10.0-64.6); height, 142.0 cm (77.5-176.5); and BMI, 16.9 kg/m2 (12.6-22.2). Prior to RTx, 17 (53.1%) patients were on dialysis. Living-related, deceased heart beating, and deceased non-heart beating renal allograft were performed in 17 (53.1%), 13 (40.6%), and 2 (6.3%) patients, respectively. Renal hypoplasia/dysplasia (31.3%) was the most common cause of RTx. Most patients (93.8%) received induction therapy with basiliximab. At randomization, median eGFR was 68.0 mL/min/1.73m2 (range 37-264).
Conclusions: CRADLE is the first study to assess the effect of early everolimus introduction with reduced tacrolimus and steroid withdrawal in pRTxRs and will provide long-term data on growth and sexual maturation, and glucose intolerance.

P227

The Outcome Of Long Term Use Of Central Venous Catheters In Children On Hemodialysis

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Introduction: Hemodialysis depends on effective access to blood vessels. Infections and venous stenosis are major complications of central venous catheter (CVC). Venous stenosis prevalence is not known in pediatric patients.
Material and methods: Staff sterile techniques were improved. To reduce infection-induced CVC replacement we slightly expanded the mitigating conditions for CVC replacement and site salvage guidelines. Venography was performed in a subset of patients. We recorded data from all patients between 2000-10, Infection rate, and re-infection risk, CVC survival and trends over the time were calculated.
Results: Sixty eight patients, median age 3.71 years, who had 184 CVCs participated. Infection rate was 2.89/1000 CVC days. Rate was higher and CVC survival lower in younger patients, during earlier study period and with increased number of CVCs inserted in a given patient. Central vein stenosis was found in 11/18 patients tested, frequently asymptomatic. Stenosis correlated with previous CVCs and infections numbers. We replaced only 16/50(32%) of CVCs that had guidelines indication for replacement. Re-infection rate, even with Staphylococcus aureus, was not significantly higher than in patients without replacement indication. Avoiding replacement was not associated with disseminated infection or death. Throughout the study period infection rate, significantly decreased and CVC survival and infection free survival increased.
Conclusions: Infection rate is negatively correlated with age. The frequent venous stenosis detected is alarming. . Expanding the mitigating conditions for CVC replacement and attempts at site preservation did not result in undesired complications. Strict sterile techniques may reduce infection rate.

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Complications Of Central Venous Stenosis Due To Permanent Central Venous Catheters In Children On Hemodialysis

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Introduction: Central venous catheter (CVC) is a frequently used as an access for hemodialysis in children. One of the known complications is central venous stenosis. Although this complication is not rare, it is often asymptomatic and therefore unappreciated. Superior vena cava (SVC) stenosis is obviously suspected in the presence of upper body edema, but there are several other signs and symptoms often unrecognized as being part of this syndrome.
Material and methods: We performed venography studies in patients on hemodialysis with difficulty in CVC re-insertion. Some, which had obstruction of the SVC, had also seemingly unrelated clinical phenomena. We studied the time scales of appearance-resolution of these phenomena and of formation and resolution of the increased central venous pressure.
Results: We describe here four patients with SVC obstruction. They had in addition the following manifestations, some of are life or organ threatening: obstructive sleep apnea, un-resolving stridor, increased intracranial pressure, increased intraocular pressure , right sided pleural effusion, protein losing enteropathy and lymphadenopathy. The temporal relationship of the phenomena with documentation of venous stenosis, together with their resolution after alleviation of high venous pressure, points to a causal role. We suggest pathophysiological mechanisms for the formation of each of these complications.
Conclusions: In patients with occlusion of the SVC, various unexpected clinical entities can be caused by high central venous pressure. As often the etiology is not obvious, a high index of suspicion is needed. Sometimes prompt alleviation of the high pressure is mandatory.

P229

Conversion From Twice-daily To Once-daily Tacrolimus In Pediatric Kidney Transplant Recipients: What Do The Patients Think About It?

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Introduction: Scientific communities recommend a 1:1mg conversion from twice-daily (Tac-TD) to once-daily tacrolimus (Tac-OD). Nevertheless, pharmacokinetics results from recent clinical studies differ from the initial observations. The aims of this study were to compare the Tac dosing at the switch (M0) and six months later (M6) and to analyze patient adherence and satisfaction, and medical practices concerning this conversion.
Material and methods: We retrospectively included all patients transplanted between 1992 and 2012, aged under 18 at transplantation, followed in the University Hospital of Lyon, Nantes, Robert Debré, Toulouse and Tours, in whom Tac-OD was introduced in relay from Tac-TD. The values at M0 and M6 were compared with a Wilcoxon paired test. Questionnaires were sent to the patients and to the nephrologist pediatricians.
Results: We included 37 patients, with a mean age of 14 +/- 3,8 years old at the switch. The conversion was proposed to improve patient adherence in most of the half cases. Patients were converted to Tac-OD on average on a 1:1,02 mg ratio for their total daily dose. At M6, a significant increase in Tac-OD dosing of + 17.5 (-25 to +100%, p=0,0119) was necessary. Sixty per cent of the patients responded to the questionnaire. Thirty six per cent declared missing their medication less often and though 77% have felt more free, only 36% forget their disease more. Finally, the medical practices for the indications or the modalities of the switch were very different in each center.
Conclusions: Our data contrasted with the preliminary studies by showing the need to significantly increase Tac-OD dosing. However there was a high interindividual variability, and our population was at higher risk of nonadherence, with medical histories of rejection and gastro-intestinal complications. Moreover, despite these limits, this study emphasized the need for steady monitoring, as a significant decrease in Tac exposure may occur.

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Catheter-related Staphylococcus Aureus Infections In Paediatric Haemodialysis Patients. Do We Always Have To Remove The Catheter?

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Introduction: Catheter-related infections are a major morbidity and mortality cause in haemodialysis patients, and may lead in some cases to catheter removal. The Infectious Diseases Society of America 2009 guideline recommends catheter removal in Staphylococcus aureus (SA) infections, based on severe complications seen in adults, such as endocarditis. However, these complications are uncommon in children, and catheter removal may lead to a central line loss, with particular relevance in infants and patients expected for a long stay on haemodialysis, such as hyperimmunized patients.

Material and methods: Objective: To determine the outcome of catheter-related SA infections in haemodialysis paediatric patients treated in our haemodialysis unit. Medical records were retrospectively reviewed since the opening of our haemodialysis unit in June 2012 until March 2014. Our unit was initially opened with two stations, being upgraded to four stations in January 2013.
Results: Two patients with catheter-related SA infection were treated. Case 1 is a 6-years-old female with liver fibrosis and chronic kidney disease secondary to renal dysplasia, on haemodialysis for two years due to hyperimmunized status. She presented with intradialytic fever. Catheter blood cultures were positive to SA. She was initially treated with intravenous cefazolin plus oral cloxacillin, but due to persistent positivity in blood cultures, and given the absence of sympthoms and echocardiographic signs of endocarditis, treatment was changed to intravenous vancomycin, vancomycin lock therapy and oral rifampicin for four weeks. Blood cultures were negative afterwards. Case 2 is a 7-years-old male with bilateral renal hypoplasia, on haemodialysis for one month. He presented with intradialytic fever, with positive catheter blood cultures to SA. Echocardiography showed no signs of endocarditis. Intravenous vancomycin, vancomycin lock therapy and oral rifampicin were administered for four weeks. Control blood cultures were negative afterwards.
Conclusions: Attempting catheter salvage in SA infections could be an option in paediatric patients.

P231
The Prognostic Factors For Mortality In Children Receiving Continous Renal Replacement Therapy In Pediatric Intensive Care Unit

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Introduction: Continous renal replacement therapy (CRRT) is an important modality of treatment in critically ill patients. Our aim was identifying prognostic factors for mortality in critically-ill children receiving continous renal replacement therapy.
Material and methods: Patients who received CRRT between 2008 and 2013 in pediatric intensive care (PICU) of Tepecik Teaching and Research Hospital from Izmir-Turkey were evaluated. 25 patients (median age: 96 month; range: 2.5-216 month; male/female: 15/10) who received CRRT were enrolled the study. 20 children (80%) had underlying chronic disease.The indications for CRRT were acute renal failure plus volume overload unresponsive to other therapies (15 patients, 60%), acute renal failure (8 patients, 32%), volume overload (1 patient, 4%), removal of toxins, metabolites/correction of severe acidosis (1 patient, 4%). Continuous venovenous haemodiafiltration were used in 24 patients (96%), continuous venovenous hemodialysis were used in 1 patient (4%). 13 patients (52%) were died.
Results: There were significant differences in Pediatric Risk of mortality III (PRISM III; 21 points vs. 22 points) score, Pediatric Logistic Organ failure (PELOD; 31 points vs. 33 points) score, number of organ failure (4 organs vs. 6 organs), the rate of cardiovascular failure (7 vs. 13), and the rate of hepatic failure (3 vs.9) between survivors and non-survivors ($p<0.05$).
Conclusions: In survivors, the higher PRISM III and PELOD scores, the higher number of organ failure, existences of heart failure and hepatic failure were important prognostic factors for mortality for children received CRRT in PICU.

P232
Renal Recovery After Long-term Dialysis In A Paediatric Patient With Atypical Haemolytic Uraemic Syndrome Treated With Eculizumab

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Introduction: To demonstrate the potential for recovery of renal function with eculizumab (a humanised monoclonal antibody against terminal complement protein C5) treatment in a patient with atypical haemolytic uraemic syndrome (aHUS) who had received long term dialysis.
Material and methods: A 1.5 year-old girl presented 4 days after polio vaccination with vomiting but no stool changes. Further investigations revealed oedema, decreased urine output, arterial hypertension (135/100 mmHg), anaemia (haemoglobin [Hb] 4.6 g/dL), thrombocytopenia (platelets 59.4 x109/L), increased creatinine (129 μmol/L) and proteinuria (3.3 g/L).
Results: aHUS was diagnosed based on identification of thrombocytopenia, haemolytic anaemia and organ failure. Initial treatment was with fresh frozen plasma, furosemide, antihypertensives, heparin and prednisone (2 mg/kg, 4 weeks). However her condition deteriorated 7 weeks after presentation: Hb 6.4 g/dL, platelets <62 x109/L, increased creatinine [288 μmol/L], and increased lactate dehydrogenase [LDH; 792 U/L]. Peritoneal dialysis was initiated 2 months after initial presentation. A renal biopsy (12 weeks after presentation) revealed active thrombotic microangiopathy. She experienced persistent arterial hypertension, thrombocytopenia, anaemia despite plasmapheresis and dialyis. 33 weeks after presentation eculizumab was initiated (300 mg every 16 days). After 4 months of eculizumab treatment and 10 months on dialysis she could discontinue dialysis. During 18 months of eculizumab therapy, urine output increased to 900 mL/day, blood pressure normalised and she has had no further clinical symptoms of aHUS. At last follow-up (26 months after presentation), Hb, LDH, platelet count, creatinine and urea were normal, and glomerular filtration rate had recovered to 58 mL/min/1.73m2. During eculizumab treatment, two respiratory tract infections, chickenpox and an acute intestinal infection occurred without breakthrough of aHUS symptoms.
Conclusions: In this patient who had been anuric and received long-term dialysis (10 months), eculizumab therapy effectively controlled aHUS and led to a significant improvement in kidney function. Currently eculizumab therapy is ongoing.

P233
Extending The Donor Pool In Pediatric Kidney Transplantation: Grandparents As Donors

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Introduction: Living related kidney donation (LD) is by far the preferred donor option for children with endstage renal disease with superior graft survival (GS) compared to deceased donors (DD). An upper age limit for donors is often advocated to ensure renal graft longevity and many centres operate with an upper donor age limit of 55- 60 years for children. The aim of this study was to evaluate our data of graft survival (GS) of grandparents donors (GPD) as compared to parental LD (PLD).

Material and methods: Retrospectively we identified recipients who had a first renal graft from a grandparent and compared the outcome to recipients of an corresponding age-span cohort of PLD.
Results: We identified 24 recipients (median 7,1, range 1,2-27,3 yrs) of a first renal graft from a GPD (median 60,75, range 42-78 yrs). The group was compared to a cohort (n=281) with the same cut-off in age of recipients (median 21,1, range 1-27yrs.) and PLD (median 49,3, range 42-72 yrs). GPD were significantly older than PLD (median 60,3 vs 49,3 yrs, p<0.001). Recipients to GP grafts were significantly younger than in the control recipient group (median 7,1 vs 21,1 y). Age difference (Donor-Recipient) was median 50,6, range 38.2-70 years for GPD; and for PLD age difference was median 28,6, range 17,5-48,3 years. GS at 1 year was 100%/92,5%, at 5 years 89,5%/81.1% and at 10 years 83,5%/ 65,6% for GPD vs parental LD, resp (p=0.1367).
Conclusions: Our data demonstrates non-inferior GS for young recipients and GPD in spite of a considerable age difference between donor and recipient. We propose considering healthy GP for children as a possibility to extend the organ pool and shorten waiting lists. After careful selection of potential donors, chronological age alone should not exclude highly motivated grandparents.

P234
Pediatric Kidney Transplant Monitoring With Protocol Biopsies And Hla Antibodies

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Introduction: Kidney transplantation is the standard of care in the treatment of pediatric patients with end-stage renal disease. Technical and pharmaceutical progress have helped to dramatically reduce the incidence of acute rejection episodes and to improve first-year outcomes. However, long-term graft survival remained largely unchanged over decades. Alloimmunity together with non-immunological factors is the most common mechanism leading to kidney graft failure.
Material and methods: Our study retrospectively analysed a sample of pediatric kidney transplant recipients with normal and stable graft function to investigate 1) the prevalence of acute and chronic humoral lesions detected on surveillance biopsies and 2) the association between these histological features and the presence of circulating anti-HLA-antibodies. We analysed 41 pediatric renal recipients (M/F 32/9, mean age at transplantation 9.73±6.24 years) who underwent between January 2011 and January 2012 at least one surveillance biopsy at 6, 12 or 24 months post-transplantation and a contemporary blood sampling for anti-HLA-antibodies detection.
Results: We observed a prevalence of subclinical acute lesions (Banff '05 2, 3, 4Ia) equal to 21.7%, 31,8% and 26,6% respectively at 6, 12 and 24 months post-transplantation (5% of humoral lesions). DSA prevalence resulted equal to 13%, 22,7% and 20% respectively at 6, 12 and 24 months post-transplantation. Similarly non-DSA anti-HLA antibodies prevalence resulted equal to 21,7%, 27,2% and 13,3% at 6,12 and 24 months post-transplantation respectively. Circulating anti-HLA antibodies were associated with the presence of subclinical acute lesions.
Conclusions: Our study demonstrates a high prevalence of histological acute lesions and circulating anti-HLA antibodies detected in patients with normal and stable graft function. These observations highlight the fundamental role of kidney graft monitoring through histological and serological testing to early identify and treat subclinical humoral damage.

P235
Mucor Mycetoma Of The Lung In A Renal Transplant Child

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Introduction: Invasive fungal infections are the cause of increased morbidity and mortality in transplant recipients. Aspergillus, Candida, Cryptococcus and Mucorales constitute the most common causes of these infections. Fungal mycetomas are localized infections that usually involve the sinuses and less often the lungs. We describe a rare case of a mucor mycetoma of the lung in a child with renal transplantation.
Material and methods: We describe a 16 years-old renal transplant boy suffered by end-stage chronic kidney disease due to posterior urethral valves. The child was transplanted 3 years before; however, due to routine laboratory testing a sudden deterioration of the renal function was found without any other clinical sign or symptom. Laboratory and imaging investigation was done which showed normal findings of the transplanted kidney. Unfortunately, the chest radiograph revealed a nodule on the left lung with a diameter of 1cm and the chest CT confirmed that the nodule was localized to the periphery of the left lung in contact with the pleura. An extensive surgical removal of the lesion was decided and performed.
Results: The histopathological study of the biopsy specimen was suggestive for mucor mycetoma confirmed by an in situ PCR which emerged Mucorales specie. Further laboratory and imaging investigation did not showed any extension of the infection. The child's initial treatment of liposomal amphotericin B for 2 weeks switched to posaconazole for further 2 weeks. After 5 months, the child was in excellent condition without signs of relapse.
Conclusions: Mucor mycetoma of the lung in renal transplant recipients is extremely rare. After an extensive search of the English literature no other such case in a child was found, suggesting that our patient is probably the first reported. Surgical removal of the lung mycetoma combined with antifungal treatment resulted to an excellent outcome.

P236
Severe Acute Combined Renal Graft Rejection In A Boy With Hajdu-cheney Syndrome

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Introduction: Hajdu-Cheney syndrome (HCS) is a rare, autosomal dominant, skeletal disorder, caused by mutations in NOTCH signaling pathway members. NOTCH dysregulation affects the development of various organs and immune pathways. Renal abnormalities occur in about 10% of patients with HCS. Presently, no published data exist on renal transplantation in affected patients.
Material and methods: Case presentation: We present a boy with HCS, whose renal function was impaired since birth due to cystic dysplastic kidneys and deteriorated progressively to end-stage renal disease at 2.5 years of age. He was transplanted at the age of 7 years after a period of peritoneal dialysis. Surgery was uneventful and he received standard immunosuppression consisting of basiliximab, methylprednisolone, mycophenolat-mofetyl and tacrolimus. After 6 months of excellent graft function, a respiratory tract infection provoked a severe acute combined (humoral and cellular) rejection of the graft. Treatment with plasmapheresis/IVIG and pulses of methylprednisolone was started at once. Since no persistent improvement of graft

function was achieved, thymoglobuline, rituximab and bortezomib were successively added to treatment, based on repeated biopsy results. Unfortunately, graft function was continuously deteriorating, resulting in graft failure after 3 months of intensive treatment when hemodialysis was initiated.
Results: Discussion: Despite of aggressive immunosuppression, rejection was extremely resistant to treatment and eventually resulted in graft failure. Recently, it has been demonstrated that NOTCH signaling pathways are critically involved in the differentiation and regulation of the immune system. A "gain of function" mutation in the PEST domain, similar to the one responsible for the HCS, was also found in some B-cell tumors. This could suggest an activation of the immune system, eluding conventional immunosuppressive treatment.
Conclusions: Although, no clinical data exist, we speculate that a dysregulation of the immune response in patients with HCS might influence the outcome of renal transplantation.

P237
Longitudinal Observation Of Increase In Fat Mass After Kidney Transplantation With Bio Impedance Spectroscopy

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Introduction: We prospectively monitored the change in fat mass and lean tissue mass in 66 children with End Stage Renal Disease before and after transplantation using bio impedance spectroscopy.
Material and methods: In 66 children within the RICH-Q database, we measured fat and lean tissue mass at four occasions: prior to transplantation (1 to 3 months before) and after transplantation (1, 3 and 6 months). Prior to transplantation 25 children were treated with peritoneal dialysis, 18 with hemodialysis and 23 were planned for pre emptive transplantation. We used the Body Composition Monitor of Fresenius Medical Care. The children were measured in ten different RICH-Q centers. The immunosuppressive regime consisted of basiliximab, mycophenolate, cyclosporine or tacrolimus, with or without prednisone.
Results: One month after transplantation, 7 children (6 boys) had a change in fat mass of > 100% of baseline. Two out of these seven children had a prednisone-free immunosuppressive regime after transplantation. In five of these 7 children the fat mass remained high 3 to 6 months after transplantation. 18 children (14 boys) had no increase in fat mass 1 month after transplantation. 12 of these children received prednisone after transplantation. Two out of these 18 children had a significant increase (more than 50%) in fat mass 3 to 6 months after transplantation.
Conclusions: Fat mass changes rapidly after transplantation, independently of prednisone dosing.

P238
Anaplastic Large Cell (cd30+) T-lymphoma (alk-) In A Boy After Renal Transplantation

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Introduction: New and increasingly potent immunosuppression significantly improves graft survival in pediatric renal transplantation, but is also associated with increased risk of infection and neoplastic disease. The malignancy rate among pediatric transplant recipients is 2.4% and post-transplant lymphoproliferative disorders (PTLD) represent the most common type of neoplasm. The majority of PTLDs is of B-cell origin and is related to Epstein-Barr virus (EBV). PTLDs of T-cell origin account for less than 15%.
Material and methods: Case presentation: We present a 10-year-old boy, transplanted at the age of 4.5 years. Immunosuppression consisted of basiliximab induction, methylprednisolone, mycophenolate mofetyl (MMF) and tacrolimus. Six months after transplantation, a primary EBV-infection triggered PTLD development. Immunosuppression was gradually adjusted including discontinuation of MMF, switch from tacrolimus to everolimus and ultimately withdrawal of immunosuppression (only temporary). Two courses of rituximab were administered, the second one being part of a low-dose cyclophosphamide and prednisone regimen. Subsequently, two additional different chemotherapy regimens were applied due to treatment failure (i.e. CHOP with dexamethasone instead of prednisone and vinblastine/CCNU). Despite aggressive treatment, polymorphic PTLD progressed to monomorphic PTLD most consistent with anaplastic large cell lymphoma (ALCL) of T-cell origin (EBV+, CD30+ and ALK-). Recently, treatment with brentuximab was initiated. Graft is still functioning well.
Results: Discussion: Although, CD20 was virtually absent in late lymph node biopsy samples, PTLD progressed in our patient and T-cell lymphoma evolved. Whereas no direct involvement of EBV in T-cell PTLD has been confirmed, EBV-infected B-cells could influence T-cell reactivity due to aberrations of T-cell regulatory function in patients on immunosuppression. A clonally restricted T-cell population could emerge, prone to neoplastic transformation.
Conclusions: Conclusion: T-cell PTLD is a rare disorder with uncertain etiology and unfavorable outcome. No specific recommendation exists for treatment. A multicentric study should be conducted to define the most appropriate management of EBV+ T-cell ALCL.

P239
Non-infectious Peritoneal Dialysis Associated Complications In Children

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Introduction: Non-infectious peritoneal dialysis (PD) complications are usually less common than infectious complications but they prolong hospitalization, require surgical or conservative treatment and affect patient morbidity. The aim of the study was to evaluate PD-associated non-infectious complications and to identify risk factors in children who received PD in tertiary children hospital.
Material and methods: Twenty seven children on chronic PD were included in the retrospective study. Patients' age at PD initiation, PD duration, and non-infectious complications such as abdominal wall hernias (pericatheteral and inguinal), dialysate leakage (pericatheteral dialysate leak, genital edema, hydrothorax), catheter obstruction with omental wrap, hemoperitoneum and chyloperitoneum were estimated.
Results: There were 30 PD treatment episodes for 27 patients. The mean age at dialysis initiation was 7.4±5.7 years (0.02 - 17.2 years), with mean PD duration 22.6±20.4 months (0.5-72.5 months). Twenty three non-infectious complications were registered. Thirteen children (43.3%) had no non-infectious complications, 13 children (43.3%) had one non-infectious complication. There were 4 children (13.4%) who had more than one complication. Younger patients (5.1±5.5 years) are more likely to have non-infectious complications than the older ones (10.3±4.7 years) ($p \leq 0.05$). Abdominal hernias were most common non-infectious complications in 9 of 30 (30.0%) children. Catheter obstruction with omentum was diagnosed 5 times (16.7%). In all these cases omentectomies were performed. Dialysate leakage was in 20.0% patients with pericatheter leakage in 10.0%, genital edema in 3.3%, and hydrothorax in 6.7%. Chyloperitoneum was diagnosed twice (8.7%). One girl experienced hemoperitoneum associated with ovulation at mid-cycle. Nineteen

children (63.3%) experienced 72 episodes of peritonitis during PD. Patients who had non-infectious complications had higher risk of peritonitis ($p \leq 0.05$).
Conclusions: More than half (56.7%) patients had PD-associated non-infectious complications. The majority of non-infectious complications was treatable and did not interfere with PD procedure. There is relationship between age of patients, peritonitis and non-infectious complications rate.

P240
Superselective Angiographic Embolization For Arteriovenous Fistula After Protocol Renal Transplant Biopsy In A Child

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Introduction: Protocol biopsies are safe and well tolerated in the majority of cases with kidney transplantation. However there are partially prevalent complications of renal biopsies such as gross hematuria, perirenal hematuria, perirenal hematoma and arteriovenous fistula. Arteriovenous fistula (AVF) is the one of most frequent complication after renal biopsies with an incidence of 0.5 - 16%. While arteriovenous fistulas are usually asymptomatic, can cause some serious complications in years. Therefore, early diagnosis and effectively treatment of arteiovenous fistulas is even more important particularly in renal allografts.
Material and methods: We describe an 11-year-old boy who underwent kidney transplantation due to posterior urethral valve and developed an AVF following first year protocol biopsy and succesfully treated with superselective transcatheter embolisation.
Results: There was no complication occured after procedure and graft function remained stable about 6-month period after embolization.
Conclusions: We believe that, these valueable kidneys should be monitored without any risk. Superselective transcatheter embolisation is a safe and highly effective treatment of choice for AVFs in renal allografts.

P241
Acquired Primary Hypothyroidism In Infantile Peritoneal Dialysis: The Role Of Iatrogenic Iodine Exposure.

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Introduction: Povidine-iodine contained in disconnect caps of peritoneal dialysis (PD) sets have been reported to potentially contribute to hypothyroidism. The Medicines and Healthcare Products Regulatory Agency (UK) alert (2006) for PD caps, suggests that infants and children with smaller peritoneal fill volumes are more likely to be affected, where higher dialysate concentrations of iodine can result. We report two cases of infants with end-stage renal failure (ESRF) receiving continuous cycling peritoneal dialysis (CCPD) who developed hypothyroidism. Both infants had normal newborn blood spot screening (TSH<6mu/L), indicating an acquired cause.
Material and methods: Case 1, a male infant with ESRF secondary to posterior urethral valves, commenced PD on day 6. He received manual PD for 6 weeks, followed by automated CCPD when minimum fill volumes were achieved. Case 2, a male infant with ESRF secondary to congenital obstructive uropathy, commenced manual PD from day 7 to 9 and again at age 7 weeks. Manual PD was continued for 4 weeks followed by automated CCPD. Manual PD potentially allows for increased iodine exposure from both long-line connection shields and PD caps.
Results: Profound primary hypothyroidism was identified in both individuals, with free T4 levels of <2.6pmol/L and TSH of >100mu/L (day 54, case 1; day 85, case 2), necessitating levothyroxine treatment. Symptoms were masked by significant comorbidity. Both patients had negative thyroid peroxidase antibodies and were noted to have bulky thyroid glands on ultrasound, consistent with appearances seen in iodine toxicity. They remain on levothyroxine treatment, aged 4 and 5 months respectively.
Conclusions: These cases further highlight the potential role of povidine-iodine in PD caps and long-line connection shields in the development of primary hypothyroidism. Given the significant morbidity associated with hypothyroidism in this age group, increased awareness of the associated risk is essential, with regular screening of this at-risk group to ensure early detection and treatment.

P242
Central Vascular Access By Tesio Catheters (tc) For Chronic Hemodialysis In Neonates And Infants: Beyond The Rules

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Introduction: Central vascular catheters (CVCs) remain the preferred hemodialytic access in pediatric patients, mainly in newborns and small children, in whom a peritoneal dialysis is not suitable.
Material and methods: We report the experience with TC implant in a series of children with body weight ≤ 10 Kg on chronic HD.
Results: Six 6.5 Fr Twin TC were placed in 6 children with BW from 3 to 10 Kg, aged 3 to 16 months, 4 boys, affected by End Stage Renal Disesase. The TC were placed into the right internal jugular vein (RIJV). An US examination is performed previously to verify the vein patency. A needle 18 G is introduced, under US guidance, into the RIJV at the lower third and a wire is passed. With the wire in place, a second puncture into the RIJV, at a distance of some millimeters, is made and a second wire is introduced. A microsection of the cutaneous bridge between the two venipuncture sites is performed. Then the 7 Fr. peel-away sheats were introduced over the wires into the RIJV, followed by the two catheters and the removal of the peel-away sheats. The right position of the arterial catheter tip at the cava-atrium junction and of the venous catheter into the right atrium is monitored, during intervention, with intracavitary ECG. A control by fluoroscopy is also performed. After the exit site was choosen, a parallel tunneling of both catheters in omolateral mammal area was made. The catheter lumen patency is verified, flushing and heparin lock is performed, the stability is assured by suturless fixing and semipermeable polyurethane membrane medicated with clorexidine. In all patients HD was started as soon as possible after the intervention. No severe complication occured, except for mild bleeding through the exit in two patients, at the start of the procedure (back-tracking), spontaneously regressed over some hours; TC allowed blood flow rates adequate to HD needs in all patients, were stable over long time. No accidental dislocation and/or kingking or exit-site infection were registered.
Conclusions: The reliability of the method in terms of duration and stability of implanted devices and the low incidence of complications, lead the authors to recommend it strongly for chronic HD and to extend the indications of the procedure even in plants required for HD in the short-medium term in this particular age group.

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Central Vascular Access For Acute Haemodyalisis: Power Picc Dual Lumen 5 Fr Catheter Of Label Used. A Preliminary Study.

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Introduction: Percutaneous ultrasound guided implant into the right internal jugular vein allows the use of oversize catheters in infants and newborns receiving acute haemodialysis. The pediatric nephrology worldwide community utilizes central venous catheters as primary dialysis access for most patients. The optimal vascular access delivers an adequate flow rate for the dialysis prescription, it has a long use-life, and has a low complications rate. The unavailability of ad hoc sized catheters for pediatric application which would represent a gold standard device in small size infants and newborns, and the recent availability of Power PICC Dual Lumen 5 Fr polyurethane high flow catheters, led the authors to investigate new possibilities catheter suitable for children haemodialysis. In fluid dynamics the Poiseuilles law establishes a correlation between the flow rate of a fluid flowing through a long pipe and the pressure drops. It directly correlates the pressure gradient through the pipe with the flow rate, the pipe length and the fluid viscosity and it correlates inversely with the 4th power of the pipe radius.
Material and methods: In this work the authors report on the experience made with Power PICC Dual Lumen catheters (5 Fr diameter, 60 cm length and 10 ml / min flow rate).
Results: The vascular device was cut and reduced to 7.5 cm length in agreement with the Poiseuille´s law and implanted in a 6-months old caucasian male, body-weight 5.9 kg , affected by acute renal failure. The implant was realized in our pediatric haemodialysis center at Childrens Hospital Santobono - Pausilipon Naples.
Conclusions: The off label modified device successfully performed as pediatric catheter, ensuring a double flow of 80 ml/ min.

P244

Endothelial Dysfunction In Pediatric Renal Transplant Recipients

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Introduction: Cardiovascular disease is a major cause of morbidity and mortality after kidney transplantation. Endothelial dysfunction (ED) was shown to constitute an independent predictor of cardiovascular events. The aim of this study was to detect endothelial dysfunction in pediatric renal transplant recipients.
Material and methods: This was a prospective cohort study of 36 pediatric renal transplant recipients after their first post transplantation year, 30 patients with ESRD on regular hemodialysis and 30 normal subjects. Doppler ultrasound was performed for assessment of brachial artery flow-mediated dilatation (FMD) and carotid artery intima-media thickness (IMT).
Results: Carotid artery IMT measurements in the transplantation group (mean ± SD = 0.43 ± 0.08mm) were significantly (p = 0.001) lower than the dialysis group (0.5 ± 0.1mm) and insignificantly higher than the control group (0.41± 0.07mm). FMD was significantly impaired in the HD group. The median (IQR) FMD of the transplantation group, 8.7% (2.5 - 20.4) tended to be higher than that of the dialysis group, 4.4% (2.6-10.8) and lower than that of normal controls, 14% (8.5-19.7), p = 0.055 and 0.12 respectively.
Conclusions: Pediatric renal transplant recipients tend to show evidence of endothelial dysfunction to an apparently less extent than those on regular hemodialysis.

P245

Peritoneal Dialysis In Infants: Single Center Experience

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Introduction: The aim of the study to determine the problems of peritoneal dialysis (PD) in newborns and infants in order to improve PD practice in this challenging patient group.
Material and methods: Acute or chronic PD was performed in 39 patients <1 year-old in our unit between 2002-2013. The patients' files were reviewed retrospectively regarding complications and outcome of PD.
Results: Acute PD was performed in 27 patients (15 newborns, 12 infants). Non-infectious complications were more frequent in newborns and the most common complication was pericatheter leakage (66.6%). The catheter was repositioned in 46.6% of the newborns and in 8.3% of the infants because of the mechanical complications. Mean recovery time was 6.2 ± 3.5 days in newborns and 25 ± 28.2 days in infants (p=0.017). Mortality rate was 66.7% in newborns and 58.3% in infants (p=0.706). Chronic PD was performed in 12 patients (8 newborns, 4 infants). Mean follow up duration of PD was 30.6 ± 25.3 months in newborns and 23.5 ± 23.2 months in infants. Although overall complication rate was not different in two groups, non-infectious complications such as pericatheter leakage, catheter obstruction were more frequent in newborns (17 occasions in newborns vs 7 occasions in infants) while infectious complications were more common in infants (6 episodes in infants vs 9 episodes in newborns). The incidence of peritonitis was higher in infants than in newborns (1:10.4 and 1:17.5 episode/months, respectively). Mortality rate was not different in two groups (50%); the cause of death was sepsis in all newborns and cardiopulmonary complications in infants.
Conclusions: The most important difficulty of acute and chronic PD in the newborns was pericatheter leakage and catheter obstruction while peritonitis was the most common problem in chronic infantile PD. Although the frequency of catheter related complications was high, those complications were not related to mortality.

P246

Chronic Peritoneal Dialysis In Children: Single Center Experience Comparing Two Periods Over 18 Years

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Introduction: The aim of the study was to evaluate whether there is a change with time regarding the complications of peritoneal dialysis (PD) and prognosis of children treated by chronic PD comparing the period of 1996-2004 to 2005-2014.
Material and methods: The study group consisted of 109 patients (54 female, 55 male) and was divided into two groups. The patients who followed up between 1996-2004 were enrolled in Group I and those followed up between 2005-2014 were enrolled in Group II. Forty four patients in Group II were compared to 65 children in Group I regarding PD complications and prognosis.
Results: The mean age of onset of PD was 9.5±4.2 years and 7.14±5.73 years in Group I and II, respectively. The most common cause of chronic kidney disease (CKD) was uropathies in both groups. The percentage of the patients on automated PD (APD) was higher in Group II than Group I (73% and 60%, respectively). Catheter failure rate was 18% in Group II, while the rate was 36.9% in Group I. The most frequent cause of catheter

failure was recurrent peritonitis in both groups. Peritonitis rate was lower in Group II than in Group I (1:22.4 months vs 1:14.3 months). The most common causative microorganism of peritonitis was Staphylococcus aureus in both groups. The most important difference between the two groups was that the percentage of the patients who received renal transplantation. Transplantation rate was 43.2% in Group II whereas 7.7% in Group I.

Conclusions: PD is the treatment of choice for CKD in children until the patients undergo renal transplantation. Although the most important complication of PD is still peritonitis, the rate of peritonitis and catheter failure have diminished as the experience in the field of PD increase.

P247

Pre-existent Peritubular Capillary Basement Membrane Multilayering In Living Related Renal Transplantation

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Introduction: Multilayering of the peritubular basement membrane has been described in different native kidney diseases, but severe multilayering (≥5 layers in ≥2 random PTC) is regarded as a specific sign for chronic antibody-mediated rejection (CAMR). We describe a case questioning this.

Material and methods: Case report with literature review.

Results: We present a boy who presented with steroid resistant nephrotic syndrome (age: 12 yrs) not responding to additional immunosupressives. Sequential renal biopsies showed progressive FSGS and dialysis was started 6 years later. Mother offered to donate a kidney. Genetic analysis revealed heterozygous polymorphism: R229Q in NPHS2 in patient and mother. In addition, she had another heterozygous intronic splice mutation c.873+7 A>G in NPHS2. Since R229Q is found in 2-4% of the normal population and the donor had no proteinuria, she was accepted as donor. At the age of 19 yrs. a living related transplantation was performed. Baseline biopsy was normal (light microscopy). Heavy proteinuria appeared within days, but responded to plasmapheresis (PP). The allograft biopsy was normal with LM but demonstrated podocyte foot effacement and multilayering (5-6 layers) of basement membrane in 2/10 PTC with electron microscopy (EM). Biopsies 4 and 7 months post-Tx demonstrated progressive multilayering, suggesting CAMR. However C4d and DSA's were negative. We then performed EM on the baseline biopsy which demonstrated multilayering in 5/10 PTC with focal podocyte foot process effacement, indicating the lesions were pre-existent in the asymptomatic donor and not related to CAMR. We performed a literature search for PTC multilayering in native kidneys.

Conclusions: 1) This is the first description of severe PTC basement membrane multilayering with podocyte effacement in non-proteinuric kidney donor carrying heterozygous NPHS2 mutations. 2) Severe multilayering after RTx is not specific for chronic rejection and can even exist in asymptomatic individuals.

P248

Sleep Disorders In Pediatric Patients On Peritoneal Dialysis

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Introduction: There are few reports describing sleep disorders (SD) in children on peritoneal dialysis (PD), mostly based on the application of questionnaires. As far as we know, none used polysomnography (PSG), the gold standard for the diagnosis of SD. This is the first study in our country assessing SD in children with chronic kidney disease (CKD).

Material and methods: Objective:To report the prevalence of SD in a cohort of children on PD. Observational, descriptive and prospective study. Eligibility: Children and adolescents up to 18 years, PD for a minimum of 3 months. Exclusion criteria: diagnosis of diabetes, neurologic disorders and sedative/hypnotic therapy. A PSG was done while on their usual cycler nocturnal dialysis regimen. Montgomery series was used as normal values. A questionnaire was complete in same day by parents. Informed consent was undersigned by all participants.

Results: Seven children on PD were studied. The median age was 10 years (1-18) and the mean body mass index z-score was -0.24(±0.71). Most have congenital causes of renal disease. The average duration on dialysis was 7.6 months. Sleep disorders diagnosis is made in 4 patients. The results of PSG showed decreased sleep efficiency (83.2%±8.1 vs 89.3%±7.5) and sleep latency (10.4min±8 vs 23.0min±25.3). Sleep breathing data showed increased apnea/hipopnea index (1.7/h±1.9 vs 0.68/h±0.75) and desaturation index (4±3.5 vs >3). Periodic Leg Movements index (PMLI) average was normal (0.61/h±0.65 vs 0.9/h±1.2), but two cases have PLMI above 0.9/h. Subjective data obtained by the sleep questionnaire are concordant with PSG, but it seems that frequency of symptoms is undervalued by parents.

Conclusions: Our study shows sleep disturbance in most of children on PD, being sleep disorder breathing and abnormal sleep architecture the most prevalent. The subjective data from questionnaires showed underestimation of sleep disturbance by parents. Systematic screening for sleep problems would therefore appear to be warranted in children with CKD.

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Mineral And Bone Disorder In Children After Kidney Transplantation

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Introduction: The aim of this study was to investigate bone mineral turnover in children after kidney transplantation.

Material and methods: We investigated data of 25 children (17 boys, 8 girls), age 14,1±3,15 (7,5-18,0) before and after deceased donor kidney transplantation. Average disease duration before kidney transplantation was 11,0±4,1 (range 2,0-16,0) years. Serum levels of parathyroid hormone (PTH), calcium, phosphorus, alkaline phosphatase (ALP), creatinine, total protein and GFR were measured in all children before transplantation and 1, 3 and 12 months after transplantation.

Results: The study revealed significant PTH level decrease 1 month after transplantation (576,9±519,5 pg/ml before vs. 115,5±95,4 pg/ml after, $p<0,05$). No significant differences were observed between PTH levels 1, 3 and 12 months after transplantation (1 month 115,5±95,4 pg/ml; 3 months 116,8±93,3 pg/ml; 1 year 105,1±85,9 pg/ml). PTH level in 56% children exceeded the norm in 1 year after transplantation. Calcium serum level remained significantly increased in 3 month after kidney transplantation (2,36±0,17 mmol/l, $p<0,05$). In first days after transplantation children showed significant decrease of phosphorus serum level (2,19 ±0,68 vs. 1,32±0,5 mmol/l, $p<0,05$), 16% of children even had hypophosphatemia. ALP serum level did not significantly change after transplantation. The analysis revealed relationship between PTH and ALP serum levels after transplantation and disease duration. We didn't observe correlation between PTH level after transplantation and its levels before transplantation, or graft performance.

Conclusions: We concluded that serum levels of PTH, phosphorus and ALP decreased significantly in 1 month after kidney transplantation. Nevertheless, a lot of patients had PTH above the norm even in 1 year after transplantation. Increase in PTH level is most likely to be caused by morphological changes in parathyroid glands, which developed during pretransplantation and remained after successful transplantation, and

doesn't depend on graft function. Some children may require continuation of secondary hyperparathyroidism treatment even after kidney transplantation.

P250

Proteinuria 1 Year Posttransplant Is Associated With Impaired Graft Survival In Children After Renal Transplantation

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Introduction: In adult population proteinuria is associated with reduced kidney allograft and patient survival. On contrary to adult patients, the association between proteinuria and graft and patient survival has never been studied in children.
Material and methods: All 91 pediatric allograft recipients transplanted at our institution between 1997 and 2007 was screened for this retrospective study. The inclusion criteria for the study were 1. functioning graft 1 year posttransplant, 2. presence of data on proteinuria, 3. no recurrence of focal-segmental glomerulosclerosis. The study cohort includes 75 patients (40 boys). Proteinuria was considered positive if index protein/creatinine in urine was higher than 30 mg/mmol Cr. Demographic characteristics and data of proteinuria and glomerular filtration rate (eGFR) were collected. Biopsies made in the first year posttransplant and the last biopsies made after the first year in individual patients were analysed separately (Banff 2007).
Results: Proteinuria > 30 mg/mmol Cr at 1 year after renal transplantation was detected in 35% patients. Graft survival rates in proteinuric patients were significantly lower as compared with patients without proteinuria ($p<0,0001$). Significant risk factors related to reduced graft survival at 1 year of follow-up were acute and corticoresistant rejection, increased proteinuria and decreased eGFR. In multivariate analysis the only significant risk factors for graft loss at 1 year remained acute rejection and increased proteinuria. During the follow-up > 1 year posttransplant the risk factors were corticoresistant and chronic rejection and decreased eGFR. No significant differences in histological findings between proteinuric and non-proteinuric group were found. There was no significant difference in patient survival between proteinuric and non- proteinuric group (100 % vs. 98 %). The only patient died with functioning graft during follow-up because of proteinuria unrelated cause.
Conclusions: In our study we have for the first time demonstrated an independent association between proteinuria 1 year posttransplant and graft survival in children after kidney transplantation.

P251

Outcomes Of Critically Ill Children Requiring Renal Replacement Therapy In A Pediatric Intensive Care Unit.

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Introduction: Over the last few decades, the epidemiology of acute kidney injury (AKI) in the pediatric intensive care unit (PICU) has changed, and recent data demonstrate, that the majority of cases are associated with secondary kidney injury (multiorgan dysfunction syndrome, nephrotoxic medications, septic shock) with significant morbidity and mortality. Purpose: To study the clinical course in critically ill childen requiring renal replacement therapy (RRT) and to analyse factors associated with mortality.
Material and methods: We retrospectively reviewed the clinical data of all the critical ill children that received RRT between January 2008 and December 2013.
Results: Twenty seven children received RRT. The median age was 3 ±4.13 years. 63% of children received continuous venovenous hemodiafiltration and 37% received peritoneal dialysis. 33% had hemato-oncologic disease and 30% congenital heart disease. The most common primary diagnosis was sepsis (30%) and postoperative congenital heart disease (22%). 88% were receiving vasoactive drugs, 41% had metabolic acidosis (pH <7.1), 30% hyperkalemia (>5.5 mEq/L) and 33% had fluid overload greater than 10%. At the time of RRT initiation 63% of children presented oliguria and 66% are classified as "failure" on pRIFLE score and 70% at stage 3 on AKIN score. The average of lenght of stay in PICU before RRT initiation was 84 hours (minimum 1h, maximum 504h). Complications of RRT were infrequent, one patient developed peritonitis, one had thrombosis and one had bleeding on catheter insertion site. The overall mortality was 48% and multiorgan failure was the most common cause.
Conclusions: In the population studied, the mortality was similar of that reported in the literature. The factor associated with a higher risk of mortality was the multiorgan dysfunction syndrome. The characteristics of our population, in which there was a predominance of patients with oncologic disease and congenital heart disease, may have influenced these results.

P252

Kidney Transplantation In Macedonian Children 2009-2013 Year

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Introduction: Kidney transplantation has become the primary method of treating ESRD in the pediatric population. The mortality rate of children with chronic renal failure has dramatically declined with the progress in surgical techniques and suppression of the immune system
Material and methods: We present seven children who have been transplanted from 2009-2013 year in " Clinic for childrens surgery". The first child has dysplastic kidneys, three of the children have valvulae urtehrae posterior, one is with Prune Belly syndrome, one with hronic kidney glomerulopathy and one with tricho-rhino-phalangeal syndrome. Child with dysplastic kidneys has been on peritoneal dyalisis 2 years, one of the children with valvulae urethrae posterior has been on peritoneal dyalisis 6 years before kidney transplantation, the other has been on CAPD for 2 years and hemodyalisis for 5 years. The patient with Prune Belly syndrome was born with neonatal bilateral hydronefrosis and bilaterall megaureters. He had ESRD at age of 4 years and started CAPD (2001 year). 2010 he started hemodyalysis because of the resistant pseudomonas peritonitis. All the children had live donor kidney transplantation from 2009 -2013 year.
Results: Only one of the children had acute rejection of the graft 3 days after the transplantion as a result of the early complication-vascular thrombosis. He had second kidney transplantation in may 2012 year and the donor was his grandfather. The other patients have imunossupressive therapy with: prednison, ciklosporin and cellcept. They have antiinfection hemoprofilaksis for 6 months. They have regulary laboratory and ultrasound controls and good graft function.
Conclusions: We present seven children with live donor kidney transplantation in Macedonia transplanted by pediatric urologist in "Clinic for children's surgery" in Skopje. The most common causes of end-stage renal disease in children are congenital malformations of the kidneys and urinary tract. The rates of graft survival are good in children who receive a kidney from a living related donor.

P253

Bk-virus Serostatus And Viremia In Children Early After Renal Transplantation

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Introduction: BK virus (BKV) nephropathy leads to graft dysfunction and affects around 5% of kidney transplant recipients. BKV viremia occurs in about 30% of patients. Negative BKV antibody status might be associated with the development of BKV infection, but the serostatus is not routinely determined. In this study BKV serostatus before transplantation and the development of BKV viremia within four months after transplantation was analyzed.
Material and methods: BKV viral load (VL) was measured by real time PCR in stored plasma samples of 29 transplanted children (16 boys, 13 girls; median age 9.0 yrs, range 3.7-17.8). Standard immunosuppressive therapy consisted of prednisolone, MMF, cyclosporine and basiliximab. BKV serostatus before transplantation was measured in all patients using a Luminex-based BKV VP1 assay.
Results: 4/29 children were BKV seronegative before transplantation, 1 of 4 (25%) developed BKV viremia after transplantation (renal biopsy showed borderline rejection without positive BKV staining). In the seropositive group (25/29), 6 (24%) developed BKV viremia. The 7 viremic children concerned 6 boys and 1 girl ($p<0.05$). The median (range) time point of the first BK PCR measurement was 84 (25-118) days after transplantation. The median VL at the first positive measurement was 1,15 x 104 cps/mL (4,8 x 102 - 2,14 x 105 cps/mL). During follow-up the highest VL in the patients ranged from 1,7 x 103 to 8,3 x 105 cps/mL. 6 children that were BKV negative during the first 4 months became positive thereafter. 16 children remained BKV negative.
Conclusions: The prevalence of early BKV viremia within the seronegative and seropositive group was not different in this study. However, no information of the donor BK serostatus was available. Significantly more boys than girls developed BKV viremia after transplantation.

P254

Chronic Hepatitis E In An Asymptomatic Child After Kidney Transplantation.

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Introduction: At present, transient asymptomatic hepatitis E virus (HEV) infection is common among healthy adults, as reported by blood transfusion services in Western Europe. In immune suppressed patients HEV infection may become chronic and lead to cirrhosis.
Material and methods: An 8-year old boy underwent renal transplantation in 2008, at the age of 4. Medication included prednisolone, mycophenolate mofetil (MMF), and tacrolimus. In the 3rd year after transplantation a routine check showed increasing liver enzymes (ALAT 94U/L, ASAT 55 U/L). They remained elevated with fluctuations (ALAT in 2011 - 2013: average 95 U/L, range 25-255 U/L). Common hepatotropic viruses (CMV, EBV, HAV, HBV, HCV) were ruled out. In 2013 a PCR for HEV-RNA was performed and found to be positive. Retrospective testing of archived plasma samples showed that the appearance of HEV RNA coincided with the elevation of liver enzymes in 2011; followed by the appearance of HEV antibodies. The HEV viral load fluctuated between approx. 60 and 3100 IU HEV RNA /mL.
Results: To treat HEV infection, the boy's MMF dosage was reduced (800 to 600 mg/m2), followed by tacrolimus (0.1 to 0.05 mg/kg/day). Prednisolone remained at 5 mg on alternate days. HEV infection cleared rapidly and liver enzymes normalized (ALAT from 255 to 14 U/L). Subsequently the immunosuppressive medication was restored to the original levels. HEV RNA remained undetectable.
Conclusions: Transplant recipients are at risk for chronic hepatitis E, which may be mistaken for drug induced liver injury. Chronic HEV infection may or may not resolve spontaneously. It can be treated with oral ribavirine; or by temporarily decreasing the level of immunosuppression. In patients with unexplained mildly increased liver enzymes HEV infection must be considered. HEV serology (IgG and IgM) in transplant patients is less reliable, to confirm or exclude HEV infection. PCR for HEV RNA must be performed on a fresh plasma sample.

P255

Poor Prognosis With Plasma Cell Infiltrates In Paediatric Renal Transplant Biopsies Leading To Renal Allograft Failure

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Introduction: The aetiopathogenesis and immunological reason for plasma cell infiltrates in paediatric renal transplant biopsies remains unknown. We investigated the incidence and impact of plasma cell infiltrates in renal transplant biopsies on allograft survival.
Material and methods: Prospective study of plasma cell infiltrates on histopathology from paediatric renal transplant recipients (RTR) from April 1996 to March 2014.
Results: 14 (6 male (43%)) RTR aged 3.2 - 17.5 (median 13.4) years at time of transplantation of whom 13 (93%) received deceased donor renal transplants and one was re-transplanted. Plasma cell infiltrates were present in the first renal transplant biopsy at 0.4 - 8.8 (median 1.5) years after transplantation when plasma creatinine was 100 - 1240 (median 273) μmol/l (increase in plasma creatinine by > 10% from baseline). Donor specific antibodies were present in 7 (50%) patients (57% Class I, 29% Class II and 14% Class I and II HLA antibodies) with 57% of them having increased titres giving total MFI of 1252 - 7709. Patient survival was 93% (one death due to sepsis) and renal allograft survival was 14% (two patients at follow-up of 4.7 and 7.7 years). Renal allograft loss was at 0.5 - 9.7 (median 2.1) years from transplantation and 0.0 - 2.9 (median 0.3) years from the first renal transplant biopsy. This compares poorly to national paediatric renal transplant data with half-life of deceased donor renal transplantation of 14 years.
Conclusions: The presence of plasma cell infiltrates in paediatric renal transplant biopsies is associated with reduced renal allograft survival. National and international collaborative studies are required to investigate the incidence and significance of plasma cell infiltrates in paediatric renal transplant biopsies. In the future, bortezomib, a proteasome inhibitor, which induces apoptosis in mature plasma cells, may play a role in patient management.

P256

Late-onset Cytomegalovirus (cmv) Infection In Pediatric Kidney Transplantation Is Not A So Rare Disease

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Introduction: CMV infections during the first year after renal transplantation are well defined and linked to the level of immunosuppressive treatment. In contrast, late-onset CMV infections are poorly characterized.

The aim of this study was to analyze the occurrence of late-onset CMV infections.
Material and methods: Retrospective, observational, single-center study including all pediatric kidney transplant recipients followed in our unit between January 2000 and January 2013. Data from patients with CMV infections after more than 1 year of transplantation were recorded.
Results: Late-onset CMV infection occurred in 6 (mean age: 13.2 years) out of 168 patients (3.5%) after a mean time of 4.6 years (range: 1 -11 years) after transplantation. Five recipients had a CMV+ serostatus at the time of transplantation and one had a CMV- serostatus with a CMV+ donor. The induction immunosuppressive therapies were similar for 5 patients with anti-IL2 receptor antibodies, a short course of 4 days of steroids, and maintenance therapy with calcineurin inhibitors and mycophenolate mofetil (MMF). One patient had the same therapy but with a long-term oral steroids. At the time of CMV infection, 5 patients had an increase of immunosuppressive therapy for an acute rejection and all 6 patients received steroids. Only 4 patients were symptomatic at diagnosis, while the 2 others patients diagnosed on systematic biological control. CMV was detectable in blood sample in 4 patients whereas CMV was detectable only on tissue sampling for the 2 others. All patients were treated with IV ganciclovir during a mean time of 12.4 days (8-15 days) with a transitory decrease or discontinuation of MMF. Thereafter they received a long-term valganciclovir prophylaxis treatment.
Conclusions: Even years after transplantation, a transient increased of immunosuppressive therapy is a predisposing condition for late CMV infection. In these high risk patients, a valganciclovir prophylaxis should be prescribed to prevent late CMV infection.

P257
Is Daily Laboratory Surveillance Of The Paediatric, Post-renal Transplant Recipient Worthwhile? A Cost-benefit Analysis

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Introduction: The Kidney Disease Improving Global Outcomes Guidelines recommend that assessment of the transplant recipient for the first post-transplant month should include measurement of urine protein excretion once, serum creatinine 2-3 times weekly and calcineurin inhibitor levels on alternate days. Traditionally our unit requests these tests (alongside haematology and liver function assessment) daily for the first month following transplantation. This often facilitates earlier discharge but imposes significant hospital attendance burden for the patient and increases laboratory expenditure. This study determines the yield and cost of daily laboratory assessment of paediatric renal transplant recipients for 30 days following transplant.
Material and methods: A retrospective audit and cost analysis of the laboratory tests performed in the first 30 days post-transplant for 10 consecutive paediatric renal transplant recipients and a cost-analysis of an alternate daily review protocol (reverting to daily review in the event of suspected graft dysfunction).
Results: Of the 10 patients, 9 were over 12 years old, 2 received deceased donor grafts, and one had a primary renal diagnosis of glomerular disease. Median discharge was day 8 post-transplant. None of 180 full blood counts, 168 liver function tests or 106 urine protein quantifications performed post-discharge prompted a change in management. 154 screening urine cultures diagnosed 4 urine infections. 188 tacrolimus levels prompted 27 dose changes (9 patients had $\leq$3 dose changes). Nine significant elevations in creatinine were detected by 199 creatinine assays, prompting one biopsy (no rejection). The average outpatient laboratory cost of an alternate daily review protocol with clinic based urine dipstick screening was calculated at AUD$1350.61 per patient (average current daily review protocol costs AUD$2285.25 per patient).
Conclusions: Whilst the safety of an alternate daily review protocol requires prospective study to prove equivalence, this pilot study has revealed numerous opportunities to improve the efficiency of healthcare expenditure in these patients without compromising care.

P258
Ten-year Audit Of Peritoneal Dialysis-related Peritonitis In A Tertiary Paediatric Centre: Rates, Patterns And Microbial Resistance

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Introduction: To characterise the frequency of peritoneal dialysis-associated peritonitis, pathogens and their sensitivity patterns over a 10-year period in our institution. We also determined rates of treatment success and failure and appropriateness of empiric therapy.
Material and methods: The ANZDATA registry was used to retrospectively identify episodes of confirmed PD-associated peritonitis between 2003 and 2013 in patients aged less than 18 years. These reported cases were cross-referenced against the hospital microbiological database and for each infection microscopy, culture and detailed sensitivity data was extracted. Antimicrobial failure was defined as recurrent peritonitis or removal of Tenckhoff catheter.
Results: 107 episodes of peritonitis occurred between October 2003 and November 2013 in 38 patients. A total of 59 patients were chronically dialysed in this period. Overall peritonitis rates for this period were 0.97 episodes per patient years on dialysis. Of all microbial isolates, 57.3% were Gram-positive organisms and 21.3% Gram-negatives. Polymicrobial infections accounted for 21.5% of all episodes. The rate of fungal peritonitis was 3.7%. The rate of culture negative peritonitis was 12.1%. Recurrent peritonitis was noted in 9.3% of episodes. Antimicrobial treatment failure occurred in 23.4%. Overall need for haemodialysis acutely was 12.1%, with ultimately nine patients permanently changing dialysis modality due to PD infection (24%).
Conclusions: The rate of PD-associated peritonitis in our institution is higher than is reported in other paediatric dialysis centres in the last decade. Treatment failure was also unexpectedly high in our population. As a result, we are revising the empiric choice of antibiotic therapy for PD-related peritonitis in our population.

P259
Successful Renal Transplantation With Eculizumab Therapy In Two Patients With Atypical Hemolytic Uremic Syndrome

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Introduction: Atypical hemolytic uremic syndrome (aHUS) is a very rare, life-threatening, progressive disease that frequently has a genetic component. In most cases it is caused by chronic, uncontrolled activation of the complement system. Patients with aHUS frequently develop end-stage renal disease (ESRD); after transplantation, the disease frequently recurs causing graft failure. Although, recently it was reported that eculizumab has successfully been used to prevent post-transplantation recurrence of aHUS, this experience is limited.
Material and methods: We report here two patients with aHUS, who were successfully transplanted using eculizumab.
Results: The first patient was 8 year old female patient who was on chronic peritoneal dialysis for 2.5 years after a severe aHUS attack resistant to plasmapheresis therapy. Second patient was 16 year old male

who was on hemodialysis for 6 years due to biopsy-proven aHUS resistant to plasmapheresis therapy. In both patients, genetic tests for factor H mutations were not detected. Both patients underwent renal transplantation from deceased donors (HLA 3 and 4 mismatch). Eculizumab was given one hour before and one day after transplantation, and weekly or bi-weekly afterwards. As induction therapy, anti-thymocyte globulin was given. Also, tacrolimus, mycophenolate mofetil (MMF) and prednisone was started. Within 7 and 8 months follow-up after transplantation, no HUS recurrence or graft dysfunction was seen. Estimated glomerular filtration rate measured by Schwarz formula is 82 and 79 ml/min/m2, respectively, at last visit.
Conclusions: Renal transplantation with eculizumab treatment is efficient in patients with atypical hemolytic uremic syndrome.

P260
Infant Peritoneal Dialysis. A Single Centre Experience
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Introduction: In consideration of poor outcomes and high mortality, the decision to commence chronic dialysis for infants under twelve months of age is not an easy one and is frequently the topic of ethical debate. We present our units experience of peritoneal dialysis in three infants aged between three days and four months. All parents were counselled regarding the complexities of treatment, impact of co-morbididities and long term outcomes. Palliative treatment versus intensive therapy including peritoneal dialysis were explored. The families elected to pursue peritoneal dialysis.
Material and methods: One infant aged four months and two infants under one week of age were treated with automated peritoneal dialysis (APD) and intense feeding regimes. All of the infants had regular developmental assessments and regular occupational therapy. Speech therapy and physiotherapy were included as necessary.
Results: Infant 1 (male): Commenced APD age four months. Minimal complications. Live donor renal transplant aged 22 months. Infant 2 (female): Commenced APD age four days. Numerous complications. Infant 3 (female): Commenced CVVH during first week of life. Transitioned to APD age six weeks. No dialysis complications to date.
Conclusions: Despite being made aware of the labour intensive nature of this therapy and the potential for serious complications, the families elected peritoneal dialysis rather than palliative care. Optimal outcomes are reliant on parent motivation and close communication within the multidisciplinary renal team in order to maintain a good quality of life for the child and achievement of developmental milestones. In consideration of co-morbidities and the impact of APD on quality of life for infants and families, APD is not undertaken without careful consideration.

P261
Just A Spoonful Of Sugar - Medihoney For Paediatric Peritoneal Dialysis Exit-site Infection, A Case Series
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Introduction: International guidelines in peritoneal dialysis (PD) advocate for regular application of topical mupirocin in chronic PD exit-site care. A strong evidence base links this treatment to reduced rates of exit-site infections and peritonitis (ESIP), however emerging reports of increasing mupirocin resistance and gram negative exit-site floral replacement and ESIP are threatening the long term viability of topical antibiotic ointments as a prophylactic treatment. Honey has multiple, proven, antibacterial and wound healing properties. A recent Cochrane Review of topical honey for wound healing found some benefit for superficial and partial thickness burns but not for chronic venous ulcers. Recent randomised controlled trials have not proven honey to be superior to mupirocin in ESIP prophylaxis. No exclusively paediatric studies have been performed but numerous case series advocate for a beneficial effect in promoting healing of complex and infected paediatric wounds.
Material and methods: We present a photographic case series of 8 paediatric patients with PD exit site infections and/or over-granulation successfully treated with topical medical grade honey in place of topical antibiotic mupirocin, accompanied by a literature review of medical honey for the treatment of paediatric wounds.
Results: Improvement was observed in all cases which we objectified by assessment using modified Twardowski criteria, from a median score of 3 ('acute infection') to a median score of 1 ('good').
Conclusions: Medical grade honey is the first line prophylactic exit-side ointment in peritoneal dialysis exit-sites at our institution. We are increasingly turning to honey to salvage infected exit sites threatening the need for removal, with much success. Increasing case reports and series are suggesting improvement in infected and poorly healing wounds in children with complex medical conditions.

P262
Immunization Status Of Children With Chronic Kidney Disease Before Renal Transplantation.
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Introduction: Vaccination is an important strategy for preventing infections in children with renal transplantation. The aim of this study was to evaluate the immunization status of children with chronic kidney disease (CKD) prepared for renal transplantation.
Material and methods: Children with CKD evaluated for renal transplantation at our pediatric nephrology clinic were included. The antibody titers against measles, mumps, rubella, varicella, hepatitis A and hepatitis B were determined.
Results: The study included 125 children, 54 females (43.2%), 71 males (56.8%), with a mean age 12.05±4.5 years and a mean follow-up period of 27.0±17.6 months. 34 (28.2%) children were followed on hemodialysis and 45 (34.4%) children on peritoneal dialysis. Pre-emptive transplantation was planned for 43 (37.4%) children. Seropositivity status was 113 children (90.4%) for rubella, 100 children (80%) for measles, 91 children (72.8%) for varicella, 84 children (67.2%) for mumps and 120 children (96%) hepatitis B, and only 62 children (49.6%) for hepatitis A. Only 33 (26.4%) patients listed for transplantation showed protective antibodies against all tested pathogens. The lowest individual immunization rates were for hepatitis A (49.6%) and mumps (67.2%).
Conclusions: The prevention of infections by effective vaccination should be an essential task of pediatric nephrologists caring for children with CKD would undergo renal transplantation with life-long immunosuppression. Measurements of serum antibodies in children with CKD should be repeated regularly and appropriate revaccination should be consider if it necessary.

P263
Long-term Outcome Of Chronic Dialysis In A Tertiary Pediatric Center
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Introduction: End-stage renal disease (ESRD) is a major cause of morbidity in children. Due to the long waiting time for renal transplantation, children may remain on maintenance dialysis for a long period of time. Dialysis in children carries a significantly higher mortality rate than for age-adjusted population. Overall survival rates of 85.7% for 3 years, with lower rates for the youngest patients are reported. Our aim was to determine the long-term outcome of children on maintenance dialysis and identify mortality risk factors.
Material and methods: Data of all patients treated with chronic dialysis (>3 month) between the years 1995-2013 in Schneider Childrens Medical Center of Israel was retrospectively collected.
Results: 109 patients, 63 male (58%) received maintenance dialysis during the study period. Median age at dialysis initiation was 11.3yrs (range 1 month-18.7yrs). Major ESRD etiologies were: dysplastic kidneys n=45(52 %) and focal segmental glomerulosclerosis n=19 (17.5 %). Dialysis modality: peritoneal -23(21%), hemodialysis 51(50%), combined 31(28%). Median follow-up duration was 9.46yrs. Outcome: 69 patients (62.4 %) successfully transplanted. 20 (18.3 %) returned to dialysis due to graft failure, 6 patients (7.3%) continue dialysis without transplantation. The data includes 39 patients who continued follow-up in adult nephrology services. Mortality rate was 12/109 (11 %). Death causes: 7/12 dialysis-associated complications: 3 line sepsis, 3 –electrolyte/hemodynamic disorder, 1-vascular complications. Five patients succumbed to their primary illness. 5yr patient survival was 85.2%: 100% for >10 year olds at dialysis start vs. 69% for < 5 year olds or younger.
Conclusions: Chronic dialysis is a suitable temporary option for pediatric ESRD patients awaiting renal transplantation. Despite high long-term survival rates, especially for older children, life-threatening dialysis-associated complications might significantly affect survival in the younger group.

P264
Calcium Balance In Pediatric Online Hemodiafiltration: Beware Of Sodium And Bicarbonate Prescription In The Dialysate

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Hospices Civils De Lyon And Université De Lyon

Introduction: We have been using pediatric online hemodiafiltration (oHDF) since March 2009 in our pediatric unit. Without any significant change of our daily practice, despite an adequate management of CKD-MBD as proposed by the international guidelines, we observed some unusually low PTH levels in all six treated patients when using a dialysate with a 1.5 mmol/L-calcium concentration. Following this observation, we changed to a 1.25 mmol/L-calcium concentration in the dialysate in December 2012.
Material and methods: In September 2013, we assessed plasma and dialysate electrolytes in five children undergoing oHDF with a 1.25 mmol/L-calcium concentration to evaluate the evolution of total and ionized plasma calcium (tCa/iCa) during one session as well as the calcium concentration in the dialysate (dCa).
Results: When using a 1.25 mmol/L-calcium concentration, both tCa and iCa decreased during the session, with iCa falling below 1.1 mmol/L in 4/5 patients. Major discrepancies were observed between the expected (1.25 mmol/L) and the measured dCa, with a median (range) of 1.01 (0.83-1.04) mmol/L. We therefore switched four children to a 1.5 mmol/L-calcium concentration: iCa remained normal at the end of the session in all patients. The differences between expected and measured dCa can be explained by technical characteristics on the Fresenius® system. During the reconstitution of the dialysate, the priority is given to the final sodium concentration: increasing bicarbonate concentration in the dialysate decreases sodium (and calcium) extraction from the acid preparation. Similarly, decreasing the sodium requested in the dialysate decreases calcium extraction from the acid preparation, therefore also decreasing dCa. Proof of this concept was obtained when measuring dCa after changing sodium and/or bicarbonate requirments directly on the Fresenius machine when patients were not connected to the dialysis machine.
Conclusions: Prescription of high bicarbonate and/or low sodium in the dialysate decreases calcium concentration in the dialysate.

P265
Development Of A Nephrology Transition Program Following Positive Outcomes Reported By Patients And Parents Transitioned In Other Specialties

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Introduction: Poor graft survival in renal transplant recipients following transfer highlights the conflict between psychodevelopmental drives of adolescence and the management of a chronic illness. Transition programs improve graft survival reducing future healthcare expenditure incurred by dialysis. The IPNA/ISN Consensus Statement was recently published to guide practice and service development. Our Transition Support Service provides support, coordination, resources, knowledge and advocacy for patients and families and for paediatric and adult clinicians. Young adults are seen in dedicated transition clinics lead by Youth Mentors with input from nursing co-ordinators from specialty teams. Youth mentors also track and facilitate progress, working with adolescents towards healthcare independence. We present data assessing the effectiveness of our institution's Transition Support Service across four non-nephrology sub-specialties and apply this to the development of a Nephrology Transition Program.
Material and methods: Between 2010 and 2012, 100% of referred patients across four sub-specialties (cardiology, haemophilia, cystic fibrosis and rheumatology) completed surveys at their first and final transition appointments, aimed at evaluating their level of self-management and knowledge about the transition process. From this data, a Nephrology Transition Protocol was developed utilising existing clinical services and the IPNA/ISN Consensus Statement.
Results: The pilot, non-nephrology cohort completed 160 pre-evaluation and 49 post-evaluation surveys. Following the Transition Program, more young adults were managing their appointments (90% post-evaluation vs 27% pre-evaluation), medications (100% vs 59%), prescriptions (90% vs 55%) and emergency care (90% vs 53%). Parental responses corroborated the responses of the young adults and documented improved medication concordance after the program (56.3% vs 9.5%).
Conclusions: Young adults are more confident, knowledgeable and capable of self-management following intervention from our Transition Support Service. We present our institution's Nephrology Transition Protocol.

P266
Optimising Dialysis: A Comparison Of Adapted And Conventional Peritoneal Dialysis

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Introduction: Conventional peritoneal dialysis (Con-PD) is delivered as a series of identical exchanges. Adapted PD (Ad-PD) consists of several initial short, low volume cycles, followed by several long, higher volume cycles. In concept it is similar to how manual PD is frequently employed

in intensive care. A recent randomised cross-over trial by Fischbach et al showed significantly increased ultrafiltration (UF) and greater clearance of urea, creatinine and phosphate with lower metabolic cost as measured by glucose absorption in a trial of Ad-PD in 19 adults. To our knowlege this is the first trial comparing Ad-PD and Con-PD in children.
Material and methods: Patients are randomised to 6 weeks of Ad-PD followed by 6 weeks of Con-PD or vice versa. All patients are seen 2-weekly for clinical assessment and assessment of dialysis adequacy using electrolyte samples of blood, urine and dialysate.
Results: This is an ongoing study, to date 9 children have been recruited and 3 have commenced Ad-PD. The first 2 were low transporters and were withdrawn in the first week due to a clinically significant decrease in UF volume. The third child was a high transporter and had a significant increase in UF (from 100 to 400ml) and a significant decrease in phosphate and potassium, such that supplementation was commenced. We await the full results which will be presented at the meeting.
Conclusions: The results of the adults Ad-PD trial were very encouraging but the initial results from our study, the first paediatric trial of Ad-PD, show that it does not work for every child. However the child that had increased UF was failing Con-PD with consideration of haemodialysis and thus this has been an excellent result for her. It is possible that outcomes are dependent on transporter status but further results are necessary to confirm this initial finding.

P267
Use Of Plasma Exchanges And Eculizumab In Haemolytic And Uremic Syndrome After Allogeneic Bone Marrow Transplantation : A Case Report.

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Introduction: Haemolytic and uremic syndrome (HUS) after allogeneic bone marrow transplantation (BMT) is a well described complication but current therapeutic modalities are not well codified and results of these therapeutics are quite variable.
Material and methods: We report the case of a fifteen years old girl who had aplastic anemia and underwent a BMT after failure of prior immunosuppressive treatment. Four months after BMT, she presented with a severe hypertension, glomerular proteinuria, pericardial effusion and acute renal failure. The renal biopsy showed lesions of thrombotic microangiopathy. No arguments for an atypical HUS were found, especially in the complement's study, taking into account that genetic studies were limited by BMT. The first therapeutic line was plasma exchanges, performed daily for ten days without any efficiency on hypertension, proteinuria or renal fonction. Eculizumab perfusions were therefore started using the same protocole as in atypical HUS.
Results: After six months of treatment with eculizumab and with a CH50 level of less than 10%, she remains stable with an unchanged proteinuria level and well-controlled hypertension, a glomerular filtration rate stable at 16 ml/min/1.73m^2 and a persistant mild thrombocytopenia but with normal LDH plasma levels and the absence of pericardial effusion.
Conclusions: Recents publications suggested that the dysregulation of the complement system may be involved in such cases and there are few litterature data showing successful use of eculizumab in patients with post-transplant thrombotic microangiopathy. In our patient, a significant efficiency of eculizumab is difficult to prove but we have seen the stabilization of the clinical and biological parameters. A multicentric register seems to be necessary to establish therapeutic guidelines in this rare post-transplant complication.

P268
The Effect Of Calcineurin-inhibition On The Renal Renin-angiotensin System. A New Place For Renin Excretion.

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Introduction: Tacrolimus (Tac) and Cyclosporin A (CyA) are two effective immunosuppressant which are essential therapeutic solutions of the prevention of the allograft rejection. However, it is well known that both of them possess nephrotoxic potential. The precise effect how these drugs act as nephrotoxic agents are still not fully revealed. In this study we investigated in-vivo the effect of calcineurin-inhibitors on the renal renin-angiotensin system.
Material and methods: Three week old, male C57 black 6 mice (n=15) were divided into five groups: mice treated with vehicle (C) or with 0.075 mg/kg/day of Tac or with 2mg/kg/day of CyA or with 0.075 mg/kg/day of Tac + 25mg/kg/day Aliskiren or with 2mg/kg/day of CyA + 25mg/kg/day Aliskiren. After three weeks of administration, renin content in the collecting duct (CD) was evaluated applying FACS and multi-foton microscopy. The contraction of the vessels was assessed and the consequent fibrosis was determined by Masson staining. Eventually, serum creatinine was measured.
Results: Serum creatinine was significantly elevated in both Tac and CyA groups. The CD renin content increased four times higher following the administration with calcineurin inhibitors, which was further supported by multi-photon microscopy, the renin granulation increased remarkably in both localizations. As a result of the local activation vasoconstriction was present in both treated groups and as early as the third week of the treatment with immunosuppressants fibrotic islands were found in the kidney.
Conclusions: In summary, our studies revealed first that calcineurin inhibitors possess nephrotoxic effect on the kidney parenchyma due to the enhanced renin activity not only in JGA but in the CD segment as well. Therefore, the inhibition of renin-angiotensin system could be beneficial in prevention of nephrotoxic effect of the calcineurin inhibitors. However, further studies are needed to reveal what kind of inhibitors and in which combination could provide the most efficient treatment? Supported by:OTKA K-108688;SE-MTA Lendulet,LP2001-008/2011

P269
The Effects Of Mesenchymal Stem Cell On The Scar Formation In Experimental Peritonitis.

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Introduction: Peritonitis is most frequen hospitalization cause in CAPD patients. Recurrent peritonitis could cause adherencies on peritoneal surface. In that case effective peritoneal dialysis cannot be done and obliged to change another renal replacement therapy. In past many studies have been done about preventing inflamation and fibrosis in peritonitis. In this study our goal is to determine whether MSC prevents fibrosis in peritonitis treatment or not.
Material and methods: In this study 8-10 weeks age, 198-357 gr, Spraque Dawley race, 64 male rats were used. These 64 rats are randomly

assigned to 4 different groups. Groups are: healty group (S), peritonitis with only antibiotics (P1), peritonitis with antibiotics and MSC(P2) and peritonitis with only MSC (P3). Heatly group is assigned into two different subgroup as S1 with no treatment and S2 with antibiotic treatment. S. Aureus was used as peritonitis S. Aureus was used as peritonitis agent and injected 1,5x 108 CFU intraperitonealy in group P1, P2 and P3 on day 0. Antibiotic treatment was started after 24 hours of infection in groups P1 and P2 and first day in S2. Vancomycin (Edicin®) was administered 30mg/kg/day intraperitoneally in one dose, everyday for 14 days. Antibiotic was administered to every single rat in body temprature by different injectors with supplemented to 5 ml with %1,36 dialysate solution. Mesencymal stem cell was administered with insulin injector by intraperitoneally in 1,5 million/kg/dose, single dose in groups P2 and P3 after 24 hours of infection. The last day of study, subjects took in mini PET and peritoneal fluid was taken for cytokine evaluation. Tissue samples were collected for histopathologic evaluation.

Results: In PET peritonitis groups are evaluated and only in peritonitis with only antibiotic treatment group (P1), decreased D/P creatinine ratio and decreased peritoneal permeability were observed. In histopathological evaluation inflamation, fibrosis and vascularization were seen more in group P1. Inflamation and fibrosis were statistically high in P1 group but no statistically significant difference were observed in vascularization between groups. TNF-a value is statistically higher in group P1 than other groups. TGF-B1 value showed no statistically significant difference between groups. When groups were evaluated for IL-6 values, group P3 were observed statistically higher. Also VEGF values were higher in group P2 and P3.

Conclusions: In this study, those have peritonitis and got antibiotic treatment inflamation, fibrosis, vascularization were increased and on the other hand, permeability in PET was significantly decreased. For the rats those have experimental peritonitis, inflamatory response was decreased by MKH addition to antibiotics and inflamation decreased fibrosis and vascularization histopathologically and it is observed that peritonitis permeability is stable when compared to healthy group.

P270

Incidence Of Peritoneal Catheter-related Infections In Children On Peritoneal Dialysis In A Single Center In The Netherlands

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Introduction: Peritoneal catheter-related infections are well known complications in children treated with peritoneal dialysis (PD). These infections can be life-threatening and lead to inadequate dialysis, temporary discontinuation of PD and/or switching to hemodialysis (HD). The aim of this study was to evaluate the incidence of peritoneal catheter-related infections in all children treated with peritoneal dialysis in our dialysis center in 2002-2012.

Material and methods: From 29 pediatric patients, baseline characteristics and data on exit site infections (ESI), tunnel infections (TI), and peritonitis episodes, diagnosed according to ISPD guidelines, together with microbiology culture results were collected retrospectively. Potential risk factors for ESI/TI, peritonitis, and relapsing peritonitis were analyzed with a multivariable Cox proportional hazards model.

Results: This cohort received PD treatment for 649 months in which 29 ESIs (6 progressing to peritonitis), 2 TIs, and 21 peritonitis episodes occurred in 21 patients. The peritonitis rate was one per 20.3 patient months with a relapse rate of 21.9%. Of all patients, 51.7% remained peritonitis-free, while 27.6% had non catheter-related infections. After 2, 6, 12, and 24 months, 20.0%, 26.1%, 38.9%, and 60.0% of all patients still on PD had at least one peritonitis episode. Microbial culture examinations of PD fluid were positive in 65.7% of patients with peritonitis (47.6% gram-positive, 33.3% gram-negative, 19.0% fungal agents). Six patients reverted to HD due to fungal peritonitis (n=4), recurrent infections, and intestinal adhesions. In univariable analyses, age, longer duration of PD, and non-Caucasian ethnicity seemed to be risk factors for peritonitis, but all three effect estimates were not statistically significant in the multivariable analysis.

Conclusions: The incidence of peritonitis and the microbial causative agents reported in this single centre retrospective cohort were in line with the reported ISPD guidelines. However, the higher than expected percentage of negative cultures in case of peritonitis warrants further investigations.

P271

Oral Pathology In Children After Renal Transplantation

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Introduction: The aims of this study were: 1. To assess the oro-dental health status of renal transplant children; 2. To ascertain the oral hygiene habits and dental care received; 3. To identify any correlation between the present oral condition and the immunosuppressive protocol received.

Material and methods: We enrolled into the study children that had received a functioning renal transplant. Factors related to the transplant and the immunosuppressive protocols were assessed. Additionally, a questionnaire data about oral hygiene habits and a dental exploration were performed to ascertain the prevalence of caries, gingival condition and dental calculus.

Results: Seventy children were included in this study. Attending to the questionnaire data, the 58,5% of the study population recognized not to visit dentist regularly and the 37,5% don´t brush their teeth daily; however, the majority of children (63,1%) had a very low caries index. The 47,1% showed moderate accumulation of plaque and 41,4% mild gum inflammation. Gingival overgrowth was found in 24,3% of the study population:the 21,4% had a moderate coverage and the 2,9% had a severe covering of the tooth width. Only 7 infants had the lingual surface of the lower incisors free of calculus. Statistically significant associations were found between immunosuppressive regimen and oral variables: children receiving a cyclosporine-based regimen showed a higher index plaque, gingival overgrowth and dental calculus. On the other hand, patients receiving a tacrolimus-based regimen were found to present lower average for plaque index and gingival overgrowth.

Conclusions: Poor oral hygiene and inadequate dental care were found in children after renal transplantation. This fact along with the ciclosporine-based immunosuppression contributes to develop significant oral pathology.

P272

Pediatric Combined Kidney-liver Transplantation: A Single-centre Experience Of 18 Cases

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Introduction: The experience of pediatric combined kidney/liver transplantation (CKLTx) is limited but this strategy is mandatory in specific diseases.
Material and methods: We performed a retrospective study of the CKLTx performed at our institution between 1992 and 2013. Results are expressed as median [range].
Results: At an age of 6.7 [1.0-18.6] years and body weight of 13 [10-40] kg, 18 children (9 boys) underwent CKLTx for primary hyperoxaluria type 1 (n= 14), Boichis syndrome (n= 3) and methylmalonic acidemia (n= 1). Four patients received anti-thymocyte globuline and 14 basiliximab as induction therapy. Renal cold ischemia time was 14.4 [9.3-19.6] hours and hepatic cold ischemia time was 9.4 [5.6-12.4] hours; 12 patients required per-operative dialysis. In the early post-operative period, bleeding complications were observed in 8 patients (second look, n= 4). Post-operative dialysis was required in 7 patients. The stay in the PICU was 10 [6-29] days. The initial immunosuppressive regimen was a variable association of corticosteroids (n= 18), antimetabolic agents (mycophenolate n= 13, azathioprine n= 5) and calcineurin inhibitors (tacrolimus n= 14, cyclosporine n= 4). One patient died from cardiovascular disease 10 years after Tx. No liver graft loss was observed but 6 episodes of acute liver rejection required reinforced immunosuppression. A total of 4 kidney grafts were lost: 2 during the immediate post-operative period (renal arterial thrombosis in very young recipients), and 2 at a later stage (EBV infection 5 years after Tx and progressive allograft dysfunction 20 years after Tx); 5 episodes of renal acute rejections were observed. Neither lymphomas nor solid tumor were observed so far. At last follow-up (6.3 [0-21] years post-Tx) for patients with functioning renal graft, GFR was 67 [25-103] mL/min per 1.73 m^2, SDS for height was -2.3 [-7.2;2.2].
Conclusions: This series confirms the feasibility of pediatric CKLTx with encouraging results in the long term.

P273
Combined Kidney/liver Transplantation In Pediatric Primary Hyperoxaluria: A Single-centre Experience Of 14 Cases

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Introduction: Combined (synchronous or sequential) kidney/liver transplantation (CKLTx) is often required in primary hyperoxaluria type 1 (PH1).
Material and methods: We performed a retrospective study of the pediatric CKLTx performed in our institution between 1992 and 2013 for PH1 patients. Results are expressed as median [range].
Results: At an age of 3.7 [1.0-18.6] years and body weight of 13 [10-40] kg, 14 children (7 boys) underwent CKLTx. All patients underwent pre-Tx dialysis starting at an age of 2.3 years [0.3-12.5] with hemodialysis (HD, n= 4) or a combination of both HD and peritoneal dialysis (n= 10). Eleven patients underwent per-operative hemofiltration, and seven required post-Tx HD. In addition to standard transplantation protocols, a specific management of PH1 was applied after Tx, mainly with citrate (n= 14) and hyperhydration (G-tube, n= 8). The time period with hyperhydration after Tx was 4.0 [0.5-6.0] years in the patients in whom hyperhydration could be withdrawn; 4 still required such a therapy at last follow-up. The urinary oxalate:creatinine ratio was normalized in 6 patients 3 years after Tx, but 4 patients presented with increased ratio 1, 2, 3 and 10 years after Tx. Four patients experienced fractures during the first year after CKLT. No liver graft loss was observed but 4 episodes of acute liver rejection required reinforced immunosuppression; 3 kidney grafts were lost (2 in the early post-operative period and one 20 years after Tx). At last follow-up 3.8 [0-13.5] years post-Tx, GFR was 67 [25-96] mL/min per 1.73 m^2 and SDS for height was -2.3 [-4.3;2.3]. Systemic disease and quality of life was improved in all patients, even in those who lost their kidney graft.
Conclusions: CKLTx is a safe and effective strategy in PH1, but the underlying disease burden as assessed by urinary oxalate can persist for months/years, thus requiring specific follow-up and management.

P274
Sirolimus In Pediatric Renal Transplantation

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Introduction: Initial use of sirolimus in children was promising, but to date there are few reports in small number of children and multicentric conversion studies in pediatric population is lacking. We report a single center experience with conversion to sirolimus in a pediatric transplant cohort.
Material and methods: Analysis of data sheets from all patients followed from Jan, 2009 to March, 2011 at the Pediatric Transplant (Rtx) setting. Conversion from CNI or antiprolipherative to sirolimus.
Results: 45 Rtx recipients aged 18 years or younger were followed at this period. In 16 pts, CNI (15) or mycophenolate (1) were replaced by sirolimus. Donor source 10 DD and 5 LD Time to conversion ranged fro 8.7 to 284 months post-transplant Mean trough level one month after introduction was 6.54 +/- 1.63 ng/dl. Safety profile: 3 patients had dyslipidemia treated with diet restriction; 1 patient presented anemia and proteinuria after conversion, associated with acute rejection and was placed back on tacrolimus.
Conclusions: Conversion of CNI or mycophenolate to sirolimus in a pediatric cohort is safe and efficient, even after many years of transplantation. Although there is a increase in proteinuria, it remained low after conversion. Our data possibly reflects the smaller dose and trough level than otherwise advise, with a once a day administration.

P275
Complications In Pediatric Renal Transplantation

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Introduction: Kidney transplantation (KT) is the treatment of choice for end stage renal disease (ESRD) in children. Advances in surgery and immunosuppressive strategies have decreased the complication rate improving the survival. The objective of the study was to describe the results of renal transplantation obtained in a single center cohort of pediatric patients.
Material and methods: Retrospective review of medical records of children who received a KT between 2001 and 2013. For statistical analysis we used the SPSS version 18.0 establishing statistical significance at $p < 0.05$.
Results: 63 KT were performed in 54 pediatric patients with a median age and weight of 7.7 years (5.8 to 14.9) and 21.5 kg (13.8-42.9) respectively. The most common underlying disease was congenital - hereditary diseases (39.6 %). 57.7 % of patients received pre-KT dialysis support (69.4 % peritoneal - 30.5 % hemodialysis, mean time of 11.3 months, 7.3-19.0). 20.6% of patients received grafts from living donors. 6.3% of patients developed urological complications being more frequent in patients under 20 kg ($p < 0.05$). No differences in the number of urological complications or the incidence of rejection among recipients of living and deceased donors were observed. The number of admissions / year was significantly higher in patients <2 years (0.86 vs 0.27, $P< 0.05$). Gastroenteritis was the most common cause (42 %) of admission. 5.5% of patients developed oncological complications. The glomerular filtration rate was recovered (GFR > 60ml/min/m2) in a week after KT in the 86.7 % of patients.

Median follow-up: 57.3 months. The graft and patient survival after one, three and five years was 95.1 % , 88.1% and 84.7 % vs 98.1 % , 95.7 % and 95.7 % respectively. The most common cause of graft loss was chronic allograft nephropathy (60%).
Conclusions: KT presents a low rate of complications appearing mainly in patients under 20 kg

P276
Eculizumab Prophylaxis For Recurrence Of Ahus After Renal Transplantation: 4 Years Experience

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Introduction: The use of eculizumab for kidney transplantation (KTx) in patients with aHUS (atypical hemolytic syndrome) and a high-risk recurrence mutation has been sporadically reported as an efficient therapy. Long-term experience after KTx with eculizumab is scarce but some case reports have demonstrated to be effective and safe.
Material and methods: We report a 11-year old (body weight 27 kg) patient with aHUS and a CFH-mutation (E1198stop) who was successfully transplanted under prophylactic treatment with eculizumab four years ago (Weitz et al 2011). Treatment with 600mg eculizumab every two weeks was continued since KTx and is well tolerated.
Results: Graft function is excellent with an eGFR of 90 ml/min/1.73m2. No recurrence of aHUS occurred. Terminal complement cascade (C5b-9) ranges from 482 -1152 ng/ml (N<320) and CH50 is <2% (65-135%). xEculizumab predose concentration was 252 µg/ml. Proteinuria of a max. 1800 mg/g creatinine (range 125-1800 mg/g creatinine) occurred two years after KTx. Renal allograft biopsy showed a mesangioproliferative glomerulonephritis with dominating mesangial C3 and lesser C1q, IgG, IgM, IgA and C4d deposits. No thrombotic microangiopathy or acute rejection lesions were diagnosed. Treatment with an ACE-inhibitor was started. Last urine analysis showed a proteinuria of 164 mg/g creatinine.
Conclusions: Treatment with eculizumab is safe and effective for maintenance therapy after Ktx in this patient with CFH-mutation. Graft function is excellent. No severe infection or recurrence of aHUS occurred. TCC is only partly suppressed, but complete suppression of CH50 indicates sufficient complement inhibition. Therapeutic eculizumab concentration is in the upper recommended range. However, C3 deposits in the renal allograft as well as the proteinuria could be the result of ongoing hyperactivation of complement.

P277
Brown Tumor At The Maxillary Sinus: A Rare Manifestation Of Renal Osteodystrophy In A Non-compliant Hemodialysis Child

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Introduction: Brown tumors are rare focal giant cell lesions of the bone caused by hyperparathyroidism (HPT). The incidence of brown tumors is very rare in dialysis patients, mainly in those with untreated renal osteodystrophy from secondary hyperparathyroidism (sHPTH). Although invasive, it has no malignant potential.
Material and methods: Here we describe a case of 16 year-old hemodialysis patient who didn't show adherence to treatment. He presented because of the facial deformity in the region of the left maxillary sinüs.
Results: A 16-years-old children was being followed in another center with the diagnosis of end stage renal failure from the age of 11 years old and on peritoneal dialysis programme for two years. He referred to our hospital at the age of 13-years old. Echocardiography showed severe left ventricular dysfunction. His serum calcium, phosphorus and alkaline phosphatase were 10.1 mg/dl, 5.4 mg/dl and 400 U/l respectively. Parathyroid hormone level was 832 pg/ml. At the beginning, he was treated with phosphate binders and daily oral calcitriol (0.5 mg/day), then with intravenous (IV) pulse calcitriol. Because of hyperparathyroidism could not be controlled and vitamin D receptor antagonist treatment was started, there was no patient adherence to this treatment. Due to the development of fungal peritonitis, peritoneal dialysis was terminated and hemodialysis programme was started. In December 2013, he was admitted to hospital with the complaint of the swelling in the left maxillary region. MRI and CT scans revealed heterogeneous, well-defined tumoral lesion approximately 3x3 cm in diameter. In the pathologhy of excisional biopsy, giant cells compatible with brown tumor was reported.
Conclusions: ESRD is a worldwide problem that continues to increase; these patients may have many serious medical problems, and physicians must know how to manage them. The physician should be aware of the clinical manifestations and radiographic appearances of these lesions to allow for early treatment of the underlying diseases.

P278
Skin Microcirculation Is Impaired In About Half Of Patients After Pediatric Kidney Transplantation

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Introduction: Cardiovascular morbidity and mortality is markedly increased in pediatric patients suffering from chronic kidney disease. Microvascular endothelial dysfunction is thought to be the first step in this process. In order to elucidate prevalence and underlying mechanisms of endothelial dysfunction in children after kidney transplantation (KTx) we initiated a prospective study.
Material and methods: Patients underwent assessment of skin microcirculation by Laser-Doppler-Flowmetry (LDF) and of arterial stiffness by pulse wave velocity (PWV). LDF was measured during thermal heating. Results were compared to healthy controls (n=119). Pathologic skin microcirculation was defined as decreased AUC and/or amplitude of axon reflex (ARA). Plasma fetuin A, Klotho, FGF23, and angiopoietin 1/2 levels were measured by ELISA.
Results: Twenty-nine children (16 male; age 6.5-17.5 years) were evaluated after a median period of 57 (10-169) months post KTx. Median cumulative prednisone dose was 3.1 g/m^2 BSA. Only 6 patients were on steroids at time of examination. eGFR (Filler) was 57 (18 – 90) ml/min/1.73m^2 BSA. Serum calcium, phosphate and PTH levels were within normal range. The majority of patients received antihypertensive treatment (27/29). Median arterial blood pressure (BP) during daytime was comparable to that in controls (0.2 SDS, ns), but slightly increased during night time (0.9 SDS, $p<0.0001$). Impaired skin microcirculation was detected in 16/29 patients (55%, $p < 0.0001$). AUC and ARA were significantly decreased in patients compared to controls (each $p < 0.001$). In contrast, mean PWV did not differ between patients and controls and only 3/29 patients showed PWV >2SDS. Endothelial dysfunction was not associated with BP control, steroid exposure, eGFR, mode and time after KTx, fetuin A, Klotho, FGF23, and angiopoietin 1/2 levels. However, the angiopoietin 1 levels were significantly lower in patients compared to controls ($p < 0.0001$).
Conclusions: Endothelial dysfunction is noted in about 50% of pediatric KTx recipients whereas arterial stiffness is less frequently observed.

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Infectious And Non-infectious Complications In Children On Peritoneal Dialysis: Experience In A Brazilian Center

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Introduction: Peritoneal dialysis (PD) is the modality of choice for treating children with end-stage renal disease (ESRD) and to avoid failure and need for hemodialysis (HD) is crutial. We analyzed PD-associated infectious and mechanical complications at our unit and identified possible risk factors in our patient group.
Material and methods: We reviewed files from 23 chronic pediatric automated PD patients from 2009 to 2014. The data included catheter dysfunction and need for replacement and complications such as peritonitis, exit-site and tunnel infection, as well as their microbiologic analysis.
Results: The mean age at start of PD was 5.42 years and 8 (34%) were less than 1- year-old. 78% were boys and 60% had etiology of congenital anomalies of kidney and urinary tract. There were 18 episodes of peritonitis in 11 patients, during 211 months (median 9,2 ± 7,8); 5 episodes (27%) were followed by a relapse. In 11 episodes (61%), no bacteria were isolated. The annual peritonitis rate was 1,02/patient or 1 episode every 11,7 patient-months. The presence of risk factors for contamination (vesicostomy, gastrostomy) was not significant for peritonitis in our group (p=1,00). There were 13 exit-site infections in 8 patients, with Staphylococcus species accounting for 66,5% and 9 episodes of tunnel infection, 6 of them with concomitant peritonitis (p=0,009). Catheter dysfunction occurred in 6 children (26%), with need for replacement. Within the group of peritonitis, 5 (45,5%) patients changed modality of renal replacement to HD – 2 of those returned to PD program even after intraperitoneal abscess with peritonitis.
Conclusions: Peritonitis was the main complication in children on PD at our center and the major cause of peritoneal failure – we have a single experience of 2 patients returning to PD after failure due to intraperitoneal abscess. There was an intermediate incidence of peritonitis when comparing with literature, but a higher percentage of sterile peritonitis

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Early Renal Transplant Biopsies In Children:acute Rejection Or Calcineurin Inhibitor Toxicity

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Introduction: Previously our centre used triple immunotherapy, including steroids, following renal transplantation (RT). However, after the TWIST study publication in 2009, we adopted an early steroid withdrawal (ESW) immunosuppression protocol. We investigated the frequency of allograft biopsies and the rate of acute rejection (AR) within the first month following RT, in two groups, one on the steroid regimen and the second an ESW protocol.
Material and methods: Retrospective record review of 98 transplants in 96 children between January 2007 and August 2013 was undertaken. Target tacrolimus trough levels were 10-15μg/l in the first 21 days and 8-10μg/l from day 21 to 30, following RT. Indication for biopsy was a 20% rise in plasma creatinine in the absence of infection, dehydration, obstruction or high tacrolimus levels.
Results: 64% of kidneys were from living donors and 50% were a favourable mismatch. There were 33 children in the steroid group and 65 in the ESW group. 53 biopsies in 43 patients were performed in the first month following RT. Mean timing of biopsy was 13 days. Nine children had AR (AR rate = 9.2%). Nine had biopsy changes consistent with acute tubular necrosis and seven demonstrated donor vascular disease. Mean eGFR peaked at 100ml/min/1.73m2 on day 6 and decreased to 82ml/min/1.73m2 by day 13. Highest mean tacrolimus trough level was 11.8μg/l on day 10. In the steroid group, 24% of patients had an early transplant biopsy, compared to 54% in the ESW group ($p<0.05$). Mean tacrolimus levels were lower in the ESW group by 0.9μg/l ($p<0.05$). There was no significant difference in eGFR or AR rates between the groups.
Conclusions: Early RT biopsy rates have doubled since adopting an ESW protocol. However, the AR rate did not increase. The fall in eGFR coincided with the highest tacrolimus levels, suggesting a possible relationship to CNI toxicity.

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Encapsulating Peritoneal Sclerosis In A 13-year-old Boy

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Introduction: Encapsulating Peritoneal Sclerosis is a extremely rare life-threatening complication of APD.
Material and methods: Consultation of clinical records.
Results: We present this 13-year-old boy with CKD since birth due to bilateral renal artery hypoplasia. He was on conservative therapy until 15-month-old, when APD was started. During his 9 year duration treatment he had 13 peritonitis. At age 9 he was transplanted. Graft failure due to chronic rejection was diagnosed 10 months after, which motivated return to APD. Peritonitis by unusual agents, fever, weight loss and painful abdominal mass corresponding to the graft led to transplant nephrectomy. During this extremely difficult procedure, many adherences with extensive peritoneal fibrosis were noted. He started HD while waiting for a second transplant. Around 2.5 years later, he had a 26.5% weight loss in 5 months due to malabsorption syndrome. He had constipation but no occlusion/subocclusion episodes occurred. A abdomino-pelvic CT scan was performed, which revealed signs of probable peritoneal sclerosis. Anaemia (despite of treatment with IV iron and ESA), leukopenia with neutropenia and mild thrombocytopenia were found, but his myelogram was normal. He also had some episodes of disequilibrium, without focal signs and with normal cranio-encephalic MRI. Although peritoneal biopsy was not performed, clinical evolution, surgeon´s description of peritoneum appearance and CT scan result, encapsulating peritoneal sclerosis was considered and treatment with prednisolone (1 mg/kg/day, 6 months), tamoxifen (10 mg/day, one year) and hypercaloric diet was started. An increase of body weight (80% of the lost) and normalization of CBC and biochemical values were noted.
Conclusions: Despite this good evolution and included on the transplant list some aspects concern us: no one knows when he will be submitted to a second transplant, which could ameliorate his prognosis; after stopping tamoxifen, will a clinical deterioration occur? And, in that case, which therapeutic options can be offered?

P282

A Case Of Streptococcus Mitis Peritonitis In A Peritoneal Dialysis Patient

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Introduction: Peritonitis is a common complication of PD and an important cause of mortality. Streptococcus mitis, an important member of viridans streptococci, is found in the normal flora of the oropharynx, gastrointestinal tract and skin. Although it has got low pathogenicity and virulence, it may cause serious infections in immunocompromised patients.

Material and methods: A 10 years-old boy, developed end-stage renal disease due to focal segmental glomerulosclerosis, and had been maintained on continuous ambulatory peritoneal dialysis (PD) for two years. He was admitted to the hospital with complaints of non localized abdominal pain without fever. His abdomen was tender. There was no infection at the exit site and tunnel of the PD catheter. The PD fluid was slightly opalescent and was sent for microbiological investigations. Empirical treatment with intraperitoneal cefazolin (125mg/L) and ceftazidime (125 mg/L) was initiated due to our department protocol. The PD fluid white cell count was 2000 cells/μL, with neutrophils cell count of 60%. Peripheral blood showed 8200 leukocytes/ mm3, with 74% neutrophils, erythrocyte sedimentation rate 114 mm/h and C-reactive protein 4.4 mg/L. A sample of peritoneal effluent was inoculated in to the blood culture bottle and after incubation at 37°C for 24 h in aerobic environment, grew Streptococcus mitis.
Results: Because of it was resistant initial therapy, administration of cefazolin and ceftazidime were stopped and intraperitoneal vancomycin (30 mg/L) was started. After 76 hours, PD fluid was clear and cell count was 0/μL.
Conclusions: The aim of this case presentation is to emphasize that S. mitis may rare cause of peritonitis in children who treatment with peritoneal dialysis.

P283
Left Ventricular Mass Changes Post Renal Transplant – Identification Of High Risk Patients

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Introduction: Left ventricular hypertrophy (LVH), is an independent risk factor of cardiovascular mortality in renal transplant recipients. The aims of this study is to monitor long-term evolution of LVM after renal transplantation in children and adolescents.
Material and methods: We retrospectively collected clinical and biological parameters and cardiac ultrasounds in children and adolescents with kidney transplants, who had at least one ultrasound measurement of LVM before and after transplantation.
Results: We included 102 patients, 38 girls and 64 boys, aged 11.6 ± 4.8 years [1.5 to 19.8 years] at renal transplantation with a follow-up period 56.7 ± 37.6 months post-transplant [2-177 months]. At last follow-up, LVM decreased significantly compared to the first post-transplant ultrasound. Seventy-five patients had LVH after transplantation with LVMi 42.7±12.6 g/m2.7 [21-95] at last follow up against 66±17.1 g/m2.7 before transplantation (p=0.09). The last measurement of LVMi correlated with those made in the first year post-transplant. 38% of patients had high blood pressure (>2SD) post-transplant, not correlated with LVMi.
Conclusions: There is a high prevalence of LVH after a successful kidney transplant, despite satisfying graft function and a significant decrease of LVMI during the first three years post transplant. Patients at high risk for de novo LVH post transplant can be identified and their management should be individualized. High blood pressure measurement should be optimized particularly in the post transplant period.

P284
Efficiency Of Rituximab In Rapidly Progressive Glomerulonephritis Due To Pediatric Microscopic Polyangiitis

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Introduction: Microscopic polyangiitis (MPA) is rare in the pediatric age group. Treatment is usually based on steroid and cyclophosphamide intravenous pulses with plasma exchanges in refractory cases.
Material and methods: We report on a 13 year-old boy presenting with hemoptysis and acute renal failure (eGFR 30 ml/min/1.73 m2), hypertension and urinary protein/creatinine 140 mg/mmol with conserved diuresis. C-ANCA were positive (1/80) and ac-anti MPO (103UI) and renal biopsy revealed microscopic polyangiitis with diffuse cellular crescents (70% of examined glomeruli). Pulmonary CT scan was compatible with MPA.
Results: The patient received intravenous methylprednisolone pulses (500 mg/m2 at day 1, 2, and 3) and rituximab (RTX) (375 mg/m2 once per week for 4 weeks) as a first line treatment inducing immediate B cell depletion, followed by RTX reinjection after 6 months. B-cell depletion was maintained for a period of more than 12 months. A control renal biopsy six months after disease onset did not show any signs of disease activity, however there were 20% interstitial fibrosis and 50% fibrotic glomeruli. Proteinuria was negative after six months and serum creatinine remained moderately elevated at 82 mcmol/L (90 ml/min/1.73 m2), without any pulmonary symptoms one year after initial presentation.
Conclusions: Initial cyclophosphamide pulses might have increased the apoptotic effect on cellular crescents and thereby reduce irreversible fibrotic lesions and nephron loss. However, rituximab seems to be a valid first line treatment option for initial and in particular for maintenance treatment with good efficiency and low toxicity on the long term.

P285
Graft Function Recovery After Pediatric Renal Transplantation As A Predictor Of Future Graft Survival

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Introduction: Our study was aimed to assess the correlation between the recovery rate of the kidney graft function in the immediate post-transplantation period and late graft survival in pediatric patients after kidney transplantation.
Material and methods: The study group included patients who underwent kidney transplantation at Schneider Childrens Medical Center of Israel between the years 2005-2012. Data on graft function in the immediate postoperative period, at 1- year post-transplantation and at last follow-up were collected from medical records. The recovery rate of the graft function was defined as increment in GFR between the first measurement and 120 hours after operation. GFR was calculated according to Schwartz formula and expressed in ml/min/1.73m2.
Results: 92 patients, aged 10.2(±4.8) years at time of transplantation were included. The mean GFR was 14.4(±5.2) at admission to ICU after transplantation, 65.2(±49.1) after 48 hours, and 84.4(±54.7) after 120 hours. The subjects were divided into two groups according to their GFR at admission-below and above 14 (group 1 and group 2 respectively). The improvement rate during the first 120 hours in Group 2 was significantly higher compared to group 1(P=0.02). The average GFR for the whole study cohort was 93(±32) at 1-year post- transplantation, and 82(±34.9) at last follow-up [average of 4.1(±1.9 years)] respectively. No correlation was found between GFR improvement curve at the first 120 hours and GFR at 1-year post transplantation. There was a positive correlation between the GFR at 1-year after transplantation and the GFR at last follow-up.
Conclusions: Although a significant correlation between graft function on admission and the recovery curve during the first 120 hours post-transplant was observed, the immediate graft function improvement curve was not established as a predictor for late graft function .This study reconfirmed the value of graft function at 1-year post-transplantation as a reliable predictor for late graft function.

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The Decrease In Gfr Is Not The Cause Of The Increase In Fgf23 Plasma Concentration In Children With Organ Transplants.

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Introduction: The Fibroblast Growth factor 23 (FGF23) controls serum phosphate and calcitriol concentrations. FGF23 concentration increases when glomerular filtration rate (GFR) decreases or in patients with liver cirrhosis. Elevated FGF23 plasma concentration has been associated with an increased risk of adverse events in these conditions.
Material and methods: We measured GFR and FGF23 plasma concentration in five groups of children: nephropathy (N, 55 patients), renal transplant (RT, 60), heart transplant (HT, 12), liver transplant (LT, 60) and intestine transplant (IT, 28).
Results: GFR was significantly lower in N (mean ± SE: 73 ± 31 ml/min/1.73m2) and RT (78 ±22 ml/min/1.73m2) compared to other groups (HT:82 ± 21 ; LT: 104 ± 30; IT: 102 ±35 ml/min/1.73m2). Age at measurement has been 11.5 ± 4.6 years. FGF23 concentration did not differ significantly between groups and was above normal values in 25.6% (N), 18.3% (RT), 33,3% (HT), 15.0% (LT) and 32.1% (IT) of the patients in each group respectively. FGF23 concentration was significantly negatively correlated with GFR and positively with serum phosphate concentration only in N and with serum PTH levels in N and HT. FGF23 was not correlated to age and did not differ with gender.
Conclusions: Further investigations are necessary to understand the significance and the consequences of the increase in FGF23 concentration in children with organ transplant and normal renal function.

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Transition Of Care In Kidney Transplantation

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Introduction: The transition from pediatric to adult care setting in transplantation is a complex process. Previous reports showed that it carries increased risk of non-adherence and graft loss. In the institution, the majority of patients < 18 yo, especially small children, are transplanted in Pediatric Nephrology setting (Ped group) and are transferred to Adult Nephrology care (Adult group) when they become 18 (Transition of Care). There is a protocol of admission with a welcome greeting when pts are transferred and all of them are followed by a trained staff (champ doctor, nurse and social assistant). Due to these characteristics, some adolescents are transplanted directly in Adult Care
Material and methods: We report the results of the kidney transplant (Ktx) program in patients < 18yo, from Jan 1984 to Jun 2010
Results: From Jan, 1984 to Jun, 2010, 1748 KTx were performed, 152 in pts <18 yo. In Ped group (n=79), mean age at KTx 10.8±2.8y, 68% deceased donors (DD), 4 re-transplants; in Adult group (n=36), mean age 16.1Â±1.6y, 42% DD, no re-tx; in Transition group (n=37), mean age 14.6Â±2.4y, 56% DD, 4 re-tx and mean follow-up after transition 52.8Â ±32.7 months. Graft survival in 1, 3, 5 and 10 y was superior in the Transition group than the other 2 groups (Log Rank p<0.001). In Ped, there were 33 graft loss â€“ vascular thrombosis (n=10), CAN (n=8), death (n=5), acute rejection (n=5), recurrence (n=2), other (n=3). In Adult, 20 graft losses, 14 due to CAN and 6 to other causes. In Transition, 5 graft losses, acute rejection (n=2), death (n=1), CAN (n=1) and recurrence (n=1).
Conclusions: These results support that a carefully designed Transition of Care protocol can have a great impact in kidney graft survival, probably due to exhaustive adherence measures. Vascular thrombosis is still a major problem in small children, and CAN in young adults

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20 Year Program Of Peritoneal Dialysis In A Single Center

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Introduction: Peritoneal dialysis is the choice of renal replacement therapy in children with end stage renal disease (ESRD). Our service is a referral center for treatment of children with chronic kidney diseases, and we describe here the experience of peritoneal dialysis over the last 20 years.
Material and methods: Review of files of all patients 0 - 21 years old who participated in the Peritoneal Dialysis Home Program between 1991 and 2012. We describe Demographic data, cause of ESRD, number of peritoneal catheters per patient, number and reasons of dropouts, and incidence of peritonitis per year. We compared age at admission, patient survival, dropouts and peritonitis between first period (1991- 2001) and second period (2002-2012).
Results: Between Jan 1991 and December 2012, 168 pts were enrolled in our PD program. Mean age on admission was 9,4 +/-5,3 . ESRD etiology was: uropathy 43%, glomerulopathy 34,5%, cistinosys 10,1%, others 12,4 %. Patients needed a mean of 1,3 catheters during the lenght of stay in PD. There were 152 dropouts of the program, mainly due to transplantation (53,5%). Comparing the two periods, there was an increase in children 0-4 y , as well as a lower dropout rate and lower peritonitis incidence on the second period when compared to the first one.
Conclusions: Peritoneal dialysis is an efficient method of renal replacement therapy, especially as a bridge for kidney transplantation. Patient mortality and peitonitis incidence were very low. The growing experience over time allowed the admission of very small children, and the results emphasize the importance of a structered service with a trained nurse and key physician in a referral center.

P289

Encouraging Trends In Paediatric Renal Biopsy Service Provision In The Uk

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Introduction: This national survey and re-audit of paediatric renal biopsies in the UK sought to identify changes in practice following the recommendations of the 2005 audit and in consideration of the national drive to build robust, patient and family focused paediatric nephrology networks.
Material and methods: All 14 UK paediatric nephrology centres were sent a preliminary survey to record current biopsy practices including advance preparation and procedural details. From January–June 2012, a national prospective audit of renal biopsies was undertaken at participating centres, comparing practice to the BAPN standards and 2005 audit results.
Results: Survey results from 11 centres demonstrated increased use of pre-procedure information leaflets (63.6% [2012] vs 45.5% [2005]) and play preparation (90.9% [2012] vs 9.1% [2005]). A total of 331 biopsies were audited and showed a move towards daycase procedures (49.5%

[2012] vs 32.9% [2005]) and reduced major complications (4.8% [2012] vs 10.4% [2005]).
Conclusions: This work highlights encouraging changes in UK practice with a commitment to ensuring that children are well prepared for their procedure and that impact on family life is minimised through reducing time away from home. Despite a move towards daycase biopsies, a reduction in major complication rates is demonstrated. Such service improvements remain key to ensuring positive development of paediatric nephrology networks.

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Continuous Renal Replacement Therapy (crrt) In A Newborn With Acute Kidney Injury (aki) After Cardiac Surgery: Carpe Diem!

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Introduction: Continuous renal replacement therapy (CRRT) has become the preferred modality for the management of critically ill children with acute kidney injury (AKI) and fluid overload. Recently a new paediatric CRRT system (CARPEDIEM, Bellco, Mirandola, Italy) has become available to treat newborns and small infants (weight range 2,0-9,9kg). Here we describe the first case of successful CRRT treatment with CARPEDIEM in a preterm 1,8 kg body-weight newborn affected by Di George syndrome, who developed AKI after cardiac surgery.
Material and methods: After cardiac surgery for interrupted aortic arch (type-B) and interventricular septal defect, a 3-weeks-old preterm newborn developed abrupt decrease in renal function with diminished urine output and oedema. To treat acute renal injury and fluid overload a 4-fr central venous catheter was placed in the right internal jugular vein and a renal replacement therapy with CVVH for four days was carried out. As hemofilter a polysulphone membrane with a surface area of 0,150 mq was employed. Priming of the extracorporeal circuit was performed with packed red blood cells to stabilize the hematocrit and to maintain hemodynamic stability. Blood flow was at 15ml/h, while mean ultrafiltration was 30ml/kg/h for 10h (range 5-24) daily. Due to high hemorrhagic risk, anticoagulation with heparin at 5 IU/kg/h was used with no bleeding complications. The patient was cared under a radiant warmer to prevent hypothermia
Results: After 4-days treatment CVVH was discontinued due to urine output recovery and fluid overload correction. After a 50-days hospitalization, the patient was discharged with normal renal function
Conclusions: This case demonstrates that CVVH with CARPEDIEM system provides good hemodynamic tolerance and correction of fluid overload in very low-body weight critically ill children with AKI. To our knowledge this is the smallest baby ever to be subjected to this treatment.

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Urinary Tract Infection In The First Year After Pediatric Renal Transplantation: Agents And Antimicrobial Susceptibility Pattern

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Introduction: Urinary tract infections (UTIs) are the most common infections after renal transplantation (RT). Objectives: Evaluate the incidence of UTIs in the first year after RT and characterize the bacterial isolates and their antibiotic sensitivity profile.
Material and methods: Observational, descriptive and retrospective study. Data were collected from clinical files of pediatric patients submitted to RT in a tertiary hospital between 2004 and 2013. UTIs including asymptomatic bacteriuria (AB) and symptomatic UTIs (cystitis and pyelonephritis) were registered. All patients had a complete year of follow-up after transplantation.
Results: Forty-three patients were included, 51,2% female and the median age at RT was 7,7 years (4-17). Twenty-two patients had UTIs (51,2%). Sixty episodes of UTIs were identified, corresponding to an incidence of 1,39 UTIs/patient/year, with 53,3% of AB. The majority of the episodes (78,3%; p< 0,010) occurred in the first six months. Eight patients (18,6%) had recurrent UTIs with a median of 3 episodes/patient/year. Relapsing infection was present in 23,3% (14) and reinfection in 13,3% (8) of the UTI episodes. Gram-negative bacteria account for 76,9% of UTIs: Escherichia coli was isolated in 50,0% episodes (31,7% of symptomatic UTIs), Pseudomonas aeruginosa in 11,7% and Klebsiella pneumoniae in 8,3%. Enterococcus spp was isolated in 21,7%. One patient had a symptomatic infection caused by Raoultella planticola. The antimicrobial susceptibility pattern for Escherichia coli showed sensibility of 83,3% and 82,8% to 2nd and 3rd generation cephalosporins, respectively, 50,0% to amoxicillin/clavulanic acid, 63,3% to gentamicin and 89,3% to amicacin, 80,7% to piperacillin/tazobactam, 100,0% to nitrofurantoin, 100,0% to imipenem and 10,0% to cotrimoxazole.
Conclusions: The incidence of UTIs in the first year after RT is high. Escherichia coli was the most frequent agent identified with a considerable resistance to the usual antibiotics. Antimicrobial prophylaxis could be recommended in this period. AB was the more prevalent UTIs which may indicate a surveillance protocol.

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Outcome Of Infants With Primary Hyperoxaluria Treated With Sequential Liver-kidney Transplantation

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Introduction: Primary hyperoxaluria type 1 (PH1) is an autosomal recessive disorder of impaired liver metabolism resulting in systemic calcium oxalate tissue deposition. Combined liver-kidney transplantation (CLKT) is the standard approach but may not be feasible in small infants, for whom the literature supports sequential liver-kidney transplantation (SLKT) following intensive daily dialysis. In the absence of any reported outcomes of this strategy we present 4 infants planned for SLKT following a tailored dialysis regime.
Material and methods: All 4 infants aged 2 to 15 months presented in ESRF requiring dialysis. Plasma oxalate (PlOx) levels were between 73-231 micromols/litre (normal<10) at presentation. Their age and size precluded CLKT so SLKT was planned. All 4 had liver transplants. 2 patients progressed to kidney transplantation, 1 patient remains on haemodialysis and 1 died shortly after liver transplantation from post-operative complications.
Results: Median pre-dialysis PlOx ranged from 140-180 micromols/litre and median post-dialysis PlOx ranged from 30-49 micromols/litre. After liver transplantation, median PlOx ranged from 9-62 micromols/litre. In 2 patients, PlOx fell consistently below supersaturation levels (30-40 micromols/litre) within one month of transplant. The third patient reached a PlOx nadir of 41 micromols/litre 3 months after transplantation. The 2 patients completing SLKT were reviewed aged 8, and 5 years. They demonstrated normal neurodevelopment and growth. Complications in the surviving patients included, CMV and EBV viraemia and central venous catheter related sepsis.

Conclusions: Infantile oxalosis was untreatable until recently and still has a high morbidity and mortality. In this context, SLKT enables survival for infants and this series demonstrates its feasibility. Following liver transplantation, PlOx levels remained low and continued to fall, allowing the subsequent transplanted kidney a low oxalate milieu which preserved function. Positive growth and neurodevelopment at the latest reviews indicate encouraging long term outcomes. Sequential liver-kidney transplantation in this group may thus be a viable treatment strategy in PH1.

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Donor-specific Anti-hla Antibodies At The Time Of Kidney Transplant Biopsy Associate With Late Graft Failure In Pediatric Renal Transplant Recipients

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Introduction: The role of antibody-mediated rejection (AMR) for late graft failure in pediatric renal transplant (RTx) recipients is poorly defined. We therefore investigated the frequency of anti-HLA donor-specific antibodies (DSA) in patients requiring a late (>1 year post-transplant) graft biopsy, and their association with graft outcome.
Material and methods: 54 patients undergoing a late biopsy between January 2005 and June 2012 at our institution were investigated. Inclusion criteria were 1st RTx and a transplant date after December 1998. Patients were tested for DSA using the LABScreen Luminex kit (One Lambda) at the time of biopsy. A mean fluorescence intensity (MFI) of >500 was used to define anti-body positivity.
Results: 21/54 (39%) of the tested patient sera were DSA positive at the time of biopsy. In 20/54 patients (95%) the DSA were directed against HLA class II antigens. The DSA+ cohort showed significantly (p=0.02) more often proteinuria than the DSA- cohort. The 4-year graft survival was significantly inferior in the DSA+ (42%) compared to the DSA- cohort (89%; p=0.002). Patients with DSA and C4d positivity in the graft biopsy showed the worst outcome (24% graft survival at 4 years). Overall 13 grafts failed; 10/13 (77%) patients were DSA posi-tive, 2/13 were DSA negative, but C4d positive, and 1 graft was lost due to treatment-resistant acute T-cell mediated rejection. Maximal MFI of class II DSA was significantly (p=0.01) higher in the group with graft failure. eGFR <30 ml/min•1.73m^2 (HR 3.8), DSA positivity (HR 5.4) and positive C4d staining (HR 3.4) were significant factors associated with graft loss.
Conclusions: Anti-HLA DSAs at the time of a late graft biopsy for clinical indication in pediatric RTx recipients is primarily against class II antigens and associate with subsequent graft failure. As many as 92% of the graft failures in this cohort could be attributed to AMR.

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Prevalence Of Obesity And Metabolic Changes After Kidney Transplantation - Hungarian Pediatric Cohort Study

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Introduction: Cardiovascular (CV) mortality in patients with end stage renal disease (CKD5) is three magnitudes higher than in the general population, it still remains 10-fold higher after successful renal transplantation (Tx). Among others, obesity and hypertension can exert deleterious effects on vascular structure and function after Tx. Successful kidney transplantation may induce excessive weight gain in part due to the effects of steroid treatment. Aims: to evaluate the presence of obesity in Tx children, their obesity-related metabolic disturbances and to assess their blood pressure and arterial stiffness in relation to obesity.
Material and methods: 41 transplant children (aged 15.7 (3.5) years, 28 males) were studied. Body composition was assessed by body mass index (BMI), waist circumference, skin-fold measurements and multifrequence bioimpedance analysis (BIA). Glucose metabolism, blood pressure (BP) and arterial stiffness (using pulse wave velocity (PWV)) were studied. Age and gender dependent parameters were expressed as standard deviation scores (SDS).
Results: The prevalence of overweight (BMI>85 pc) increased from 3.2% to 24.4% at 49(3-183) (median, range) month; the BMI SDS increased from -0.27(0.79) to 0.67(1.35) after Tx. There was a close correlation between BMI SDS and the percentage of body fat (PBF%) and body fat mass (BFM) in the Tx group (r=0.80; r = 0.94 p=0.0001). Children with disturbed glycemic control (n=14) had higher PBF% and higher BP compared to those with normal glucose metabolism (p<0.05). There was no difference in PWV between the lean and obese patients.
Conclusions: The prevalence of overweight or obese patients in the Hungarian pediatric renal cohort is low at transplantation and rises subsequently. Overweight is associated with disturbed glycemic control, increased blood pressure, however these disturbances are not yet reflected by stiffening of the arteries. Strategies are needed to prevent obesity, its impact on hypertension and cardiovascular disease in pediatric transplantation. Supported by OTKA 100909, MTA (HAS) postdoctoral fellowship

P295

Sudden Blindness In A Child On Automated Peritoneal Dialysis

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Introduction: Automated Peritoneal Dialysis (APD) is a mode of renal replacement therapy. Among the complication of this procedure is sudden blindness owing to Anterior Ischemic Optic Neuropathy (AION), which is a manifestation of hypoperfusion of the optic nerve leading to infarction. We aim to highlight this rare complication which is most likely caused by hypovolemia, which is very difficult to appreciate in patients on APD. Also the importance of cautious fluid and sodium adjustment to prevent this devastating complication as AION.
Material and methods: A six year old girl who underwent bilateral nephroectomy at t 1st year of life because of congenital Nephrotic syndrome. She was on home Automated Peritoneal Dialysis (APD) for the last 5 year (Dianel 2.27% , six cycles for 12 hours fill volume 450 ml). Mother gave a history of poor oral intake for the last 3 days with no vomiting or diarrhea. She presented to the hospital with acute visual deteriorations. On presentation, she had a very low blood pressure (BP) when plotted for her percentile according to age and height (50/25 mmHg). She had no signs of dehydrations, fever with normal systemic examinations. She was resuscitated with IV fluids normal saline boluses until BP improved to normal. Her positive ophthalmologic examination revealed; The Right eye Light perception was impaired fixed dilated pupil, not reacting to light but consensual light reflex was present. The Left eye light perception present, pupils sluggish reaction to light. Fundoscopy exam revealed Bilateral disc edema (swelling, obliterated cup, blurred margins, obscured peripapillary nerve fiber layer) right>>left, disc pallor left>right. Note flame shaped hemorrhages close to the disc margin in right eye. Retinal vessels are mildly tortuous. Macula is normal. Retina is flat. Positive laboratory investigations showed mild hyponatremia with very high urea and creatinine. MRI orbit was normal.

Results: She was treated with pulse Methylprednisolone 20 mg/kg/day for 5 days followed by oral prednisolone 2 mg/kg/day for one month tapering dose. On follow up, her visual acuity improved with time.
Conclusions: Children are at risk to develop sudden blindness owing to AION while on APD when they have hypovolemia and hypotension. More attention should be given to identify and correct there risk factors on children on dialysis.

P296
Laparoscopic Disobstruction Of A Tenckoff Catheter In A Newborn On Chronic Peritoneal Dialysis

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Introduction: Laparoscopy is a video-assisted, minimally invasive, surgical technique that allows the identification of causes of malfunction of Tenckoff catheter for peritoneal dialysis and the simultaneous resolution. There are no cases in the literature concerning the use of such a technique in newborns.
Material and methods: We describe the case of a female baby, born at 35 weeks of pregnancy complicated by oligohydramnios, birth weight 3,150 kg.
Results: A severe chronic renal insufficiency because of bilateral renal hypodysplasia was present at birth. At the 3th day of life a straight Tenckoff neonatal, double cuffed, peritoneal catheter was inserted trough the paramedian line of the abdomen; a simultaneous partial omentectomy was performed. Two days after, a peritoneal bleeding occured, so a surgical revision and a new insertion of the peritoneal catheter were necessary. At nine days of life, peritoneal dialysis treatment was started by neonatal circuit. After eight days, the peritoneal catheter had suddenly difficulties during tha drainage phase. The XRay of the abdomen showed no displacement of the catheter, while the ultrasound showed the presence of echogenic material (omentum? Fibrin ? Clot ?) around the distal end of the catheter. Heparin was ineffective. A laparoscopy was performed with a 2 mm telescope. A residual strip of greater omentum was strictly adherent to the catheter holes. Using a 3mm grasper, the catheter was completely freed from omentum and the free flow of the solution was visually checked. The small diameter of the abdominal ports allowed an immediate use of the catheter for dialysis without risk of leakage. One month after, this procedure was successfully repeated for a new peritoneal catheter obstruction by peritoneal adhesion.
Conclusions: Laparoscopy is of great interest because of its minimal invasiveness. In our experience, the laparoscopy with tools of small diameter has proven a good choice, as an alternative to traditional surgery, even in a patient of low body weight, for the disobstruction of a peritoneal catheter. In addition, compared to traditional surgery, it allowed to restart dialysis treatment immediately after the procedure without early complications

P297
Severe Neutropenia In Children After Renal Transplantation: Incidence, Course And Treatment With G-csf

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Introduction: Infections are an important cause of morbidity and mortality in solid organ transplant recipients. Neutrophils play a crucial role in the initial host defense against bacterial pathogens. Neutropenia is not uncommon after renal transplantation in adults; however, there are scarce published data in children.
Material and methods: We conducted a historical cohort study to evaluate the incidence, clinical course and management of severe neutropenia after renal transplantation in children. In a single center study we collected data on all children (<19 years) who underwent renal transplantation in 2005-2013.
Results: Of 67 children, 30 (44.8%) had neutropenia <1000/microliter. Fourteen (20.9%) had severe neutropenia (<500/ microliter), 2-11 months (mean 3.9) after renal transplantation. Work up for viral infection or malignancy was performed. Initial management included dose decrease and subsequent discontinuation of mycophenolate/ azathioprine, stopping co-trimoxazole and valgancyclovir. Bone marrow aspiration in 4 children revealed normal marrow cellularity in all cases, with myelocyte maturational arrest in 2. Six children were treated with G-CSF (5 mcg/kg/day) 1-8 doses, with excellent response in all and no adverse effects. Three children presented with fever during severe neutropenia, and were treated with empiric antibiotics. Mycophenolate/ azathioprine were resumed in all patients unless contraindicated (pre-existing BK viremia -1, PTLD -1). Recurrence of neutropenia was seen in 4 patients, associated with PTLD-1, CMV-1 and thymoglobulin treatment of acute rejection -1. Graft function was preserved during and after resolution of neutropenia.
Conclusions: Post-transplant neutropenia in children is common, and mostly occurs in the first few months. Its etiology is probably primarily a result of the combination of immunosuppressive agents and prophylactic treatment of infections in the early post-transplant period. Decreasing immunosuppressive or antimicrobial medications carries the risk of acute rejection or infection. Off –label treatment with G-CSF may present a safe and effective alternative.

P298
Daily Blood Pressure Monitoring In Renal Transplanted Children

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Introduction: The long-term graft survival in transplanted children is mainly restricted by cardiovascular complications, in particular, arterial hypertension (AH). To reveal the posttransplant blood pressure (BP) dynamics 56 children aged from 6 to 17 years (27 boys and 29 girls) after cadaveric renal transplantation (TP) were examined.
Material and methods: In the period of 2, 6 months and 1, 2, 3 years after the TP all children underwent daily BP monitoring (DBPM), echocardiography, biochemical tests, GFR measurement. Initially the majority of patients had CAKUT (64.29% of children), HUS (14.29%), chronic glomerulonephritis (8.93%). Patients age at the time of the transplantation varied from 6 to 17 years (11.9 ± 2.8 years, Me = 12 years). 46.43% of children received a renal replacement therapy (RRT) for 1-3 years. Two children were dialyzed over 5 years.
Results: Our study revealed a double predominance of patients with AH (n = 36, 64.29%) over normotonics (n = 20, 35.71%). Children with BP within 95-99th percentile value prevailed over patients with BP above 99th percentile value. Thus 3 groups of patients were determined: normotonics, AH 1 (n = 27, 48.21%), AH 2 (n = 9, 16.07%). There was no correspondence between BP and duration of dialysis ("short" - for 2-6 months and long-term - 6 months-1 year and 1-3 years courses of RRT). Majority of children had AH 1 (66.6%, 62.5%, 64.3%, respectively). Serum creatinine was increased in 92.59% children with AH1 and in 77.78% with AH2. Left ventricular dilatation (LVD) was revealed in all groups. Patients with AH2 had LVD in 2 times more often, than children with AH1 and in 3 times more often, than normotonics .
Conclusions: AH and LVD are typical for transplanted children. Early identification and correction of AH will improve the graft function. The best way to control the BP in these children is DBPM.

P299

Pediatric Kidney Transplantation (ktx) In The Last Decade: A Report From The French National Database Of The Agence De La Biomédecine.

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Introduction: Objectives are to describe demographics, modalities and results of pediatric KTX in France.
Material and methods: Data were collected from the French database including donors and patients registered on wait-list (WL) and transplanted. Pediatric patients are under 18 years (y) at registration.
Results: In 2012, a total of 691 pediatrics patients were receiving renal replacement therapy (48.3 pmh) and 70% had functioning graft at the censed date. In 2013, among 3074 KTX performed, 112 (3.6%) were in pediatric recipients. Mean age of recipients was 12,3 y ± 5,2 , 18% under 5 y. Sensitized patients (calculated panel reactivity > 85%) were accounting for 10%, 5% and 26% of new registered, transplanted and remaining on WL on 1st January respectively and retransplantations for 13 %, 9% and 26% of the same groups. Thirty two percent of patients received preemptive transplantation and the median duration on WL for patients registered between 2008 to 2013 was 7,7 months (IC 95% 7,0-8,9) versus 25 m (IC 95% 24,5-25,5) for adults recipients and decreased to 5,1m if only active list in considered. The part of living donors (18 patients, 16%) was between 10 and 20% during the last decade and 77% of deceased donors allocated for pediatric recipients were pediatric donors, and 94% were under 30 y with a mean cold ischemia time of 16 h. Graft survival improved comparing cohorts 1996-2012 and 1985-1995: 93,2% vs 82,5% at 1 y; 83,2% vs 67,3 % at 5 y ; 67.9 vs 56.1% at 10 y. Donors and recipients under 2 y have an increased risk for graft loss in the first month: 22% and 15,4% respectively vs 6,1 % each for the older.
Conclusions: Pediatric patients have a good access to KTX with short time on WL and optimal donors according to high level of priority given to children.

P300

Pediatric Renal Transplant Biopsies: Eleven Years' Experience From A Single Center

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Introduction: We aimed to evaluate the clinical features of transplant biopsies in pediatric renal transplant recipients.
Material and methods: The medical records of pediatric renal transplant recipients who were followed-up between January 2003 and December 2013 at our center and who had a renal biopsy were evaluated retrospectively.
Results: Within 227 transplant recipients who had a median follow-up period of 47.8 months (1-127), 94 biopsies were performed in 68 (29.9%) patients, 21 of whom had two or more biopsies. Seventy-seven percent of the transplants were from living-related donors. Thirty-six (53%) of the patients were boys with a mean age of 15.8 ± 4.7 years and a mean follow-up period of 50.8 ± 30.1 months. The median time for performing biopsy was post-transplant 25 months (15 days-77 months); approximately one-fourth of the biopsies were performed in the first six months, one-third in the first year and half in the first two years. The indications for renal biopsy were deterioration of kidney functions in 76 (80.9%), plasma BK virus positivity in 14 (14.8%) and proteinuria in 4 (4.3%). The pathological diagnosis were acute cellular rejection (ACR) in 22 (23.4%), antibody-mediated rejection (AbR) in 22 (23.4%)(four were C4d negative), polyomavirus nephropathy (PVN) in 14 (14.9%), calcineurin inhibitor toxicity (CNI-NT) in 11 (11.7%), chronic allograft nehropathy (CAN) in 7 (7.4%), recurrence of primary disease in 5, borderline changes in 2, and indefinite signs or un-diagnosed due to inadequate samples in the rest of the biopsies. The median time for the diagnosis of PVN was 5 months (2-40); whereas it was 19 (1-55), 25 (19-94), 26.5 (0.5-77) and 30 (0.5-49) months and for ACR, CAN, CNI-NT and AbR, respectively.
Conclusions: Acute rejection, both cellular and antibody-mediated, still constitutes the most frequent diagnosis in pediatric renal transplant biopsies.

P301

The Effect Of Anti-hla Antibodies On Renal Graft Functions

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Introduction: Long term donor-specific tolerance remains one of the important goals in transplantation. The identification of suitable donor kidneys for transplant candidates with high levels of circulating antibodies against human leukocyte antigen (HLA) is a major challenge and results in adverse graft outcome. Post-transplant de novo donor specific HLA antibodies play an important role on allograft damage and rejection.
Material and methods: Seventy four kidney transplanted children without any shown HLA antibody in the pre-transplant period were enrolled in the study. Their anti HLA antibody status was checked at 6-12 monthly intervals and during acute graft dysfunction using Luminex in post-transplant period and its relation with the graft function and prognosis of the patients is studied.
Results: Mean age of the patients was 13.5±5.2 years. Mean follow-up time was 3.8±1.1 years. Pre-transplant cytotoxicity tests and PRA was negative in all patients. Nine (12.1%) patients were found to have anti HLA antibodies after kidney transplantation. Mean time for the detection of antibodies was found as 11±4.8 months. Patients with anti HLA antibodies were similar with patients without antibodies in the terms of age, sex, HLA mismatch, transfusions and immunosuppressive drugs as well as the presence of viral infections. Mean serum creatinine level was found to be higher in patients with anti HLA antibodies. The antibody mediated rejection rate was found to be 7.2% (5/65) in patients without anti HLA antibodies while it was 55.1% (5/9) in patients with anti HLA antibodies. There was a prominent C4d positivity in all patients with anti HLA antibody positivity except one. Three patients (33.3%) had graft loss in spite of intensive treatment.
Conclusions: Anti HLA antibodies have important role in the development of antibody mediated rejection and graft loss in children. It is vital to detect patients with the risk of development of anti HLA antibodies as early as possible

P302

Effects Of Hyperuricemia On Renal Function In Pediatric Renal Transplant Recipients

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Introduction: Hyperuricemia is common in pediatric renal transplant recipients and it is associated with poor allograft outcomes. Hyperuricemia occurs early after transplantation and is associated with decreased glomerular filtration rate (GFR), use of diuretics, cyclosporine therapy, and a history of hyperuricemia. We aimed to investigate causes and effects of hyperuricemia on allograft outcomes in our patients.

Material and methods: Eighty-one (F/M: 41/40) pediatric transplant patients were included to the study. Demographic characteristics and laboratory parameters were recorded. Risk factors for hyperuricemia and the effects of plasma uric acid levels at 3rd and 6th months, 1st and 3th years on allograft outcomes were evaluated.
Results: Mean age was 16.9 ±5.6 years. Mean follow-up time after transplant was 3.5±0.47 years. Hyperuricemia was detected in 17.6% of patients. A significant negative correlation was found between 6th month uric acid level and 3th year of GFR value (r = -0.33, p = 0.04 and r = -0.33, p = 0.017). A significant positive correlation between 3th and 6th months uric acid levels and 3th year plasma creatinine level was demonstrated (r = -0.44, p = 0.01 and r = -0.51, p = 0.00). There was no significant correlation between plasma uric acid level and body mass index, plasma lipid levels, use of diuretic and immunosuppressive treatment (tacrolimus, cyclosporin A).
Conclusions: Uric acid levels may have predictive value in the long term assessment of renal function. Posttransplant hyperuricemia can be used as a long term prognostic marker of poor renal outcome. Patients with hyperuricemia should be monitored closely for renal functions.

P303
Hepatic Diseases In Pediatric Renal Transplant Recipients

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Introduction: Hepatic dysfunction may occurs common in kidney transplant recipients. We aimed to evaluate associated risk factors that affects liver functions in children who underwent kidney transplantation.
Material and methods: Eighty-nine renal transplant recipients (F/M:44/45) aged 3-20 years (median: 13) were enrolled the study. Patients with hepatic disfunctions after the first month of the renal transplantation were evaluated retrospectively. Information about age at transplantation, number of transplant, graft survival, deceased or living donor transplant, immunosuppressive drugs, and causes of renal failure, systemic diseases were recorded. Serum electrolytes, kreatinin, AST, ALT, GGT, protombin time, PTT, INR levels and viral markers (hepatitis A, B, C, EBV, CMV, parvovirus) were evaluated. Abnormalities of liver function tests were recorded.
Results: Abnormal liver function tests were detected in 38 patients (%42.6) . Eighteen of these patients were female and 20 were male. Median age was found as 11 (3-17). Four of these patients had chronic liver disease secondary to hepatic fibrosis, one patient had cystinosis, two patients had glycogen storage disease. When viral markers were evaluated, one patient had positive HBsAg after the transplantation. That patient underwent liver and kidney transplantation because of oxalosis. One patient admitted to hospital because of weakness and vomiting after the fourth year of transplantation and AntiHBcIgM was found positive. Thirty three of 38 patients had positive AntiHBs and 5 had negative AntiHBs. These patients were not able to generate antibodies despite being vaccinated. There was no positive AntiHAV IgM and AntiHCV result. Seven patients had positive EBV-PCR and 4 of them had positive EBV IgM. Eight patients had positive CMV-PCR and 5 of them had positive CMV IgM. Parvovirus hepatitis was detected 2 of the patients during the follow up. Seven patients had drug related hepatic toxicity.
Conclusions: Consequently hepatic dysfunctions in patients who underwent kidney transplantation is a common situation. We found that the causes of the hepatic dysfunctions in these patients are associated with viral infections and drug toxicity. Thus viral markers should be assessed frequently and regularly and these patients need close follow up.

P304
Enhancing Safe Administration Of Anticoagulation Therapy In The Philippines – A Challenge In Nursing Practice

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Introduction: Effective heparinization during dialysis is vital since it allows blood to flow into the extracorporeal circuit. This study aimed to develop a relationship between errors in Heparin administration and the study of Partial Thromboplastin Time (PTT), Hemoglobin (Hgb), Hematocrit (Hct), and Platelet levels (Plt) of hemodialysis (HD) patients.
Material and methods: 96 pediatric HD patient records were examined for compliance and errors in heparin administration practices (mean age is 15.6). With multiple tendencies, cox regression was used to analyze trends whilst Pearson rho moment correlation determined relationships .
Results: The results indicated that heparin was administered via three routes namely bolus (90.47%), maintenance (100% via machine, 19.04% via manual approach), and preparation and administration. It was significant that only 8% of nurses followed the Independent Double Check method of heparin preparation and administration which was a required standard within the unit. Data showing both medication administration practices and extent of errors versus the mean scores of the PTT, Hct, Hgb and Plt were analyzed individually showing a significant regression of PTT (r=1.38, 1.50), Hgb (r=0.80, 1.03), Hct (r=1.11, 1.07), and Plt (r=1.22, 1.27). Results were summed and revealed strong correlation between the errors versus the mean values of the PTT (p=+0.77), Hct (p==0.55), Plt (p=+0.67) with the exception of Hgb which did not show any correlation at all p=(+0.04).
Conclusions: The results of this study led to the development of a standardized protocol minimizing errors relating to heparin administration during dialysis. Additionally, the study provided a Process Map when untoward incidences relating to use of Low Molecular Weight Heparins occurred. Further, the study has led to a significant decline in errors in medication administration practices in general within the unit.

P305
Eleven Key Areas Of Renal Nurse Responsibility - The Foundations Of Quality Patient Dialysis Outcomes

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Introduction: Renal nurses develop their expertise over time and in the exercise of their professional skills deliver the essence of safe, competent, and compassionate care. The knowledge, attitude and skills of a nurse develop progressively where complexities of clinical procedures and experiences are intertwined. This study identifies whether Quality Patient Dialysis Outcomes (QPDO) were directly affected by eleven key areas of nurse responsibility used when evaluating renal staff competency (SC).
Material and methods: 59 Staff Nurses were appraised evaluating SC while 525 hemodialysis patients were evaluated using the QPDO parameters. Univariate linear regression and Pearson rho moment correlation were used to build relationships.
Results: Data indicated both increase and decrease trends in relation to staff competency. Competencies related to Health Education (↑172.6), Communication (↑147.5), Records Management (↑141.6), Safe and Quality Nursing Care (↑135.0), and Management of Resources (↑133.5) demonstrated increase trends. Competencies related to Research (↑-35.2), Quality Improvement (↑-12.3), and Legal Responsibility (↑-6.68) were relatively decreased as the period of competency evaluation progressed. It was notable that QPDO related to Kt/V, Albumin, Hemoglobin, and Hematocrit Levels were directly proportional to increasing extent of SC

ρ=(+0.61) while calcium and phosphorus levels were directly associated to areas where staff were demonstrated an decreasing trend ρ=(+0.66).
Conclusions: The eleven key areas of responsibility used to measure SC in a periodic evaluation demonstrated a strong correlation to the increasing extent of QPDO. Additionally, as the nurses progressed to becoming expert a direct correlation to the QPDO was notable. The study became the foundation for staff training and developing a competency appraisal framework in renal nursing practice thereby promoting quality assurance procedures while attaining QPDO.

P306
Green Mileage – Sustainable Program Towards Eco-friendly Dialysis In Saudi Arabia: Results Of Phase One

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Introduction: Green Mileage (GM) was launched in 2011 in response to the initiative of the Saudi Ministry of Health towards better medical waste management. GM is composed of 4 Phases with an expected pilot of four years. To evaluate pre and post implementation of GM P1 related to legislation compliance and reusability (waste water).
Material and methods: Three dialysis units participated in the study; Unit A (control), B (manipulation), and C (mixed); each has 21 stations operating 16 hours/day. The implementation began with Phase One (P1) in February 2011 focused upon compliance and reusability.
Results: In May 2011, all Units were fully accredited by the Central Board of Accreditation for Health Care Institutions (CBAHI) in Saudi Arabia. In March 2011, all waste water was diverted to an underground tank and used for commodity purposes. Two reverse osmosis (RO) units were used as series, the rejected water from the second RO was diverted to the inlet of the first RO. RO maintenance included assigning staff to monitor feed and immediately switch RO into stand-by mode following last disinfection. A portable RO was used in cases of On-Calls where only 1 or 2 patients were dialyzed. General water consumption decreased to at least 42% of the usual 45 metric tons/month. Furthermore reject water has reduced to 32-35%.
Conclusions: GM P1 has been an effective tool to efficiently promote environmental sustainability while protecting patient safety. It also enables the health team to adequately control and reuse waste products while achieving better outcomes.

P307
Causes Of Emergency Department Attendance In Renal Transplant Children

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Introduction: Objectives: Characterize the episodes of attendance to emergency department (ED) of children submitted to renal transplantation (RT).
Material and methods: A retrospective analytical study was performed in a Portuguese Pediatric Renal Transplantation Center (RTC), during 5 years (2009-2013), by consulting clinical files of all children followed in the RTC during the same period. We included the children with complete data of the emergency episodes. Demographic data, time after RT, reason of attendance to ED, diagnose and destiny at discharge were analyzed.
Results: In the period of study, 73 children submitted to RT kept follow-up at the RTC, 35 RT were performed and 25 patients shifted their follow-up to Adult's Center. We included 35 children (47,9%); 60% were female. Median age at RT was 7,8 years [4,0-17,6]. Attending to the follow-up period after RT, 3 were observed in the first 3 months, 8 in 3-6 months, 10 in 6-12 months, 22 in 1-5 years, 8 after 5 years. The median number of observations at ED per child was 3 [1-16]. The most common causes for ED attendance were fever (n=15) in the group 1-5 years and gastrointestinal symptoms in the other groups. Infectious disease was the main diagnose in all groups, being upper respiratory infections (27; 20,1%), gastroenteritis (24; 17,9%) and urinary tract infections (UTI) (22; 16,4%) the most common. In 27,6% of the episodes it was required hospitalization.
Conclusions: Common pediatric infectious diseases were the main attendance causes. We verified a more elevated prevalence of UTI compared with the described in general pediatric population. The small number of emergency visits in the first year possibly is explained by the very regular observation at RTC. Knowing the reasons of attendance to ED, we aim to improve the quality of health care provided to this complex group of patients that are increasing in the last years.

P308
Dyslipidemia In Pediatric Renal Transplantation (dyspet)– Analysis Of 135 Patients Of The Certain Registry

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Introduction: Cardiovascular complications display one of the most important factors of mortality and morbidity in pediatric renal transplant (RTx) recipients. Dyslipidemia and metabolic disorders are well known to significantly contribute to these complications. However, comprehensive data on dyslipidemia in children after RTx are indefinite with reported prevalence rates between 10 and 60%. We aimed to identify the incidence and dynamics of dyslipidemia in all pediatric patients included in the CERTAIN (Cooperative European Paediatric Renal Transplant Initiative) registry.
Material and methods: Patients of the CERTAIN registry who obtained a RTx between 1998 and 2010 were included in our analysis. Data from the day of RTx and five time-points during the first year after RTx were analysed. According to the guideline of the German Study Group of Renal Transplantation in Pediatrics, a total cholesterol > 250 mg/dL and triglycerides > 500 mg/dL were considered thresholds for therapy.
Results: We included 135 patients (53 girls) with a median age of 11 years (range 1-25 years) in our study. During the first 6 months after RTX 7% of the patients presented with a therapy-requiring hypercholesterolemia. This prevalence decreased to 2.5% one year after RTX. Less than 1 % of the patients showed a therapy-requiring hypertriglyceridemia. There was neither a correlation of age nor of the underlying disease to hypercholesterolemia or hypertriglyceridemia. However, acoording to the most recent KDIGO guidelines, more than a third of our patients (38% before, 34% at 6 months, 20% at 1 year after RTx) displayed a borderline hypercholesterolemia (>170 mg/dl).
Conclusions: The prevalence of patients that would require a lipid-lowering therapy was low. Nevertheless serum cholesterol was elevated in a substantial portion of patients. Unfortunately, our study is limited by relatively low reporting of complete lipid profile data, possibly displaying the low awareness of this cardiovascular risk factor after RTx. To get a more conclusive overview of both, prevalence and impact on morbidity, we have to yearly monitor lipid levels after RTx and also take clinical consequences of dyslipidemia (e.g. intima-media-thickness) into account. This will enable us to assess whether the given thresholds for therapy need to be modified.

P309

The Role Of Ultrasound In The Diagnosis Of Peritoneal Catheter Obstruction In Children On Chronic Peritoneal Dialysis

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Introduction: In children on chronic peritoneal dialysis (CPD) obstruction is a main cause of early catheter non-function. This study evaluates the usefulness of ultrasound (US) in visualizing the obstruction of CPD catheter and identifying the etiology.

Material and methods: Between January 2000 and January 2014, 44 patients (24 M, 20 F, mean age 4,8±2,8; age range 1 month - 9 years) were treated with CPD because of ESRD and examined with US. The mean duration of dialysis was 4 ± 1.2 years. The type of catheter in all subjects was the straight 2-cuff Tenckhoff catheter. In case of catheter malfunction patients underwent to US. Real-time US examination was always performed by an radiologist using the ESAOTE My Lab Twice scanner with a microconvex and/or linear transducer (5-18 MHz); the position and the lumen of the catheter, the presence/absence of fluid collections between the catheter tube or cuff and the surrounding soft tissues and the presence of free fluid in peritoneal recess were explored. The distal extremity of the catheter was displayed in all cases. US scanning has given a clear picture of the peritoneal catheter along all its tracts (external, subcutaneous and intra-abdominal segments) as well as the holes and the distal tip. Sonographically, the silicon tube was visualized as a sandwich structure consisting of a double-layered hyperechoic band representing the anterior and posterior sides of the catheter. Both the external and internal cuffs were hyperechoic and had a characteristic acoustic shadow.

Results: We observed 14/44 (32%) cases of catheter malfunction related to its obstruction. US was performed and demonstrated the catheter obstruction. In 8 patients US showed the presence of fragmented echoic material in the lumen and around the distal tip of the catheter. The treatment was conservative, based on forceful irrigation with saline solution and fibrinolytic agents (Urokinase 5000 U/ 40 ml Saline). As a result catheter showed excellent flow in both directions; in the follow-up period US revealed a progressive reduction of the fragmented echoic material in the catheter: intraluminal fibrin strands was the cause of the catheter obstruction. In the other six patients US demonstrated displacement of catheter in bowel loops and an amorphous material appearing as homogeneous echoic area around the distal tip: omental wrapping and peritoneal adhesion around the catheter were the cause of its obstruction. These patients underwent the laparotomic surgery: catheter was stripped from the omentum and then repositioned in the abdominal cavity directly to the Douglas peritoneal sac. The catheter restarted work properly and US showed the correct placement of its tip and confirmed that the fluid flew freely.

Conclusions: Our results confirm the effectiveness of ultrasound in the assessment of the complications related to intraperitoneal catheters. US is able to identify catheter obstruction and recognize the etiology (endolumen strands of fibrin, other materials or omental wrapping) facilitating a correct therapeutic approach.

P310

Risk Factors For Urinary Tract Infections In The First Year After Pediatric Renal Transplantation: A Cohort Study

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Introduction: Many factors are thought to contribute to the high incidence of posttransplant urinary tract infections (UTIs). Current evidence is scarce regarding the risk factors associated with UTIs after pediatric renal transplantation (RT). We evaluate risk factors for UTIs in the first year after RT.

Material and methods: Observational, descriptive and retrospective study based on the clinical files of a cohort of pediatric patients (0-18 years) submitted to RT between 2004 and 2013. We evaluate possible association of modifiable and non-modifiable risk factors (RF) for ITUs in the first year after RT. Exploratory analysis of data and statistic inference was done by using SPSS version 20, significance level of 5%.

Results: Forty-three patients were included, 51,2% female, median age at RT time was 7,7 years (4,0 – 17,2). Twenty-two patients (51,2%) had UTIs. UTI was associated with white race (63,3% white race vs 23,1% non-white race, p=0,022), younger patients (mean age at transplantation in years 7,99±3,07 vs 11,25±4,02, p=0,005) and longer duration of dialysis pre-RT (median in months 43,0 [2,37-103,3] vs 9,8 [0,92-103,7], p=0,023). Female gender (59,1% girls vs 42,9% boys, p= 0,367), absence of pre-RT diuresis (62,5% vs 48,6%, p=0,698), cadaveric donor (CD) graft (52,5% in CD vs 33,3% in living-donor recipients, p=0,607) and urinary vesical catheterization after RT (mean in days 8,9 ±5,0 vs 7,5±2,8, p=0,231) was also associated with UTIs, although not statistically significant. Other variables, such as the etiology of the chronic renal disease, duration of the urethral catheter, hospitalization stay, presence new-onset diabetes after RT, acute graft rejection and cytomegalovirus infection didn´t show clinical significance.

Conclusions: We found association of UTIs with white race, younger age at RT and the duration of dialysis pre-RT. In this small sample, others variables were associated with UTIs but without statistical significance. Improvements in prevention and control of modifiable factors probably result in less comorbidities.

P311

Age Dependant Risk Of Graft Failure In Young Kidney Transplant Recipients

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Introduction: The transition from pediatric to adult health care may be a vulnerable period for young kidney transplant recipients. We sought to ascertain whether patients are at greater risk for graft loss during this transition period irrespective of the age at transplantation.

Material and methods: The outcomes of all first kidney transplantation (KTx) in young kidney recipients up to age 30 years as reported by the French organ transplant database (CRISTAL) from January 1993 to December 2012 were analyzed. Multivariable Cox models with time-varying covariates were used to estimate the association between current age (as a time-dependent variable) and time to death or graft failure (non-death censored graft survival), adjusted for time since transplantation and other potential confounders.

Results: A total of 5,983 patients with a median follow-up of 7.9 years were included (60% males, 15% living donor KTx, 15% preemptive KTx, mean age at KTx 20.9 ± 7.2years). Overall graft survival was 85, 70 and 55% at 5, 10 and 15 years respectively. After adjustment on recipient sex, donor age, donor type, primary disease, RRT modality prior KTx, transplantation period and time since transplantation, we found that non-death censored graft survival were the lowest in 15 to

21 years old recipients. Compared to recipients with current age of 15-21 years (i.e. in the transition period), graft failure risk was significantly lower (p0.001) during ages 0-14 years (adjusted hazard ratio [aHR], 0.69; 95%CI 0.55-0.86) and 22-29 years (aHR 0.75; 95%CI 0.64-0.87).
Conclusions: Among first kidney transplant recipients younger than 30 years in France, those currently in late adolescence and early adulthood (15-21 years) have the greatest risk of graft failure, irrespective of the time since transplantation. Comprehensive programs are needed to reduce graft loss during the transition period from adolescence to adulthood.

P312
Intensified Hemodialysis Around The Globe – First Results From The International Pediatric Hemodialysis Network (iphn)

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Introduction: Intensified chronic extracorporeal dialysis modalities received recent attention in the pediatric dialysis community. Intensified hemodialysis (HD) and hemodiafiltration (HDF) more effectively remove middle and protein-bound molecules, and have been claimed to exert multiple beneficial effects on physical health and quality of life in both adult and pediatric patients.
Material and methods: We reviewed 253 records of 119 chronic HD/HDF patients from 19 pediatric dialysis units in 16 countries, with median age 13.2 (0.3-20) years. 86 patients (72%) had central venous lines (CVL), 29 (25%) arteriovenous fistulae (AVF), and 4 (4%) grafts (AVG). Patients undergoing HDF were reported in 4 and intensified HD (>15 hours/week) in 3 centers.
Results: 114 patients received conventional HD, 14 HDF. The mean dialysis time per week was 13.4±2.9 and 10.7 ±3.2 for HDF and HD, respectively (p=0.001).13 patients were dialyzed more than thrice weekly. 35 children had less than 10 hours, 69 10-15 and 15 more than 15 hours dialysis per week. Children on intensified regimens were more likely to be oligoanuric (80 vs. 490 ml urine/m^2BSA/day; p<0.001). Time on dialysis correlated positively with dialysis frequency (r=0.71, p<0.0001) and BMI SDS (r=0.29, p<0.01), and negatively with CRP levels (r=-0.35, p=0.004) and diastolic blood pressure (r=-0.24, p=0.01). Patients who had short dialysis time (<10 hours/week) had significantly higher diastolic blood pressure (1.1 vs. 0.64 SDS, p<0.001) and lower BMI SDS (-0.72 vs. -0.02, p<0.001). HDF patients had higher serum bicarbonate concentrations (24 vs. 22mmol/l, p=0.02). Access related complications, i.e. infection and dysfunction, were three times more frequent with CVL than with AVF/AVG.
Conclusions: Intensified HD programs are still limited to few pediatric treatment centers. According to our preliminary findings, intensified HD is associated with better blood pressure control and nutritional status in children.

P313
Outcome Of Pediatric Renal Transplantation: A New Center Experience

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Introduction: Renal transplantation is the optimal treatment for children with end stage renal diseases. There is paucity of pediatric kidney transplantation in our region. We undertook this study to present the short term results of a new pediatric transplant program in a challenging age group in Saudi Arabia.
Material and methods: A retrospective analysis on 53 pediatric renal transplant recipients (age at transplant <16 years) were performed. Data were collected from pediatric renal transplant records. Records of recipient that have been transplanted outside our center were excluded. Primary outcome measures included patient and graft survival at one and two years .
Results: Fifty three pediatric renal transplant cases have been performed in multi-organ transplant center in King Fahd Specialist Hospital, Dammam, Saudi Arabia from September 2008 to December 2013 (33 male, 20 female). These included 25 (47.2%) living related recipients (LRR) and 28 (52.8%) deceased donor recipients (DDR). Mean age at transplantation was 8.26 ±3.8 years (2.6 – 15.7 years). Children less than 5 years were 15 (23.8%). Average weight at time of transplantation was 15.6 ± 5.5 kg (9.5 – 67 kg). One and two year patient survival is 100%. Forty one (41) recipients completed one year after transplantation (17 were LRR, 24 were DDR). Overall one year graft survival was 95.1%. One year graft survival for LRR and DDR was 100% and 91.6% respectively. Two year graft survival was 94.1%. Two years graft survival for LRR and DDR was 100% and 90% respectively. There were only 2 graft losses secondary to graft thrombosis in DDR.
Conclusions: In spite challenges facing our new center; small age group, predominant deceased donor transplant and the developing pediatric experience we showed promising quantitative and qualitative outcomes compared to international centers. long term data will bring more experience in outcome of deceased donor transplantation and risky groups

P314
Semen Analysis In Adolescents With Familial Medditerenean Fever

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Introduction: Although, the frequency of infertility is increased in adults with Familial Medditerenean Fever (FMF) compared to normal population, limited data exist for adolescents. The aim of this study was to analyze sperm parameters in adolescents with FMF.
Material and methods: Semen was collected and analyzed for sperm concentration, count and motility in adolescents with FMF. Demographic and clinical parameters of patients were analyzed.

Results: Nine adolescents between 15-18 years old were enrolled. Mean age at the diagnosis was 10.1 years (2-14). 7 patients had homozygous and one had heterozygous mutation for FMF, whereas one had no mutation. Mean colchicine dose at the time of the study was 1.44 mg/day, whereas it was 1.11 mg/day at the time of diagnosis. Only three patients (33%) had normal sperm parameters. Sperm concentration was decreased in one and sperm count in two patients, whereas sperm motility was decreased in five patients. Mean sperm concentration was 56 millions/mL (11-141; N>15), sperm count was 85 millions (26-402; N>35) and sperm motility was 51% (20-85; N>50%). All 5 patients with decreased sperm motility had an attack in the previous three months, whereas no patient with normal sperm motility had.
Conclusions: A high number of adolescents with FMF had anormal sperm parameters, mostly sperm motility. We suggest that all adolescents with FMF should be screened for semen analysis.

P315
Long-term Outcomes Of Transplanted Children: A Single Centre Experience

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Introduction: To evaluate the clinical data on long term outcome of childhood onset end-stage renal disease (ESRD) with a focus on patients transplanted (TX) below 19 years of age.
Material and methods: Data on 48 TX children (26 boys; 1991-2013) followed at the Paediatric Department of Safarik University Kosice were retrospectively collected from the medical files. The mean time of follow up was 9.8 years (range 1.2-19.0). The occurrence of hypertension, anemia and left ventricular hypertrophy were studied. The patient and the graft survival time were tested using the Kaplan-Meier survival analysis.
Results: During the study period 56 transplantations were performed on 48 children. The most frequent cause of childhood onset ESRD were congenital anomalies (39.0%) followed by hereditary cystic diseases (24.4%). The median age at dialysis initiation was 11.5 years. Peritoneal dialysis (PD) was used in 22 (45.8%) children while 30 (62.5%) patients underwent both PD and hemodialysis before TX. The average waiting time was 18.0 months (the median age at the time of transplantation 13.0 years; range 3.9 to 18.9 years). A living-related kidney donor was used in 5 (10.4%) recipients. The mean graft survival time was 6.4 years (range 0.4 to 20.5 years). 13 (27.0%) grafts were lost, mostly due to chronic allograft nephropathy. 5 (10.4%) children died during the study period (3x sepsis, 2x liver failure). Hypertension was present in 68.0%, 66.7%, 84.6%, 83.3% of studied children at 1, 3, 5 and 10 years post-transplant. Anemia was identified in 48.0%, 36.2%, 49.8% and 36.7% respectively. Left ventricular hypertrophy was identified in 30.3% TX children at the average time of 5.2 years after kidney transplant.
Conclusions: Cardiovascular burden and anemia occurs in a significant portion of successfully transplanted young individuals.

P316
One-month Valganciclovir Prophylaxis In High Risk Pediatric Kidney Trasplant Receptors

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Introduction: Cytomegalovirus (CMV) disease in kidney transplant population has almost disappeared by the common use of prophylactic strategies. Since 2003 our CMV high risk pediatric kidney transplant population has received Valganciclovir (VGCV) for one-month combined with CMV-Polymerase Chain Reaction (PCR) monitoring as a guide for preemptive therapy.
Material and methods: Protocol: Prior to transplant procedure the serological CMV risk for each receptor is defined, determining the specific prophylactic strategy. The high risk group (D+/R- or R+ with anti-lymphocyte globulin) receives VGCV prophylaxis. All patients are monitored with CMV-PCR testing during the first 3 months after transplantation. If CMV-PCR becomes positive, a full-dose oral VGCV is given until complete virus eradication occurs. Patients: 50 subsequent pediatric kidney transplant receptors in our center were analyzed. The incidence of CMV infection and disease, the blood viral load at diagnosis, time to complete viral blood clearance, and the costs related to this preventive strategy are retrospectively recorded and analyzed.
Results: 38% of our receptors were on the high risk, 44% were on the intermediate risk (R+ with no anti-lymphocyte globulin), and 18% were on the low risk groups (D-/R-). CMV viremia was detected in 40% of patients with a mean viral load of 4408 copies/ml, at a mean post-transplant time of 78 days. Mild leucopenia and/or mild hepatitis are the most common biochemical findings but no overt CMV disease was described. Mean time to CMV-PCR clearance after VGCV treatment was 21 days. Only one asymptomatic patient did not eliminate the virus despite full-dose VGCV administration due to a documented viral resistance. The costs of this strategy is 637€/high risk patient. The costs of a universal 3 months VGCV prophylaxis would be (2099€/patient on risk).
Conclusions: One-month prophylactic VGCV strategy combined with CMV-PCR guided preemptive treatment is safe and cost-saving for CMV high risk pediatric kidney transplant population.

P317
Chronic Peritoneal Dialysis In Children Under 2 Years Old

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Introduction: The number of very young children requiring dialysis is increasing worldwide.The aim of our study was to analyze long term outcome in children who initiated chronic peritoneal dialysis (PD) under the age of 2.
Material and methods: Retrospective analysis of the files of all the children submitted to PD for more than 3 months in our center, from January 2000 until December 2013. We excluded children who initiated dialysis over the age of 2, the ones who came from another center and children that made hemodialysis (HD) as the first treatment.
Results: 27 patients were eligible, 3 (11%) girls and 24(89%) boys. Mean age at initiation of PD was 0.74 years old (yo).Seventeen patients started on PD under the age of 1 yo. Most patients had urologic malformations. Eleven patients had to change from PD to HD, 9 (81%) due to peritonitis. Mean time on PD was 16.4 months. Nine patients were transplanted, mean age at the first transplant was 4 yo, after mean total time of 37.5 months on dialysis. The renal function was improved in 3 children, 1 was transferred to other center and we lost follow-up. Ten (37%) patients died, 5 on PD, 4 in HD and 1 post-transplant. At the end of study, on December 2013, there were still 16 alive – 3 on conservative treatment, 8 transplanted, and 5 were still on PD.
Conclusions: Similar to other studies, male sex, urologic malformations and need to change of method due to peritonitis are more frequent in this population. Even though 10 patients died and we had a long time waiting for a transplant, the majority of patients were still alive at the end of the study, half of them with a functioning renal graft

P318
Dialysis Independence Achieved Following Treatment Of Childhood Scleroderma Renal Crisis With An Endothelin Receptor Antagonist

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Introduction: Scleroderma renal crisis (SRC) is a sinister complication of scleroderma that carries a high morbidity and mortality rate. Treatment with ACE inhibition (ACEi) and plasmapheresis has some evidence supporting efficacy in adult patients with SRC; however there are recent adult case reports of successful endothelin receptor antagonist (ERA) use in adults with SRC. We demonstrate safety and efficacy of ERA treatment in a paediatric patient with SRC.
Material and methods: A 12-year-old girl with scleroderma subsequently developed SRC despite having received initial treatment with steroids, methotrexate and intravenous immunoglobulin. Rapid progression of renal impairment with oligoanuria necessitated thrice weekly hemodialysis. Treatment was escalated to plasmapheresis and rituximab in addition to maximal ACEi however she remained dialysis dependent. Renal biopsy revealed widespread acute proliferative arteriopathy causing complete luminal occlusion of medium-sized arteries due to the abundant endothelial reaction. An ERA (Bosentan) was then commenced and the dose slowly increased to 250mg twice daily.
Results: Clinical and biochemical improvement occurred following ERA commencement. This was characterized by markedly better blood pressure control allowing discontinuation of four anti-hypertensive medications and progressive increase in urine output from 300ml/day to 1200ml/day. Renal function improved gradually from eGFR of 13 to 36ml/min/1.73m2, such that dialysis was discontinued 18 weeks post ERA commencement and 24 weeks since originally starting dialysis. Quality of life improved off dialysis along with a relaxed daily fluid restriction. Renal biopsy three months later showed relative preservation of the tubulointerstitial compartment with persistent arteriopathic changes. There were no side effects seen.
Conclusions: We conclude that ERA therapy alongside ACE inhibition is likely to be a safe and effective treatment in paediatric SRC patients. This may result in a significant improvement in blood pressure control and renal function. Remarkably, in the case presented this therapy allowed discontinuation of dialysis despite its delayed commencement.

P319

Angiotensin Ii And β2-microglobulin In Urine As Diagnostic Marker Renal Parenchymal Scar In Patients With Vesicoureteral Reflux.

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Introduction: vesicoureteral reflux (VUR) promotes development of renal nephropathy due to renal scar formation (RN). The aim of the study was assess as a noninvasive markers Ang II (angiotensin II) and β2MG (β2-microglobulin) urine concentration according to tubulointerstitial damage in children with VUR.
Material and methods: 62 patients aged between 1 and 14 years, median age was 10,23±3,7 y. (77,4% female) with all grade VUR and 20 normal children (control group) were enrolled in the study. Renal scar in DMSA scan was performed at least six months after pyelonephritis episode. According to DMSA scan results, children were divided into two groups: gr. 1 - 41 patients (1-2 scars: RN – gr.I-II) and gr. 2 – 21 patients (more than 3-4 scars, RN – gr. III - IV). Urinary excretion of Ang II/Cr and β2MG/Cr was measured by ELISA method.
Results: the median urinary Ang II/Cr and β2MG/Cr level was significantly higher in both 1 and 2 groups compared to controls (p=0.02 vs p=0.05 respectively). Children with III-IV degree of reflux-nephropathy showed higher urine concentration of Ang II/Cr and β2MG/Cr than patients with reflux-nephropathy gr.I-II ($p<0.05$). A positive correlation was noted between renal scar and urinary Ang II/Cr.
Conclusions: high urine level of Ang II/Cr and β2MG/Cr is closely associated with renal parenchymal scars in children with different degree of VUR. Increased Ang II/Cr and β2MG/Cr levels in urine of VUR children suggests a potential role in fibrogenesis. The results of this study have showed the important role of Ang II/Cr and β2MG/Cr in progression of interstitial fibrosis and maybe used as early diagnostic markers for renal parenchymal scarring.

P320

Correlation Between Serum Basic Level Of Fibroblast Growth Factor And Severity Of Reflux Nephropathy.

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Introduction: Firoblast growth factor (b-FGF) is a potent mitogenic factor of cortical fibroblasts and induce kidney fibrosis. We hypothesized that serum level of b-FGF has association with the severity of vesicoureteral reflux and renal parenchymal scar.
Material and methods: Between 2007 and 2009, 27 children with VUR enrolled in study as cases and 31 healthy children with no history of urinary tract infection, normal renal sonography was considered as controls. B-FGF (ELIZA; Biosource company) was measured in both groups.All children with VUR had renal DMSA scan.
Results: Fifty eight children (27 with vesicoureteral reflux and 31 healthy children) aged 2- 16 years enrolled in study. From VUR groups, 14 had some degrees of renal parenchymal scar in DMSA. The mean level of FGF in VUR group was 64.68 (19.38) and in control was 60.29 (8.78)($P>0.05$). The mean serum level of FGF, in the patients with scar was nearly the same as those without scar ($P>0.05$). There was no correlation between the serum level of FGF and sex, age, or the grade of VUR.
Conclusions: This study showed no correlation between serum FGF and renal parenchymal scar or grade of VUR.

P321

Eculizumab In Anti-factor H Antibodies-associated Atypical Hemolytic Uremic Syndrome

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Introduction: Atypical hemolytic uremic syndrome (aHUS) is a life-threatening multi-systemic condition often leading to end-stage renal failure. It results from an increased activation of the alternative pathway of the complement system due to mutations of genes coding for inhibitors of this pathway or from auto-antibodies directed against them. Eculizumab is a monoclonal antibody directed against C5 and inhibiting the activation of the effector limb of the complement system. Its efficacy is already been demonstrated in atypical HUS.
Material and methods: The present paper reports for the first time the use of eculizumab in a patient presenting an aHUS associated with circulating anti-complement factor H (CFH) auto antibodies (Ab) and complicated by cardiac and neurological symptoms.
Results: Our observation shows the efficacy of eculizumab in this form of aHUS not only on renal but also on the extrarenal symptoms.
Conclusions: The present paper suggests that eculizumab should be used very promptly after aHUS presentation in order to prevent life-threatening complications and to reduce the risk of chronic disabilities. To obtain a complete inhibition of the effector limb activation, the advised dosage must be respected. After this initial therapy in the autoimmune aHUS form, a long-term immunosuppressive treatment should be considered, in

order to prevent relapses by reducing anti-CFH Ab plasma levels.

P322

Labial Adhesion And Urinary Tract Problems: The Importance Of Genital Examination

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Introduction: The Urinary tract infection (UTI) is a common bacterial illness in children. Delayed UTI in children may lead to acute renal parenchymal damage and subsequent renal scarring in children. It is very well known that several risk factors increases the tendency to urinary tract infection. If any of these risk factors are detected, the patients exposure to unnecessary invasive procedures could be prevented. One of these factors is labial adhesion. The purpose of this study is to emphasize the importance of genital examination to detect labial adhesion particularly in patient with nephrourologic symptoms including urinary tract infections.
Material and methods: The data of 46 patients who were Pediatric Nephrologhy Department with urinary tract complaints or other problems and diagnosed as labial adhesion were gathered. The patient's age, thickness of the labial adhesion, any recurrence, methods of the treatment, were collected from the patients' files. If patients had urinary tract infections, the number of urinary tract infection before detection of labial adhesion was noted. Thickness of adhesion was grouped as thin, moderate, or dense by the physician who examined the patient. Also labial adhesions of patients were grouped as partial or complete.
Results: Urinary tract infection was detected in 27 (58.7%) of 46 patients with labial adhesion. Partial adhesions were present in 21 (45.7%) of 46 patients. 34 (73.9%) patients had thin (21 partial and 13 complete adhesion), 11 (23.9%) had moderate thickness (all had complete adhesion), and 1 (2.2%) had dense adhesion. An association was found between the presence of UTI and type of adhesions regarding the partial or complete. Although 78.8% of patients in the group of complete adhesions had UTIs, 22.2% of patients with partial adhesions had UTIs ($p<0.05$). In contrast, 100% of 12 patients with moderate (11 patients) and dense (1 patients) labial adhesions had UTIs, 44.1% of patients with thin adhesions had UTIs ($p<0.05$).
Conclusions: Genital examination should be performed in all patients with urinary tract infection to detect labial adhesion early. By determining the labial adhesions, many unnecessary and invasive investigations could be avoided in these children.

P323

Do Screening Parameters Predict Response To Desmopressin In A Primary Nocturnal Enuresis Population?

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Introduction: In children with nocturnal enuresis a frequency/volume chart or bladder diary provides information to choose the appropriate therapy and to evaluate the chosen therapy. The aim of this study is to identify possible predictive factors to desmopressin treatment response.
Material and methods: The study is a re-analyses of an international study evaluating ≤6 months treatment of children with primary nocturnal enuresis using desmopressin tablets. 471 children completed this prospective open-label study with 6 months follow-up and registration in a calendar.
Results: Only the demographic variable age ($p<0.001$) is a significant predictor of response to desmopressin. Country, family history and sex had no predictive value. Controlling for age, significant predictive variables were: average daytime voided volume ($p=0.0305$), average daytime voided volume corrected for Hjalmas ($p=0.0305$), maximum daytime voided volume ($p=0.0022$), maximum 24h voided volume ($p<0.0001$), nocturnal diuresis ($p<0.0001$), nocturnal diuresis corrected for Rittig ($p<0.0001$), total 24h urinary output ($p<0.0001$), total daytime urinary output ($p=0.0188$) and number of wet nights per week ($p=0.0053$). Three factors are of major concern to predict therapyoutcome of desmopressin: age, 24h urine output and number of wet nights a week. More than 80% of the patients had no nocturnal polyuria and a small bladder for age.
Conclusions: Most patients had no nocturnal polyuria and a small bladder for age, therefore the chosen therapy, desmopressin was not the appropriate therapy. The results clearly demonstrate the importance of a frequency/volume chart for patient selection in order to choose the appropriate therapy and to elevate the success rate.

P324

Neuropsychological Functioning Is Associated With Night-time And Daytime Characteristics Of Monosymptomatic Nocturnal Enuresis

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Introduction: The aim of this study is to investigate which psychological problems are present in children with monosymptomatic nocturnal enuresis (MNE) and nocturnal polyuria (NP). Second, to explore whether these psychological problems are related to specific characteristics of enuresis: fluid intake, bladder volume, number of wet nights and number of nights with nocturnal polyuria.
Material and methods: Thirty children aged 6 - 16 years (mean 10.43y, SD (+/-3.08)) referred to a tertiary enuresis centre are included in the multi informant multi method study.
Results: Eighty percent of the children had at least one psychological, motor or neurological difficulty, most common (26.7%) was the comorbid diagnosis of Attention Deficit Hyperactivity Disorder. Fluid intake had a positive linear relationship with externalizing symptoms ($\rho=0.463$, $p<0.05$), and a negative linear relationship with self-esteem ($\rho=-0.425$, $p<0.05$), auditive memory ($\rho=-0.448$, $p<0.05$) and sustained attention ($\rho=-0.499$, $p<0.01$). An increase in bladder volume was associated with an increase of anxiety/depressive symptoms ($\rho=0.395$, $p<0.05$), spatial recognition memory ($\rho=0.534$, $p<0.01$) and a decrease of attention problems ($\rho=-0.585$, $p<0.01$), inhibition problems ($\rho=-0.395$, $p<0.05$), social problems ($\rho=-0.395$, $p<0.05$), auditive memory ($\rho=-0.421$, $p<0.05$) and orderly/tidiness problems ($\rho=-0.518$, $p<0.01$). Number of wet nights had a positive linear relationship with social problems ($\rho=0.370$, $p<0.05$) and anxiety/depression problems ($\rho=0.403$, $p<0.05$) and a negative linear relationship with social self-esteem ($\rho=-0.416$, $p<0.05$). Finally, the number of nights with nocturnal polyuria had a positive linear relationship with problems in executive function ($\rho=0.663$, $p<0.01$) and a negative linear relationship with quality of life ($\rho=-0.504$, $p<0.05$).
Conclusions: Children experience problems in daytime functioning and emotional wellbeing in relation to their wetting problem at night. Not only night-time symptoms of enuresis have an influence on the child's function

and emotional wellbeing, also daytime symptoms such as fluid intake or bladder volume are of concern. Further research is necessary to clarify it all.

P325

Desmopressin Melt Improves Sleep And Psychological Functioning In Patients With Monosymptomatic Nocturnal Enuresis.

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Introduction: A comorbidity and a possible causality between nocturnal enuresis, sleepdisorders and attention deficit-hyperactivity disorder (ADHD) has been suggested (Yeung, Baeyens, Dhondt). This prospective study in children with monosymptomatic nocturnal enuresis (MNE) aims to evaluate the influence of desmopressin melt on sleep and psychological functioning of the child.
Material and methods: Thirty patients (23 boys) aged 6-16 years (mean 10.43y, SD (+/-3.08)) with MNE based on nocturnal polyuria (NP), in this study defined as nocturnal diuresis >100% bladder volume for age, are included. Patients are tested before the start of desmopressin melt and 6 months later. It is a multi-informant multi-method study, using overnight standardized video-polysomnographic study (PSG), questionnaires, clinical interviews and neuropsychological testing.
Results: According to the ICCS definition, 10 patients were full responders, 2 patients were responders, 11 patients were partial responders and 6 patients were non-responders to desmopressin melt. The responsestatus was unknown in 2 patients due to missing values. 87% (26 of 30) patients have a disrupted sleep at the first PSG. They experienced greater than 5 periodic limb movements per sleep hour (PLMS-index). 60% (18 of 30) patiënts have a disrupted sleep at the second PSG. All except 3 patients had a decrease in PLMS-index. The amelioration of the nocturnal enuresis coincides with a significant reduction of the PLMSindex ($p<0.0001$) and cortical arousals ($p=.0071$) 6 months later. Moreover, psychological functioning was improved. After 6 months of desmopressin, children experienced significant less attention problems, less internalizing and externalizing problems, a higher quality of life, higher executive functioning and a higher auditive memory.
Conclusions: Desmopressin melt not only improves enuresis but also sleep and psychological functioning in children with MNE based on NP.

P326

Management Strategies In Paediatric Uti In South-eastern European (see) Countries

Introduction: The aim of this study was to establish current practices amongst paediatric nephrologists in SEE region, with regard to the investigation, diagnosis and management of urinary tract infection (UTI) and to evaluate these practices against actual guidelines (NICE and AAP guidelines).
Material and methods: An electronic survey was performed using a questionnaire that included short clinical scenarios.
Results: 22 paediatric nephrologists from the wider region were sent a questionnaire. 15 responded to the questionnaire (1 from Slovenia, 2 from Croatia, 3 from Serbia, 1 from Bosnia Herzegovina, 1 from Kosovo, 1 from Macedonia, 1 from Albania, 2 from Greece, 2 from Bulgaria and 1 from Turkey). 80% use dipsticks and urinary sediment microscopy for rapid diagnosis of UTI, 60% will send urine for culture in all febrile infants and 40% only in positive cases. 80% use urine collection bag in infants. For confirmation of diagnosis 53% use catheterization and 20% suprapubic aspiration. In children 1-5 ys, 93 % use clean voided sample, only 13% use catheterization to confirm the diagnosis. 73% would recommend i.v. antibiotic treatment for infants with suspect UTI and the remaining -oral antibiotics. 53% will admit to the hospital all infants with febrile UTI and 47% only in a case of vomiting or intoxication. After first febrile UTI most will perform only ultrasound, reserving cystography and DMSA for those with abnormal findings: in infants 27%, in children 1-5 ys 67% and in children > 5 ys 73%, respectively. However, 73%, 33% and 13% of respondents will perform ultrasound and DMSA for the correspondent age groups, respectively.
Conclusions: Considerable variation in the management of UTI in children between the paediatric nephrologists in the SEE region is demonstrated in context of the actual guidelines on the subject.

P327

An Analysis Of The Applications For A Paediatric Investigation Plan (pip) For Indications In Uro-nephrology

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Introduction: In order to assess the requirements for paediatric clinical trials by the European Medical Agency (EMA) for a therapeutic field, we assessed the published decisions on Paediatric Investigation Plans (PIPs) of the Paediatric Committee (PdCo) in uro-nephrology. Paediatric uro-nephrology is a field comprised of some rare paediatric indications (e.g., the incidence of renal replacement therapy (RRT) in paediatric patients is reported to be 9 per million), but also of quite frequent paediatric conditions (e.g., in the first three months of life, 7.5% [girls], 10% [uncircumcised boys], and 2.4% [circumcised boys] of all infants experience a urinary tract infection). On one hand, clinical trials are needed in order to base therapy on evidence, on the other hand, the relevant population can be very small in paediatric nephrology. In order to obtain approval for new drugs, the regulation (EC) No 1901/2006 requires pharmaceutical companies to agree a PIP with the PdCo of the EMA; instead of a full PIP, the pharmaceutical company can apply for a waiver, i.e., no paediatric studies need to be conducted, and, as part of a PIP, a deferral can be requested, i.e., the paediatric studies do not need to be completed when the market authorization is sought after for adults. This requirement for a PIP or an approved waiver has a widespread impact on paediatric clinical research, both for clinical academic institutions as well as for the pharmaceutical industry.
Material and methods: All decisions on PIPs published by the EMA on the EMA website under the therapeutic area "uro-nephrology" were included in this analysis. Until September 2013, the EMA published 20 decisions on PIPs/waivers/deferrals in the therapeutic area of uro-nephrology. Data are presented as proportions (categorical data) and median (range) (numerical data).
Results: Full and partial waivers Seven of the published decisions on PIPs granted a full waiver for all paediatric age groups. For the remaining 13 decisions, a PIP was agreed upon (5 of those 13 with agreed modifications after first approval). For 6 of those 13 PIPs, a partial waiver was granted for certain age groups. The granted partial waivers for specific age groups concerned age groups from 0 to 6 months in two decisions, 0 to 5 yrs, 0 – 6 yrs, 0 – 8 yrs, and 12 – 18 yrs in one decision each. In 5 decisions, the partial waivers were based on the grounds that a significant therapeutic benefit over existing treatment is not expected, and in one decision on the grounds that the substance is likely to be ineffective or unsafe. Agreed PIPs The agreed PIPs require the conduct of 0 – 3 (median 1) quality studies (i.e., studies on the development of the pharmaceutical formulation), 0 – 2 (median 0) non-clinical studies (i.e., studies in juvenile animals), and 1 – 6 (median 3) clinical studies (i.e., studies in paediatric subjects). As there are ca. 9 paediatric dialysis subjects per million of all paediatric subjects, an estimate of the number of paediatric dialysis patients in Europe would roughly be a total of ca. 400 patients. There are at least 4 PIPs agreed which require inclusion of paediatric dialysis subjects. These PIPs comprise a total of 14 clinical studies, i.e., ca. 14 subjects are available for each of those studies. On the other hand, there are no concessions in powering the

clinical studies, and therefore, the required participant numbers will be much higher than the available number of subjects in Europe (specific number of subjects required for studies not published by the EMA/PdCo). Deferrals For 5 of the 8 agreed PIPs (no data on decisions on five modified PIPs available), a deferral was granted, i.e., the studies required to be conducted by the remaining 3 PIPs need to be submitted along with the submission of adult data. For the three PIPs where a deferral was not granted, one is aimed at the treatment of overactive bladder, which is a common condition of childhood (Estimated prevalence ranges from 2% to 20%). However, for the other two PIPs where a deferral was not granted, the indication is a rare condition (hyperphosphataemia in chronic kidney disease, fluid retention). While for the PIP on overactive bladder, only two clinical trials are required, the PIP for fluid retention requires the completion of five clinical trials. Time for decision and time for completion of PIP: The time between start of the agreement procedure and the decision of the PdCo/EMA was 103 days (35 – 468 days). The time between the date of decision of the PdCO/EMA and the date of the required completion of the PIP ranged from 0.03 yrs – 13.47 yrs (median 4.84 yrs).

Conclusions: For 6 of 13 agreed PIPs, a partial waiver was granted. All these waivers affected the lowest age groups, i.e., the partial waiver was granted for patients from birth up to a certain age. Although the youngest age groups need an evaluation of new substances most urgently (for them, the available data is the sparsest), the number of granted partial waivers indicates how difficult it is to conduct clinical trials in this subpopulation. However, only 4 of the 13 agreed PIPs and modifications of PIPs are concerned with a more frequent indication in paediatric patients, while 9 of those are aimed at rare indications. For those 9, a median of 3 clinical studies is required. As the number of paediatric patients in these indications is very low, and there is significant overlap between the patient populations, it seems unlikely that it is possible to recruit the required number of subjects in a realistic scenario. As two of those are in the field of a very rare indication, and up to 5 clinical studies are required to be conducted, it can be expected that the timely conduct of the required studies will prove to be a very challenging strategical task for the pharmaceutical companies. Moreover, the possibility to complete those studies at the same time as to complete the studies conducted in adults is at least questionable. Therefore, the development program is prone to delay adult approval, as there is a high probability that the studies cannot be completed within the same timelines as the studies for adults. This is further stressed by the agreed timelines for the completion of the PIP. A median time to completion of 4.84 yrs– depending on the indication and number of required studies and subjects – can be very difficult to almost impossible to achieve. In summary, this analysis shows several imbalances: a) the conduct of clinical trials is most complicated in the youngest patients, even though they need them most, b) the spectrum of indications and the number of required subjects for clinical studies does not fit incidence/prevalence of the condition in the paediatric population, and c) especially for rare conditions and those without a granted deferral, it is very probable that the timelines for completing paediatric studies cannot be met, thereby also delaying the approval for adults.

P328

A Simple Formula Based On Cystatin C For Individual Carboplatin Dosing In Children

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Introduction: As carboplatin clearance is linearly related to glomerular filtration rate, the principle of renal function-based dosing is widely accepted, although not always practiced. The prediction of carboplatin clearance could be improved by adding plasma cystatin C to other patient characteristics routinely used for dosing. We aimed to evaluate the usefulness of cystatin C as a predictor of carboplatin clearance in children and develop a simple model that can be used for dosing.

Material and methods: We performed a population pharmacokinetic analysis on 78 clearance studies performed in 30 children with a wide spectrum of solid tumors, using non-linear mixed effect modeling. The influence of six covariates (sex, age, body weight, height, BMI, BSA, creatinine and cystatin C) on carboplatin pharmacokinetics was evaluated. The final model was validated using bootstrap analysis.

Results: A two-compartment model was fitted to the time-concentration data. The best equation was: carboplatin clearance = 2.63 x (cystatin C/0.695)^(-0.637) x (weight/15.72)^0.79 with clearance in L/h, cystatin C in mg/L and weight in kilograms. The mean parameters obtained from the 1,000 bootstrap runs were almost identical to the estimates obtained from the original dataset, indicating the model is robust. Observed carboplatin concentrations were accurately predicted by the final model. The correlation between observed and predicted clearance was almost perfect ($R^2 = 0.92$; $P < 0.001$). Bias (%MPE) and imprecision (%MAPE) of the final model were 1.8% and 15.6% respectively.

Conclusions: A model based on cystatin C and weight gives the best prediction of carboplatin clearance in children. This simple model can be used for individualized dosing of carboplatin.

P329

Renal Swelling In Infants With First Urinary Tract Infection

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Introduction: Renal swelling as a response to inflammation has been described in infants with urinary tract infection (UTI) and may predict renal damage. To further study this swelling and the value of early ultrasound (US) we prospectively assessed renal length and volume and the correlation to fever and serum C-reactive protein (CRP) in infants with first UTI.

Material and methods: 104 infants <1 year of age were examined with US in the acute phase of UTI and at follow-up after 4 weeks. Renal length and volume measured with the ellipsoid method were calculated and computed to standard deviation score (SDS).

Results: 58 boys with median age 2.8 months and 46 girls with median age 4.0 months were included. The mean renal length and volume at the first US examination were 1.90 SDS (±1.54) and 1.67 SDS (±1.13) for the larger kidney, and 0.86 SDS (±1.01) and 0.84 SDS (±0.90) for the smaller kidney, respectively. There was a significant decrease in renal length and volume between the first and second US with a mean difference 0.96 SDS (±1.24) and 1.07 SDS (±1.10) for the larger, and 0.41 SDS (±0.91) and 0.47 SDS (±0.96) for the smaller kidney, respectively ($p<0.0001$). Length of the largest kidney correlated with degree of fever ($p<0.001$) and serum CRP ($p<0.0001$), and renal volume of the largest kidney correlated with serum CRP ($p<0.0001$) but not to degree of fever ($p=0.09$).

Conclusions: Measurement of renal length and volume by US in the acute and late phases of UTI in infants can identify renal swelling. The degree of swelling of the larger kidney correlates with inflammatory signs. Early US can be of value to identify children with risk of renal damage.

P330

Morphometric Profile Of Platelets In Children With Hemolytic Uremic Syndrome

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Introduction: Microvascular thrombosis as a result of platelet activation and consumption in the hemolytic-uremic syndrome (HUS) is a key aspect of the pathogenesis of this disease.

Material and methods: The study enrolled 35 patients with severe HUS (2,37 ± 1,4 years) in the anuria stage (1st point), the stage of diuresis recovery (2nd point) and the renal function reduction (3d point).Comparison group consisted of 14 healthy children (2,4±1,6 years).Morphofunctional condition of circulating platelets was assessed by computer morphometry using computer phase-interference microscope.
Results: In the cell population we distinguished 4 morphologic forms of platelet with according to various activation levels. 48% of resting platelets (discoid forms), 36% of platelets with low activation level, 14% of platelets with high activation level and 2% of degenerate functionally incomplete platelets were registered in healthy children. Platelet population in children with anuria stage (platelet count – PCT 82,8±43,1*109/L) characterized by the following relationship: 51% - I type, 32% - II type, 15% III type, 2% - IV type. In assessing the dimensional parameters of platelets in children at the onset of HUS compared with the control group decreased diameter, perimeter, height square and volume. In the 2nd point and normalization of PCT their morphological condition varied. I type - 45%, II - 38%, III – 15%, IV – 2%. There was a tendency to increase dimensional parameters, but they were lower than the control group. 3d point characterized normal or higher PCT (356,7±144,6x109/L) proportion of different platelet types was: . I type - 42%, II - 36%, III – 17%, IV – 5%. Dimensional platelet parameters normalized.
Conclusions: Computer technology application allows to detect morphofunctional changes of circulating platelets in children with HUS. Lack of platelet morphofunctional recovery in the peripheral blood when renal function restoring indicates adaptation processes of platelet hemostasis.

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Procalcitonin As A Predictor Of Renal Scarring And Vesicoureteral Reflux In Pediatric Acute Pyelonephritis

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Introduction: The aim of this study was to evaluate the usefulness of procalcitonin (PCT) as a marker of renal scars or vesicoureteral reflux in children with a first episode of acute pyelonephritis (APN).
Material and methods: Children admitted for first APN to the emergency department of Centro Hospitalar Póvoa de Varzim/Vila do Conde between January 2010 and December 2011, were prospectively enrolled. White blood cell (WBC), neutrophil count, C-Reactive Protein (CRP) and PCT were obtained in all patients. An 99mTC-dimercaptosuccinic acid (DMSA) scintigraphy was routinely performed 6 months after APN. A voiding cystourethrography (VCUG) was performed in children with renal scars or other risk factors. Data analysis was performed with SPSS version 22.
Results: The study included 37 children, aged 3 days to 8 years (median age 6 months), with 25 (67.6%) females. In majority of cases (n=19, 51.4%) body temperature was 39-40ºC and presenting for 8-24 hours (n=20, 54.1%) before admission. Escherichia coli was the main agent (n=34, 91.9%). Urina samples was collected by bladder catheterization in 33 cases (89.2%) and by clean catch in 4 cases (10.8%). The results of DMSA 6 months after APN showed renal scars in 16 children (43.2%), bilateral in 5 (31,3%). A VCUG was performed in 31 patients and VUR was detected in 7 (22,6%). No significant differences were found in comparing groups with and without renal scars in the valued parameters (fever duration, maximum temperature, CRP, PCT, WBC, neutrophil count). No differences were found when comparing PCT levels in children with and without VUR.
Conclusions: Several studies showed a correlation between increased PCT values at admission and presence of renal scars and proposed PCT as a key tool for a clinical decision rule to predict high-grade VUR. In our study PCT was inadequate in identify late renal scars after APN and in predict VUR.

P332

Low Bone Mineral Density Measured With Dexa Does Not Predict Bone Disease And Fractures In Adulthood After Childhood Renal Failure.

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Introduction: In 2000, we conducted a late outcome study in young adult patients with childhood end-stage renal disease (ESRD), the LERIC study. Patients had on average a very low bone mineral density (BMD) measured by Dual Energy X-ray Absorptiometry (DEXA) and 37% of patients had clinical signs of bone disease. The relevance for chronic kidney disease-mineral and bone disorder (CKD-BMD) surveillance of BMD by DEXA remains unclear. We analyzed to what extent a low BMD predicted clinical bone disease (CBD) in the subsequent 10 years.
Material and methods: 113 of all 187 patients of the LERIC-cohort participated. Data regarding BMD were gathered in 2000. Volumetric BMD (vBMD) was calculated to correct for height and hence bone size. Data on CBD were gathered by reviewing medical charts over the period 2000-2010 and by questionnaires in 2010.
Results: Both groups had equally low vBMD. Mean [SD] vBMD Z-score of the lumbar spine for patients with CBD and those with no CBD were -0.9 [1.5] and -1.2 [1.4], respectively (p=0.361).Incidence rate [95%CI] of CBD for patients alive in 2010 and those who died between 2000 and 2010 were 1.0/10 patient years [0.46-1.9] and 0.12/10 patient years [0.09-0.16], respectively. Logistic regression showed no significant relation between vBMD Z-score of the lumbar spine and the presence of CBD in the total study population (p=0.359).
Conclusions: Bone mineral density after correction for height is low in adult patients with childhood onset end-stage renal disease. Although low BMD is known to be associated with increased fracture risk, we found no association between BMD measured by DEXA in 2000 and CBD in 2010. We believe that DEXA should not be used as a diagnostic tool for the detection of CKD-BMD. Other imaging methods are needed in order to manage and prevent fracture risk and motor disabilities from CKD-BMD.

P333

Neonatal Renal Venous And Arterial Thrombosis

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Introduction: Newborns comprise the largest group of children developing thromboembolic events (TEs). Over 80% of venous TEs in newborns are secondary to central venous lines. Arterial TEs in newborns are, with few exceptions, iatrogenic complications that occur secondary to indwelling arterial catheters. Renal vein thrombosis (RVT) is the most common non-catheter related venous TE in newborns.Renal artery thrombosis (RAT) is far less common than RVT .
Material and methods: We present two neonates with RVT and RAT.
Results: Patient No.1 was full-term neonate with uneventful prenatal history. Macroscopic hematuria and signs of early onset neonatal infection with progressive thrombocytopenia occurred after the delivery. Abdominal ultrasound and contrast enhanced CT revealed bilateral renal vein thrombosis and thrombosis of inferior vena cava. Treatment with low-molecular-weight heparin resulted in partial recovery of the renal

veins. There was insufficient recovery at the left side with persistent decreased renal function. Since the age of 2.5 years the patient is maintained on ramipril because of hypertension. Patient No.2 was a premature girl born to a mother with gestational diabetes. The birth was urgent in the 28th week of gestation due to bleeding placenta previa. Umbilical vein catheterization was not performed in this child and her blood pressure was normal. The abdominal ultrasound performed at 4 weeks of age revealed hyperechogenity of the renal medullary pyramids of the left kidney, more detailed ultrasonography visualised partial thrombosis of the left renal artery. The girl was treated with low-molecular-weight heparin. This resulted in arterial recanalization. The renal growth is normal. The child is normotensive and her urinalysis was repeatedly normal.
Conclusions: RVT and RAT have to be considered in high-risk neonates and in cases of macroscopic hematuria, abdominal mass, thrombocytopenia, hypertension. In spite of urgent and appropriate therapy, the TEs can result in kidney damage and renovascular hypertension.

P334
Esbl Bacteria And Management Of Children With Urinary Tract Infections

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Introduction: Multidrug resistant bacteria are increasingly recognised as a cause of urinary tract infections (UTI) in children, especially in children with congenital anomalies. The aim of our study was to find out the spectrum of bacteria identified in our children with UTI and the proportion of multidrug resistant ones. In addition, we were interested in antibiotic treatment prescribed.
Material and methods: 217 children, hospitalized at our Nephrology Unit in the period from January 2011 till September 2013 with urine culture confirmed UTI, were included in the study in retrospective manner. Medical documentation was examined and some clinical data, results of urine culture, diagnostic procedures and treatment protocol were collected.
Results: There were 61 boys (28%) and 156 girls (72%) included in the study with CRP in the range of 93±68.5 mg/l and leucocytes 17.7 ±10.5x109/l. Repeated hospitalizations were noticed in 12.9%, mostly in children with congenital anomalies and neurogenic bladder. In all children renal US was performed and further diagnostics indicated in 28.5% of them. E. coli was the most common pathogen found in 78.4% of children, in 48.9% sensitive to all tested antibiotics. Resistance to ampicillin was present in 44.5%, trimethoprim-sulfamethoxazole in 21.9%, amoxicillin-clavulanate in 9.3%, quinolones in 7.1%, gentamicin in 2.7%, nitrofurantoin in 1%. ESBL bacteria were found in 5.5%, mostly E. coli and Klebsiella species. Children were treated with gentamicin in 65.9%, amoxicillin-clavulanate in 15.6%, cephalosporins in 7.3%. Carbapenems were used in 2.3% cases. Treatment protocol was changed in 6.4%.
Conclusions: E. coli is the leading uropathogen in our children with UTI, with good sensitivity to most antibiotics used, except ampicillin. ESBL bacteria are momentarily problem only in children with congenital anomalies. Most investigated children were treated with gentamicin and amoxicillin-clavulanate. The change of empirical antibiotic was rarely needed as well as the treatment with reserve antibiotics.

P335
Timing Of Voiding Cystourethrogram After First Documented Urinary Tract Infection In Children

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Introduction: Up to 60% children diagnosed with urinary tract infection (UTI), have vesicoureteral reflux (VUR). Many authorities recommend an interval of at least 3 to 6 weeks after a urinary tract infection before performing a voiding cystourethrogram (VCUG). This prolongs the interval of prophylactics, and reducing the likelihood of having to perform the procedure. The aim of this research was to determine whether the detection of vesicoureteral reflux in children with a urinary tract infection is more likely if the voiding cystourethrogram is performed early or late.
Material and methods: This prospective study was performed on 100 children aged 3 months to 15 years admitted with a first documented UTI to a tertiary care pediatric hospital over a 1-year period. Patients were divided into 2 groups according to whether they had a VCUG scheduled to be performed early (within the first 7 days after diagnosis) or late (>7 days after diagnosis).We compared the presence and severity of the reflux in the two groups.
Results: Vesicoureteral reflux was demonstrated in 51% and 60.2% in early and late group, respectively. The most common degree of reflux was grade II and III in two groups, and the most common detecting age for having VUR was 1-3 years. No significant difference was found between two groups in terms of incidence of VUR, severity and grading.
Conclusions: The rate of detection and severity of VUR in children with a first episode of UTI does not increase when the VCUG is done early (within the first 7 days of diagnosis) rather than later. Early VCUG shortens the period of prophylactic antibiotic use and increases performance rate of VCUG.

P336
Urinary Ngal Levels In Children With Familial Mediterranean Fever

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Introduction: We aimed to investigate the urinary neutrophil gelatinase-associated lipocalin (uNGAL) level, which is a sensitive marker of glomerular function for establishing probable renal involvement in early stages of the disease in patients with familial Mediterranean fever (FMF), and to determine the relation between gene mutations of these cases and uNGAL.
Material and methods: Forty patients with FMF who were admitted to our department and 38 healthy children were included in the study. Diagnosis was based on Tel-Hashomer criteria. Gene mutations (M694V, V726A, M680I, E148Q,) and acute phase reactants were determined as supportive findings. Routine renal function tests with spot urinary NGAL and microalbumin levels; and urinary NGAL/creatinine and micoalbumin/creatinine ratios were evaluated.
Results: There was not a statistically significant difference between the study and control groups in terms of NGAL/creatinine ratios. Comparison of subgroups (gene mutations) in terms of all parameters (age, age at diagnosis, duration of delay in treatment, glomerular filtration rate and NGAL/creatinine ratios) showed no difference.
Conclusions: We suggest measurement of urinary NGAL levels at regular intervals in order to establish renal injury early and decrease related complications are not required.

P337
Choice The Empirical Antibiotic Therapy In Children With Urinary Tract Infection

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Introduction: The aim of this study was to determine the structure and antibiotic resistance of urine pathogens in children with urinary tract infection (UTI) in Voronezh region in comparison with the Russian research "DARMIS" (2010-2011) and to choose an empirical antibiotic therapy.
Material and methods: There were examined 34 children aged 3 – 17 years old with the community-acquired UTI. Among them, 12 children (35, 3%) had first episode of UTI and 22 (64, 7%) – repeated. In 19 (55, 9%) patients urine flow disorder was observed (urinary tract abnormalities or vesicoureteral reflux). Microbial strains were identified by method of time-of-flight mass spectrometry; antibiotic resistance research was performed by determining minimum inhibitory concentration of antibiotics for each microorganism.
Results: The most part of isolates in patients of Voronezh region was constituted by E. Coli (70, 6%), the same as in the Russian research. It was revealed that resistance of E. Coli to ampicillin - 25%, amoxicillin clavulanate - 18,8%, ampicillin sulbactam - 25%, gentamicin - 18,8%, cotrimoxazole - 31,25% in children with recurrent UTI was significantly higher ($p < 0,05$) than in children with the 1-st episode. In patients with normal urine flow we did not observe any resistance of E. Coli to studied antibiotics, however resistance of E. Coli in patients with urine flow disorder was determined to ampicillin - 33,3%, amoxicillin clavulanate - 26,7%; ampicillin sulbactam - 33,3 %, gentamicin - 20,0 %, cotrimoxazole - 33,3 % ($p < 0\ 05$).
Conclusions: In children with the 1-st episode of UTI without urine flow disorder aminopenicillines or cephalosporins can be used. However in patients with recurrent UTI and / or urine flow disorder it is better to choose cephalosporins III generation or amikacin.

P338
Urine Biomarkers And Renal Swelling In Infants With Urinary Tract Infection

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Introduction: Elevated urine biomarkers and renal enlargement at the time of diagnosis of urinary tract infection (UTI) may define patients at risk of long term complications. The aim was to evaluate the relationship between urine biomarkers and kidney size during the acute phase and 4 weeks after UTI in infants.
Material and methods: A prospective study of infants with first UTI. Urine biomarkers were measured and renal size evaluated by ultrasound both at the time of diagnosis and 4 weeks later. Measured urine biomarkers were Kidney injury molecule 1 (KIM-1), Clara cell protein (CC16), Retinol binding protein (RBP), Neutrophil gelatinase associated lipocalin (NGAL), high sensitive C-reactive protein (hsCRP), Interleukin-1b, Interleukin-6 and Interleukin-8; all were related to urine creatinine.
Results: 96 infants were included, 52 boys with median age 2.7 months and 44 girls with median age 4.8 months. The concentrations of all urine biomarkers were significantly higher in the acute phase of the UTI than after 4 weeks ($p<0.0001$). KIM-1, CC16, hsCRP and RBP correlated with renal length and volume of the largest kidney at the time of UTI. The same urine biomarkers also correlated to serum CRP. KIM-1 had the strongest correlation to kidney volume ($r=0.48$, $p<0.0001$).
Conclusions: Several urine biomarkers, particularly KIM-1, were correlated to the size of the largest kidney in the acute phase of UTI and are possible candidates for screening infants in need of further evaluation.

P339
Urinary Kidney Injury Molecule-1 In Children With Idiopathic Hematuria

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Introduction: Hematuria is very common symptom in childhood and various factors take part in variable degrees in its etiopathogenesis. Kidney injury molecule -1 (KIM-1) levels in urine is being studied in our search as if it is a new indicator in this field, for being a noninvasive test for early detection of possible renal damage which is caused by idiopathic hematuria.
Material and methods: Thirty-eight children with idiopathic hematuria at the ages between 1 and 15 years are included in the study together with 39 children, who do not show any urinary symptoms, and who are compatible with patient work group in their ages and gender. Both in patient and control group, tests were done according to the hematologic etiology. These tests were complete urinary analysis, urine culture; calcium, magnesium, uric acid and creatinine levels in spots urine; the biochemical parameters in blood such as hemogram, erythrocyte sedimentation rate, parathormone, ferritin, antistreptolysin O, complement 3, romathoid factor, C-reactive protein levels; prothrombin time and active thromboplastin time values; throat culture and abdominal ultrasonographic investigation of the renal tract. KIM-1 levels in urine were measured as an early indicator for renal damage.
Results: The levels of KIM-1 and KIM-1/creatinin in urine were determined statistically significantly higher for the patients with hematuria in relative to the control group. There were no statistically meaningful differences for the other parameters.
Conclusions: As the result of this study; the detection of high KIM-1 levels in urine, as indicator for renal tubular damage, for the patients having idiopathic hematuria was determined to be evidence which is to be followed during the development of renal damage or failure in hematuria.

P340
Prospective Polysomnographic Study In Children With Monosymptomatic Nocturnal Enuresis And Polyuria

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Introduction: To explore the impact of sleep fragmentation in children with primary monosymptomatic nocturnal enuresis (MNE) and nocturnal polyuria (NP), sleep was investigated in relation to enuretic parameters: fluid intake, maximum and average voided volume, number of wet nights and nocturia.
Material and methods: Children (6 - 16 years) with primary MNE and NP were recruited from the paediatric nephro-urology clinic. Two diaries were completed: fluid intake was daily evaluated for four days and NE was registered for 14 consecutive nights. Maximum voided volume was measured during one day of forced drinking. Uroflow and post-void residual volume were performed by ultrasound. A general demographic questionnaire was completed. All subjects participated in one overnight video-polysomnographic study. The results regarding the periodic limb movements in sleep were compared with those of a former pilot study (29 children with refractory nocturnal enuresis).
Results: The study group comprised 30 children with proven primary MNE and NP (23 boys and 7 girls: 10,43 years ± 3.08 SD). The periodic limb movement in sleep-index (PLMS-index) was increased: 10,83 ± 4,99 SD. The arousal index and awakening index were 6.433 ±3.310 SD respectively 8.720 ±3.757 SD. No significant correlation was found between age, gender, social economic state, family size and the enuretic and sleep parameters. The PLMS-index was positively correlated with the arousal-index and the awakening-index ($p<0,001$). There was no significant correlation between the sleep and the enuretic parameters. Children with refractory nocturnal enuresis from the previous pilot study show a significant higher periodic limb movement in sleep-index and cortical arousal-index compared to the children from the actual study group ($p<0.001$).

Conclusions: PLMS and cortical arousals in sleep are increased in children with primary MNE and NP. No significant correlation was found with the enuretic parameters. The presence of PLMS probably constitutes a comorbid phenomenon, driven by a common but independent pacemaker. We hypothesize the autonomic system, its sympathetic branch, and the dopaminergic system as a candidate .

P341
Long Term Renal Toxicity Of Ifosfamide In Children: Be Vigilant For Renal Dysfunction

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Introduction: Ifosfamide is indicated as first line treatment in a variety of solid tumors. It is known to be nephrotoxic. Although renal damage may be acute and reversible, chronic toxicity may induce potentially proximaly tubular dysfunction the commonest presentation while distal tubular impairment is relatively rare. Aim of this study was to assess long term effects of ifosfamide exposure on renal function.
Material and methods: Retrospective data analysis of all patients who received ifosfamide for osteosarcoma and Ewing tumor between 1998-2010 were performed.
Results: Nephrotoxicity is still present after the completion of ifosfamide treatment as shown at 6, 18 and 36 months after diagnostic by eGFR declining, by proximal tubular dysfunction as expressed by declining of phosphatemia and TPO4/GFR and by elevation of beta2microglobulinuria. Mean age at diagnosis and cumulative dosage of ifosfamide were respectively 13.6 years (SD 2.6) and 51 +/- 18 gr/m2. At initiation, 6, 18 and 36 months evolution of mean dosage was respectively for GFR (Schwartz formula) 145, 111, 107, 105 ml/min/1.73m2, for FeK+ 11, 23, 24, 35% , for TPO4/GFR 1.29, 0.95, 0.98, 0.8 mmol/l, for FeGluc 0, 3.12, 3.15, 9.67 % and for beta2microglobulinuria 264, 15648, 20183, 18869 microgr/l.
Conclusions: Full recovery of renal function may occur but seems to be rare. The occurence of this toxicity remains unpredictable. Regular monitoring may minimise late complications such as osteomalacia.

P342
Folate And Homocysteine Status In Children With Neurogenic Bladder Due To Meningomyelocele

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Introduction: Meningomyelocele (MMC) is the most severe form of spina bifida caused by both genetic and environmental components. It is well known that status of folate plays an important role in the risk of neural tube defects. High homocysteine (Hc) level may be associated with disturbed sensory and motor peripheral nerve function and is lowering after folic acid (FA) fortification. The aim of this study was to explore possible links of FA and Hc and to correlate them with renal and bladder function (based on urodynamics) as well as physical activity in patients with NB after MMC.
Material and methods: The investigation was conducted on two groups: group 1- 30 children with neurogenic bladder, group 2 - 20 healthy children with no abnormalities in urinary and nervous systems. The Hc concentration in urine and serum was estimated using the ELISA set and FA was measured in serum used electrochemiluminescence method. FA/Hc ratio was calculated in all children.
Results: The median serum and urine Hc were higher compared with reference group. There were no differences in serum FA between studied group. Median FA/Hc ratio was statistically significantly lower in MMC group compared to reference group. We found statistically significant correlations between urodynamics parameters and FA and Hc.
Conclusions: Hyperhomocyteinemia and hyperhomocysteinuria could be considered as factors influencing bladder function in MMC patients. Although serum FA level was in normal range in MMC patients it does not exclude disturbed folic acid status.

P343
Xanthogranulomatous Pyelonephritis In A 2 Year Old Girl

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Introduction: Xanthogranulomatous pyelonephritis (XGP) is a chronic inflammatory disease characterised by destruction of the renal parenchyma and replacement by granulomatous tissue containing histiocytes and foamy cells, resulting in severe renal damage. It can be diagnosed by the typical bear's paw sign on CT scan.
Material and methods: A previously healthy 2 year 10 month old girl presented with a 4 day history of cloudy urine but without fever, abdominal pain or urinary symptoms. She was irritable, with reduced appetite but no weight loss, looked pale, and had a right-sided abdominal mass extending from the costal margin to the right inguinal region. Urinalysis revealed pyuria and haematuria. Proteus mirabilis was cultured from the urine. Her haemoglobin was 5.4g/dL, white cell count was 25x109/L, platelets were 747x109/L, CRP was 198mg/l. Ultrasound revealed an enlarged right kidney with cortical thinning, distended calyces and multiple calculi and a normal left kidney. CT scan showed a grossly enlarged kidney with its parenchyma replaced by low attenuating masses. There was a 17mm staghorn calculus, stones in the dilated calyces and a 3mm stone at the vesico-ureteric junction. Significant para-aortic and retroperitoneal lymphadenopathy and a small right psoas abscess were noted.
Results: She underwent a percutaneous nephrostomy and received intravenous antibiotics. DMSA scan confirmed a non-functioning kidney. Four weeks later she underwent open nephrectomy. Extensive inflammatory adhesions to the inferior vena cava, liver and surrounding tissues were found and a right partial adrenalectomy was necessary. Histology revealed a destructive inflammatory process, extensive necrosis, abscess formation, foamy histiocytes around necrotic foci and aggregates of multinucleated giant cells.
Conclusions: We describe the case of a 2 year old girl with a short history of cloudy urine, a large right flank mass and CT findings typical of XGP, who underwent successful open nephrectomy, made an uneventful recovery and is well 8 months later.

P344
Nocturnal Enuresis In Outpatient Department

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Introduction: The aim of the study: To evaluate whether the children with nocturnal enuresis (NE) are referred to the proper specialist and at the right age and to assess the distribution of NE types and their treatment choices.
Material and methods: A retrospective analysis of 196 children (77 girls and 119 boys) referred for NE to the specialist outpatient department was performed.
Results: All patients were grouped: <5 years – 55 (28,1%), >5 years 141 (71,9%), the youngest being 2 years 10 months, the oldest 15 years old. The first choice specialist for NE was pediatric urologist – 100 (51%), the second pediatric nephrologist – 90 (45,9%) and the third pediatric neurologist – 6 (3,1%) children. NE was classified into two types: primary – 174 (88,8%) and secondary – 22 (11,2%) cases. Primary NE was divided in monosymptomatic – 125 (71,8%) and non-monosymptomatic – 41 (23,6%). In 8 (4,6%) cases NE was just a symptom of the other disease.

The treatment of monosymptomatic NE was: desmopressin 50 (40%), oxybutinine 30 (24%), other drugs 5 (4%) patients. Forty (32%) patients were assigned for the follow up. Non-monosymptomatic NE was usually treated with oxybutinin – 18 (43,9%) cases. Enuresis alarm was not used in either type of NE.
Conclusions: A big number of patients are referred too young and not to a proper specialist. Patients are mostly referred for primary monosymptomatic NE, but the treatment tactics of NE is inadequate.

P345
Changes In Bacterial Resistance Patterns Of Pediatric Community-acquired Gram (-) Urinary Tract Infections
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Introduction: Knowledge of local antimicrobial resistance patterns is essential for evidence-based empirical antibiotic prescribing, and a cutoff point of 20% has been suggested as the level of resistance at which an agent should no longer be used empirically. In this study, we aimed to detect the changing ratio in antibiotic resistance by years.
Material and methods: Retrospective analysis of isolated gram (-) bacteria from children with UTIs was performed at the Marmara University Hospital during years 2011-2014. The findings were compared with data collected in a similar study carried out in 2000-2003.
Results: We analyzed 465 subjects from 2000-2003 and 400 from 2011-2014. Among these, 61% were female and 39% male (1.5 girls: 1 boy). The age range was from 2 months to 16 years (mean: 3 years and 9 months). The most frequently isolated microorganism was E. Coli, found in 60% children in the first period and 73% in the second period. Resistance to cefixime, cefepime, amikacin and ciprofloxacin were 1%, 1%, 0% and 0% respectively during years 2000-2003. The resistance increased significantly to 15%, 7%, 4% and 3% respectively during years 2011-2014 ($p<0.05$). The resistance to nitrofurantoin was 17% during 2000-2003, whereas it decreased significantly to 7% during 2011-2014 (p:0.0001). Resistance to other antibiotics were also reviewed. Rates of resistance to different antibiotics during years 2000-2003 and 2011-2014 were as follows respectively: ampicilline 69% and 71%, amoxicillin clavulanate 44% and 43%, cefazolin 39% and 32%, trimethoprim-sulphamethoxazole 32% and 31%, cefuroxime 21% and 18% and ceftriaxone 10% and 14% ($p>0.05$).
Conclusions: It was concluded that, in childhood urinary tract infection, microorganism and antibiotic resistance should be evaluated periodically, thus the empirical treatment should be planned according to the resistance patterns.

P346
The Comparison Of Bladder Catheterization And Suprapubic Aspiration Methods For Suspected Urinary Tract Infection In Infants
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Introduction: Proper diagnosis of urinary tract infections depends on obtaining an uncontaminated urine sample for culture. Suprapubic aspiration and transurethral catheterization are the two recommended procedures for obtaining specimens for urine culture from infants. The objective of the current study was to compare to these 2 procedures according to culture and urinalysis results in young infants.
Material and methods: A prospective study was conducted in the Department of Pediatrics of a tertiary care referral hospital in Turkey. Local Ethics Committee approved the study. We analyzed the results of urine samples obtained from 83 infants aged 0 to 24 months with suspected UTI by both two methods of urine collection: suprapubic aspiration (SPA) or catheter obtained urine (COU). All urine specimens were subjected to both urinalysis and culture. Statistical analysis was made by using SPSS version 15.0.
Results: All infants (n=83) with positive urine culture results by COU subjected to SPA. Of these, only 24 (28.9%) and 20 (24%) infants showed positive urine culture and abnormal urinalysis results, respectively. In COU group the most common uropathogen was Enterobacter spp.(37.3%) whereas in SPA group it was Escherichia coli (62.5%).
Conclusions: In infants younger than 24 months, suprapubic aspiration is the best method to avoid bacterial contamination than transurethral catheterization. Health professionals should consider these differences when choosing a method for obtaining a urine sample from young infants.

P347
Eculizumab As An Off-label Therapy In Neurological Injury In Hemolitic Uremic Syndrome. A Case Report With Good Outcome.
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Introduction: Eculizumab has been approved for the therapy of atypical Hemolytic Uremic Syndrome (HUS). It has been suggested also in D+ HUS but further controlled prospective evaluation is needed. In particular, when neurological impairment occurs, some authors suggest its use.
Material and methods: Gianvito, 4 y.o., was admitted to our hospital for diarrhea and classic symptomatic triad of HUS. Diagnosis was made with finding 0126 STEC in the stool sample. He was treated with hemodialysis but after seven days he developed aphasia, irritability and dizziness. EEG showed background slowing with theta and delta diffuse activity. Despite plasmapheresis treatment, the clinical status of the patient worsened dramatically with sudden onset of seizures. Brain MRI showed a large ischemic lesion in the white matter of right hemisphere and other small ischemic injury in thalamus and bilaterally in front-basal and front-cortical zones. After checking meningococcal vaccine, authorization of the local ethical committee and informed consent by the parents for off-label use of eculizumab, we administered a first dose (300 mg i.v) and a second one after a week.
Results: The day after first administration, the neurological status as well as EEG improved. After three weeks, a second brain MRI showed complete "restitutio ad integrum" of cerebral parenchyma and the child was discharged without neurologic outcomes and with complete recovery of renal function
Conclusions: Toxin mediated microangiopathy may involve the cerebral microcirculation but also cerebral vasculitis could play a role in the pathogenesis of the cerebral damage. Despite serious and significant injury described in MRI, surprisingly complete recovery was obtained after eculizumab. We cannot say with certainty that resolution of neurological symptoms can be linked to this drug: in the absence of other treatment options and according to the success described in our case and in other similar ones, this therapeutic choice must be considered.

P348
Evaluation Of A New Technique In Obtaining A Mid-stream Clean Catch Urinary Sample In Newborns: A Randomized Controlled Study
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Introduction: We aimed to evaluate the feasibility, safety, efficacy and utility of bladder stimulation and paravertebral lumbar massage manoeuvres in collecting a clean catch midstream urinary sample in newborns.
Material and methods: The 3-10 days old newborns were randomly assigned into experimental group and control group. Twenty five minutes after feeding, the genitelia and the perineum of the all babies, were cleaned. The male babies were held under their armpits with their legs dangling and the female babies were held also in hip flexion. Bladder stimulation and lumbar paravertebral massage manoeuvres were only applied to babies in experimental group. To obtain a midstream clean catch urinary sample within 300 seconds of starting the stimulation manoeuvres in experimental group and of holding under the armpits in control group were presumed as success. The urinary samples of all babies were analysed for urinary tract enfection.
Results: A total of 127 term newborns were included in our study. The urinary samples were successfully collected in 49 babies (77.8%, n: 63) of the experimental group and in 21 babies (32.8%, n: 64) of the control group. The median time for sample collection was 60 seconds (20-285 s) in experimental group and 300 seconds (116.25-300 s) in control group ($p<0.001$). The success rate in obtaining urine sample was significantly higher in experimental group than in control group ($p<0.001$). Contamination was detected in urine samples of 12 babies in experimental group and 6 babies in control group. There was no statistically significant difference in the rate of urinary contamination between experimental group and control group.
Conclusions: We suggest that bladder stimulation and lumbar paravertebral massage is a safe, quick and effective technique in obtaining a mid-stream clean-catch urine sample in newborns.

P349
Successful Treatment Of Ahus With Eculizumab In A 1 Month Old Infant

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Introduction: Atypical haemolytic uraemic syndrome (aHUS) is a rare genetic condition caused by complement dysregulation, accounting for 5-10% of all cases of haemolytic uraemic syndrome (HUS). Recent trials have advocated the use of the monoclonal antibody eculizumab in the treatment of atypical HUS. We present a 3.9kg, 4 week old infant with aHUS and extrarenal manifestations, successfully treated with eculizumab. To our knowledge this is the youngest documented case of aHUS successfully treated with eculizumab in the literature.
Material and methods: The infant presented at 27 days of life with diarrhoea, vomiting and focal seizures. MRI brain scan showed significant abnormalities of the periventricular white matter of the corpus callosi, the upper thalami and the lentiform nuclei. The infant developed frank haematuria with thrombocytopenia, haemolytic anaemia and a raised lactate dehydrogenase. Estimated glomerular filtration rate (eGFR) fell to 17.9ml/1.73m2/min. Despite the loose stool at presentation, the infant's young age suggested aHUS was the most likely diagnosis. ADAMST13 assay was negative, stool was negative for E.coli and E.coli antibodies were not detected. Due to the infants size plasma exchange was not a treatment option and she was commenced on a trial of eculizumab within 12 hours of the diagnosis being made.
Results: Significant improvement occurred within 11 hours of the first treatment dose with a reduction in both renal deterioration and haemolysis. In addition there was clinical neurological improvement, later substantiated by improvements in brain imaging and EEG. The infant continues to receive eculizumab and remains well at 6 months of age with normal developmental milestones.
Conclusions: Marked improvement of clinical status and brain imaging shown by this 4 week old infant suggests that early eculizumab treatment can improve neurological function and prevent renal failure in even the youngest of children with aHUS.

P350
Quality Of Life In Children With Chronic Kidney Disease, End-stage Renal Disease On Peritoneal Dialysis And Kidney Transplantation

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Introduction: Progressive chronic kidney disease (CKD), irrespective of the underlying etiology, reaching renal replacement therapy or renal transplantation (RT) significantly impact the quality of life (QoL) of children. The purpose of our study was to compare the QoL of children with different stages of CKD, end-stage renal disease (ESRD) on peritoneal dialysis and after RT with that of healthy children with a similar age distribution.
Material and methods: Greek version of the KIDSCREEN-52 questionnaire was used, which consists of 52 items and is based on a multidimensional health related QoL construct. The questionnaire is categorized into ten dimensions: physical well-being, psychological well-being, moods and emotions, self-perception, autonomy, parent relation and home life, peers and social support, school environment, social acceptance (bullying) and financial resources.
Results: The study included 55 patients (28 girls) with a mean age of 11.6 ±5.1 years, separated to three groups. Group 1 consists of 25 patients with 1st-4th CKD stage, group 2 consists of 14 patients on peritoneal dialysis due to ESRD and group 3 consists of 16 patients after RT. Each group compared with 53 healthy controls. Physical well-being of all groups was significantly lower ($p<0.05$) compared to controls, as well as social acceptance ($p=0.017$) for group 1, and moods and emotions ($p=0.017$) for group 2. On the contrary, parent relation and home life in group 2 was significantly higher ($p=0.013$) compared to controls. Differences in QoL were also observed when each group was compared to the other two.
Conclusions: The different stages of renal disease in children impact QoL and physical well-being constitutes the dimension is influenced more adversely, indicating the need for special health care. Thus, optimal care requires attention not only to medical management but also to an assessment of QoL factors that may help promote pediatric patient's health.

P351
Efficasy Of Cranberry Capsules To Prevent Recurences Of Urinary Tract Infections

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Introduction: Urinary tract infection (UTI) is one of the commonest bacterial infections in childhood with more than 10% of children experience recurrences. These children are usually subjected to long standing antimicrobial prophylaxis, with increased risk of colonization from resistant species. The aim of our study was to evaluate the efficacy of cranberry to prevent UTIs recurrences in children.
Material and methods: Children and adolescents, aged 2-18 years, with history of recurrent episodes of UTIs were recruited for the study. The participants were randomized to receive cranberry (capsules Mirtygil, Istituto Ganassini, SpA, Epsilon Health) or not. The dose was fixed for all children (2 capsules/daily). Children with vesicoureteral reflux ≥grade III were excluded from the study. Specific consultation was given to all children and parents regarding voiding and constipation problems. Children were followed for 1 year in which compliance, side-effects of cranberries treatment and UTI episodes were recorded.
Results: A total of 76 children, 53 girls, were included in the study and 38/76 received cranberry for at least 3 months. Children on cranberry

compared to control group presented lower percentage of UTIs (18.4% vs. 63.2%, p<0.001) and initiation of antimicrobial prophylaxis (5.3% vs. 34.2%, p<0.001). Moreover, episodes of UTIs totaled 9 and 44 on the cranberry and control group, respectively (p<0.001). Children on cranberry had significantly fewer days on antimicrobial treatment (p=0.003). No side effects in cranberry group reported. Escherichia coli, Klebsiella and Proteus spp. in this order were the predominant species isolated in both groups, in the beginning and also in the end of the study.
Conclusions: The use of titrated dose of cranberry was effective in reducing the number of children who experienced a UTI recurrence, the actual number of recurrences and related antimicrobial use, suggesting that cranberry is a secure and effective prophylaxis treatment for children with UTI recurrent episodes.

P352
Intravesical Hyaluronic Acid Therapy In Recurrent Urinary Tract Infection In Patients With Spina Bifida And Neurogenic Bladder
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Introduction: Hyaluronic acid is a protective barrier of the urothelium. Damage to the glycosaminoglycan layer may increase the possibility of bacterial adherence, cystitis and infection. Intravesical hyaluronic acid (HA) therapy is one of the most popular regimens for treatment of bladder pain syndrome/interstitial cystitis especially in women. Patients with neurogenic bladder who perform clean intermittent catherization (CIC) 4-6 times a day are also under great risk for recurrent cystitis. The aim of this study was to assess the efficacy and safety of intravesical treatment of HA in reducing episodes of recurrent cystitis attacks (RCA) in patients with spina bifida (SB) and neurogenic bladder who perform CIC.
Material and methods: Between 2012-2014, 10 patients (nine girls, one boy) with SB and neurogenic bladder, who had documented RCA occured at least three times in the previous 12 months, were treated with intravesical 40 mg HA (Hyacyst®) weekly for the first month, then monthly for 3 months. Urine cultures, urodynamic studies, urinary USG were performed and ratio of sterile urine cultures were determined at the beginning and after the therapy. Since the limited number of patients fulfilled the inclusion criteria of the study, we couldn't comprise a control group with RCA who didn't take HA treatment. We compared cystitis attacks for each patient before and after the HA treatment.
Results: The mean age of the patients was 11,11±4,83 years. None of the patients had vesicoureteral reflux and six patients had renal scarring on DMSA for at least one kidney. The most common microorganism was Escherichia Coli in all patients except two. The mean follow-up time was 14,6±6,9 months after the therapy. The mean RCA ratio decreased from 95,83±9% to 55,74±27,9% after the treatment period.(p=0,011)
Conclusions: Intravesical HA therapy in patients with SB and neurogenic bladder with RCA who perform CIC, is safe and effective for the prevention of RCA.

P353
Cfh Gene Mutation In A Case Of Shigatoxin Associated Hemolytic Uremic Syndrome
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Introduction: We report the case of a patient with shigatoxin (ST) associated hemolytic-uremic syndrome (HUS) with a concomitant heterozygous CFH gene mutation.
Material and methods: Our 18 months patient was presenting with a hemolytic anemia and thrombotic microangiopathy in a context of acute gastroenteritis. The patient didn't show severe organ failure, especially he didn't require dialysis. Considering the persistent hemolysis and the complement decrease (total and C3), a immunotherapy by eculizimab (Soliris® Alexion) was realized under antibiotic and vaccination. Patient outcome was favourable. A type 2 Shigatoxine associated to Escherichia Coli was identified. Complement analysis showed a heterozygous mutation of CFH gene inducing a quantitative factor H defect. This defect was assessed on two distinct samples, one before and the other after recovering from HUS and at distance from the eculizimab therapy.
Results: Our patient was presenting with a typical ST associated HUS. However, complement analysis indicated a factor H mutation, suggesting an atypical HUS. With this case report we suggest the possibility of ST triggering in HUS patient with genetic complement abnomalies. For this reason, we suggest a complement analysis, even in case of ST associated HUS, especially in situations of clinical or biological particularities.
Conclusions: We reported a case of ST associated HUS with a quantitative factor H defect. To our best knowledge, there are very few cases of ST associated HUS described with complement gene mutation (I; MCP), but it had never been observed with factor H mutation. Complement analysis seems to be of interest even in case of typical ST associated HUS.

P354
Arteriovenous Alterations In Horseshoe Kidney. Review Of Clinical Cases.
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Introduction: Submit arteriovenous malformations associated to the Horseshoe kidney and possible complications
Material and methods: We report two cases of children with horseshoe kidney and arteriovenous abnormalities.
Results: Case 1: 6 year old boy with glomerular hematuria.GFR normal. Ultrasound: fused kidneys. Angio-CT:Left renal artery supplies the middle and upper pole of left kidney (KL). Right renal artery supplies the upper pole of right kidney (RK). Renal arteries Two other polar type, one in KL leaves the lateral margin of the aorta and supplying the lower pole segmental KL taking three branches, two of which supplying the lower pole and splits and is directed to isthmus. There is a polar artery arising from the right common iliac artery at its origin and goes to the lower pole of RK. Case 2: 12 year old boy with horseshoe kidney. Angio-CT: fused kidneys. RK: Double arterial contribution: Branch of the anterior wall of the aorta, inferior to the output of the inferior mesenteric artery bifurcated into two segmental branches, another of the left common iliac artery. Venous drainage through two channels: less than the output of the superior mesenteric artery that leads to the cava vein, and vein formed by confluence of three branches in the upper pole, stands parallel to cava, before emptying it converging with vein. KL: Venous drainage: two veins from the hilium to the ascending cava, coming together with the renal vein.
Conclusions: The arterial blood supply classification most widely used is that of Eisendrath. 1ª case corresponds to a type V, in which there are multiple renal arteries originating from the aorta, mesenteric and iliac arteries and may be associated with abdominal aortic aneurysm. The 2nd case corresponds to anomalies of the inferior vein cava (5.7%). Should ruled extrarenal malformations (genitals, skeleton) and malformation syndromes, as well as its association with tumors

P355
Increasing The Dosage Of Desmopressin (fast-melting Oral Lyophilisate; Melt) From 120 To 240 μg Is Of Little Benefit In Treating Monosymptomatic Nocturnal Enuresis.
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Introduction: International Children's Continence Society (ICCS) recommends desmopressin and enuresis alarm as the first-line strategy in treating monosymptomatic nocturnal enuresis. Oral desmopressin (fast-melting lyophilisate; Melt) has become s first-line medicine in the 2008 ICCS guideline. ICCS guideline recommends that initial dosage of Melt is 240 μg and should be lowered to 120 μg if effective. Although Melt is not mentioned in the Japanese guideline, it is now practically available in Japan. According to the package insert, initial dosage is 120 μg and can be increased up to 240 μg. In our institution, initial dosage of Melt is set to 120 μg per day, and increased to 240 μg if the patient shows no or partial response. Our aim of this study is to investigate its efficacy of increasing Melt in treating monosymptomatic nocturnal enuresis.
Material and methods: The cases were reviewed in which Melt was administered with no or partial response to the initial dosage of 120 μg per day. In these cases, duration of treatment until the diagnosis of "resistance" was made, and efficacy of increasing Melt to 240 μg per day were analyzed. Therapeutic efficacy was evaluated by the criteria of ICCS.
Results: Thirteen cases were enrolled in this study, 12 males and 1 female. Mean age of the patients was 10 years and 9 months. Mean period between the first visit to hospital and initiation of Melt was 1 year and 11 months. Mean period between the initiation of Melt and increasing its dose to 240 μg was 2.9 months. Evaluating by the criteria of ICCS, ten cases showed no response, and 3 cases showed partial response. So, no case showed satisfactory response to the increase of Melt.
Conclusions: Increasing the dosage of Melt from 120 μg to 240 μg per day was of little benefit in treating monosymptomatic nocturnal enuresis.

P356
Experience For 3 Years In The Treatment With Bacterial Vaccine For The Prevention Of Urinary Infections

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Introduction: We are describe the cases that they have been treated by individualized bacterial vaccine from January, 2011 until December, 2013 and the characteristics of the patients and the evolution after the administration of the vaccine. The bacterial vaccines are specific stimulants of the adaptative immunity. They are indicated with the aim to diminish the severity and frequency of these infections and to diminish the utilization of antibiotics.
Material and methods: During these 3 years of follow-up had administered the bacterial vaccine to 9 patients. 100 % is women of ages between 7 and 12 years. The cases have been described valuing if they present structural alterations, deficit of immunity or associate pathology and how it has been his evolution, quantifying the appearance of new episodes of urinary infection and the need to continue with antibiotic prevention.
Results: All of them had had infections of repetition and in all there was in use antibiotic previous prevention. They present urocultivos positives, seven girls to E.coli, two in addition to another gérmen (Acinetobacter, Enterococo faecalis). They associate Vesical dysfunction, four; deficit of lectina fixing of manosa, four; hipercalciuria, one; without associate pathology, two. The duration of the vaccine in all of them was 6 months, (two cycles with general vaccine (Proteus, E.coli, Klebsiella and Enterobacter)). In one of them with specific vaccine to E.coli. During the administration of the vaccine, five of them did not present infections, two presented one episode. Two of them had infections of repetition and suspended the treatment
Conclusions: The bacterial vaccine is an option of prevention for children with ITUs appellants. In our experience, 7 of 9 girls have had, after the administration, good evolution, presenting one or no infections, in a minimal period of follow-up of 14 months after the beginning of the vaccine.

P357
Seasonal Variation Of Urinary Output In A Healthy School Children Population In Mallorca

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Introduction: Several studies have shown an increased prevalence of urolithiasis in hot climates. This is atributted to a major degree of dehidratation and a consequent decrease in urine production. A recent study performed in our healthy children population has shown that there is a high percentage of children at risk of crystallization in urine and that a low urinary output is the factor most associated with it. We assess the urinary volume of healthy school children in Mallorca in two different climatic seasons.
Material and methods: Two 12-h overnight urine samples were obtained from 111 children aged 5−12 years, one collected in a cold season and the other in a warm season. Urine volume and urine creatinine excretion were measured. Only in the samples with creatinine excretion rates of 15 −25 mg/kg/day were included.
Results: Mean temperature of cold and warm seasons were 11.2º C (range 3.2ºC-15.6ºC) and 21.1ºC (range 15.4ºC-24.7ºC), respectively. Median diuresis value was 0.78 ml/kg/h (p25-p75: 0.67-0.98) in the cold season and 0.9 ml/kg/h (p25-p75 0.69-1.78) in the warm season (p=0.09). Data analysis was performed by using Generalized Estimating Ecuation adjusted by age, BSA, temperature and humidity. Temperature was directly associated with diuresis (ß=0.014; p=0.03) and age (ß=0.088; p=0. 17). Diuresis increased with increasing temperature (0.014 ml/kg/h per degree) and age (0.088 ml/kg/h per year).
Conclusions: Children´s urinary volume was unexpectedly higher in the warm season, although it is noteworthy that the urinary output was low in both periods. May be, the higher water loss caused by heat is phisiologically compensated by thirst and increased fluid intake. Achieving an adequate fluid intake is an important measure for the prevention and treatment of urolithiasis. This recommendation has to be strongly encouraged in cold seasons.

P358
Family History Of Kidney Stones Is Related To Calcium/citrate Rate Value In First Morning Urine Sample

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Introduction: Prelithiasis is defined as a situation in which a patient has metabolic abnormalities that can potentially cause kidney stones. The calculation of the relationship between the urinary concentrations of citrate and calcium is a very simple way of assessing the lithiasis risk. The objective of this study is to know whether there are differences in the lithogenic capacity of two urine samples collected at different times of the day and if the results are related to family history of urolithiasis.
Material and methods: We have studied 55 children (21V, 34M) aged 10.3±3.4 years (4-18 years) showing sonographic renal stones (23/55) or

having apparent renal lithiasis risk (32/55). Calcium, citrate and creatinine levels were analized in two urine specimens (last day at night and next morning, respectively). Grases et al. criteria were employed to define lithiasis risk (calcium urinary level higher than 0.27 mg/dl and/or urinary calcium/citrate ratio higher than 0.33). Familiar history of urolithiasis has been analyzed for first-degree and second-degree relatives.
Results: Urinary calcium level was increased in 14.5% (8/55) of the night urine samples and in 30.9% (17/55) of morning urine samples. Moreover, calcium/citrate ratio was increased in 39.2% (n=19/55) of the night samples and in 70.9% (39/55) of the morning ones. There was a family history of renal stones in 40 families (72.7%). The increase in calcium / citrate ratio in the morning urine was related to family history of renal stones (32/39) ($p<0.05$).
Conclusions: Fluctuations in urinary calcium and citrate levels occur along the day. Early morning urine is the most lithogenic sample and its calcium/citrate ratio is the best correlated parameter to family history of renal stones. This ratio is particularly useful within paediatric population because there are no reported standard values for calcium/creatinine or citrate/creatinine ratios along the whole day and night.

P359
Three Cases Of Atypical Hemolytic Uremic Syndrome

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Introduction: The description of three cases of atypical Hemolytic Uremic Syndrome (aHUS) with different aetiologies, treatments and outcomes.
Material and methods: Retrospective review of the clinical data of 3 patients diagnosed with aHUS, microangiopathic hemolytic anemia, thrombocytopenia, renal dysfunction and primary complement dysregulation.
Results: Case I: A 7-year-old boy was diagnosed with aHUS and hypocomplementemia. He was initially treated with dialysis and Plasma Exchanges. Despite an improvement hemolysis parameters, he did not recover renal function. Anti-factor H antibodies were detected and a renal biopsy showed glomerular mesangiolysis. He presented severe hypertension and died from cardiac tamponade. Case II: A 4-year-old boy with aHUS and hypocomplementemia. Two years ago the patient was diagnosed with thrombotic microangiopathy through a kidney biopsy. The patient and his father showed low levels of MCP, but no MCP gene mutation was found. The episode of HUS was self-limited without treatment and the patient has remained asymptomatic for the last 5 years. Case III: A 2-year-old girl with Type I membranoproliferative glomerulonephritis, who developed aHUS with hypocomplementemia. A C3 gene mutation was found in the patient and her father. Symptoms persisted despite standard treatment, so Eculizumab was dispensed and hemolysis disappeared. After 4 months it was decided to discontinue the Eculizumab treatment. One year later, coinciding with a chickenpox infection, the patient presented a HUS relapse that was successfully treated with a single dose of Eculizumab. Two years later she presented another relapse and Eculizumab was administered again, and cannot be discontinued.
Conclusions: The clinical outcome is as expected according to the aetiology, with the MCP deficiency being the most benign. Eculizumab use is very effective treatment in patients with C3 gene mutation and in these cases it changed the catastrophic course of the disease.

P360
Vitamin D Deficiency Is Not A Risk Factor Of Recurrent Urinary Tract Infection In Small Children

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Introduction: Approximately one-third of children with urinary tract infection (UTI) develop recurrent UTI episodes that may lead to renal scarring. Vitamin D stimulates production of cathelicidin and β-defensin-2 (hBD2), endogenous antimicrobial peptides. Both peptides are expressed in the urinary tract, with a critical role in the innate immune defense against uropathogenic bacteria. The aim of this study was to identify risk factors of recurrent UTIs in small children, with focus on vitamin D and hBD2.
Material and methods: We enrolled 77 children under two years of age, with the first episode of UTI between March 2012 and March 2013. Serum vitamin D (25-OH cholecalciferol) and plasma hBD2 levels were measured two months after the first UTI. The children were then followed for one year after the first episode of UTI.
Results: Female sex, low age and presence of vesico-ureteral reflux were associated with increased risk of recurrent UTI. Of the 77 children in the study, 61% (n= 47) had optimal serum levels of vitamin D (75 – 250 nmol/l), and 39% (n=30) had vitamin D deficiency or insufficiency (<75 nmol/l). We found a positive correlation between vitamin D and hBD2 levels. There was no statistically significant difference in the UTI recurrence rates between children with optimal vitamin D levels (recurrence rate of 26%) and children who were vitamin D deficient or insufficient (recurrence rate of 30%). Accordingly, there was no association between the hBD2 levels and the recurrence rate of UTIs.
Conclusions: Vitamin D levels correlate with the antimicrobial peptide hBD2 levels in blood. However, vitamin D deficiency and insufficiency are not associated with increased risk of recurrent UTIs in small children.

P361
Structure Of Causes Of Diseases Of Urinary Organs In Disabled Children

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Introduction: The problem of childrens nephrology pathology is very important, due to its high frequency, predisposition of kidneys' disease to its chronicity, followed by chronic renal insufficiency (CRI) and patients' disability even in the childhood
Material and methods: A retrospective analysis of patients' charts and on-site examination of 61 chidren with determined disability was held on the base of nephrology unit of Irkutsk Children Clinical Hospital.
Results: The study revealed, that boys suffer from nephrological pathology, leading to disability, more than girls, which is 70,49% and 29,51% respectively. C Leading position in the structure of causes of disability takes congenital abnormality of urinary organs, which is 80,33%, 13,11% of patients suffer from primary nephrotic syndrome. Also there are patients with genetic tubulopathy (Burter's syndrome), Wegeners granulomatosis, ICD and GUS among disabled children. Anatomical abnormalities are prevalent in the structure of malformations of urinary system and take 83,93%, abnormality of kidney's differentiation is identified in 16,1% of all disabled children, which leads to permanent flow of pyelonephritis in 65,67% children, and in 18,03% it leads to secondary arterial hypertension. it is necessary to note, that in 21,3% of cases (3 children) on the background of existing pathology of urinal system progressive reduction of renal function has led to the development of CKD, and in 3 patients occurred ESRD. The study also revealed a high dependence between patients' disease and hereditary background.

Conclusions: Despite of early diagnosis and operative correction of major abnormalities of organs of urinary system, was found progressive reduction of renal function, followed by formation of CRF and lead to significant decrease of patients' quality of life. All this emphasizes the importance of monitoring such patients in reference to formation CRF.

P362

Modern Technolodies In Treatment Of Uric Tracts Infections

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Introduction: Modern principles of treatment of uric tract infections are based on applications of antibacterial preparations in view of an estimation of a degree bacteria with identification of uropathogenic strains. Despite of sanations of uric tracts and normalization of work of alimentary tract, use of physio- and herbal therapy in significant part of patients there was marked a progressing pathological process with involving of kidneys interstitial tissues. Bacteria-inflammatory process in organs of uric system is necessary to consider first of all from the point of infringement of urodynamic of the lower uric track.
Material and methods: There has been developed and introduced pathodeneticaly proved method of treatment and rehabilitation of patients with an infections of uric tracts – a method of variable zonal barotherapy (A.S.1627163), points of application of which are vessels of a small pelvis (arterial and venous), functional syncytium of unstriped muscles cells, nervous-receptor system. Under the influence of pressure difference – periodic change of negative and positive pressure – there occurs massage of a vascular channel of urinogenital system.
Results: During sessions of vacuumtherapy blood circulation drows, there is more blood to organs of a small pelvis, more active diffusion of oxygen from blood to tissues that contributes to the improvement of blood circulation in organs of urinogenital system, improvement of microcirculation in organs of small pelvis, with elimination hypoxia, restoration of energy exchange of detrusor and myotropic action on adrenoreseptors, with activation of organ blood flow, entails restoration of adaptable and contractile functions of bladder that in turn conducts to restoration of secretory-excretory functions of kidneys.
Conclusions: Clinical effect is shown by normalization of number of urinations, restoration of physiological volumes of bladder, absence of residual urine, elimination of bacteriuria and relapses of microbial-inflammatory process. The clinical effect is marked in 92% of patients.

P363

High Expression Of Tlr2 And Tlr4 On Peripheral Blood Monocytes In Children With Urinary Tract Infections

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Introduction: Toll-like receptors increasingly appear to play a significant role triggering the innate immunity and therefore protecting the mucosal barrier against bacterial infections. In this study we aimed to determine the monocyte TLR-2 and TLR-4 expression during the acute phase of Urinary Tract Infections (UTIs) in children
Material and methods: 120 children free of severe or chronic illness, symptoms of acute infection, immune deficiency, immune suppressor therapy or any medication were enrolled in the study: 60 patients (6months-14 years, 24 boys) with at least one episode of acute urinary tract infection (positive urine culture and clinical symptoms), with/without anatomic genitourinary anomalies and 60 age and gender matched healthy controls. 21/60 patients had anatomic genitourinary anomalies. Flow cytometry was used to estimate the percentages of T and B lymphocytes, Natural Killer cells (NK) and the expression of TLR-2 and TLR-4 on monocytes. Serum immunoglobulins and IgG subclasses were measured be nephelometry.
Results: Phenotypic analysis showed that the percentage of CD14+/TLR2+ was considerably higher among patients (mean ± SDEV: 88%±10,3%) compared to controls (mean ± SDEV: 78%±11%) and there was a significant difference between them ($p<0,05$). Additionally a significantly higher percentage of CD14+/TLR4+ was observed in patients (mean±SDEV: 88%±10,3%) compared to controls (mean±SDEV: 81%±10%) ($p<0,05$). There were no significant differences in the TLR-2 and TLR-4 expression between the patients with genitourinary anomalies and those without. Percentages of T, B, NK and levels of immunoglobulins and IgG subclasses in both patients and controls were normal.
Conclusions: TRL-2 and TLR-4 are highly expressed on peripheral blood monocytes during acute UTIs and may play a potential role in their pathogenesis mediating rapid immune response.

P364

More Than Just "a" Rare Disease: Renal Calculi Secondary To Aprt Deficiency In A Child With Severe Haemophilia A And G6pd Deficiency

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Introduction: Adenine phosphoribosyltransferase (APRT) deficiency is an uncommon genetic disorder. It often causes renal calculi and kidney failure can occur in some patients. More than 300 cases have been reported world-wide. We report a case of an infant with severe Haemophilia A, G6PD deficiency and APRT deficiency who presented with non-oliguric acute renal failure with obstructive uropathy secondary to renal calculi.
Material and methods: C is 17 months old Chinese infant, 3rd child of non-consanguineous parents and who has G6PD deficiency and severe haemophilia. There is no family history of renal calculi. He presented with intermittent vomiting, fever and was noted to be pale and lethargic. Urine output was normal with no urine discolouration. Blood investigations revealed acute renal failure (urea 55.9mmol/L, creatinine 429umol/L) with metabolic acidosis and hyperkalaemia (serum potassium 9.6mmol/L). He was started on haemodialysis. Renal ultrasound showed bilateral hydronephrosis and hydroureter with multiple renal calculi (0.8-1.5cm) in the renal pelvis, left pelviureteric junction, ureters and bladder. C underwent bilateral percutaneous nephrostomy tube insertion and subsequently staged surgical removal of the multiple renal calculi in the bladder and ureters. He was taken off dialysis on Day 5 of admission with return of good renal function.
Results: Initial stone analysis showed a compound stone (calcium, ammounium, oxalate and urate). Subsequent infrared spectrometry stone analysis showed 2,8-dihydrooxyadenine (2,8-DHA). The diagnosis of APRT deficiency was further confirmed with RBC enzyme assay. C was started on allopurinol and a low purine diet and has remained well with no further recurrence of renal calculi.
Conclusions: APRT deficiency is an uncommon autosomal recessive genetic disorder where patients lack the enzyme APRT and are unable to break down dietary purines, resulting in accumulation of 2,8-DHA. 2,8-DHA is poorly soluble in the urine and results in renal calculi and renal impairment if severe. Treatment is with allopurinol. We report a first case of an infant with both severe Haemophilia A and APRT deficiency.

P365

Study Of Agreement Between The Results Obtained With Three Formulas For Estimate The Glomerular Filtration Rate In Children And Adolescents

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Introduction: In the 70s the first formulas for estimating glomerular filtration rate (eGFR) were created. The new formulas take into account the method of determination of creatinine and cystatin C. The aim of this study was to determine if differences in eGFR occurs using three of these formulas.
Material and methods: We studied 34 patients (23V, 11M) age between 12.1 ± 4.7 years (range 4.3 to 21). The most common diagnoses were scar nephropathy (n=9) and kidney malformations (n=9). In all of them eGFR was calculated using modified Schwartz equation based on serum creatinine (enzymatic method, 2009), the Filler formula (2003) using cystatin C and the Schwartz equation (CKiD) (2012) involved BUN, creatinine and cystatin C (nephelometric method). Patients were classified according to the stages of CKD KDIGO Guidelines 2012. Whenever there was no agreement between the three eGFR, were included in the stage in which two formulas coincided.
Results: eGFR levels calculated with the modified Schwartz, Filler and Schwartz (CKiD) formulas were 91.1 ± 53.6, 71.9 ± 2.1 and 70.1 ± 30.9 ml/min/1.73 m2, respectively. Ten patients were included in the G1, G2 stage at 12, 8 in G3 and 4 on G4. In 20 cases (58.8%) there was agreement between the three equations. The highest concordance was observed in G1 (8/10, 80%) and G4 stages (3/4, 75%) and the lowest in G2 (5/12, 41.7%) and G3 stages (4/8, 50%). Discordant results at the G2 stage were due to the modified Schwartz equation (higher values) in 6 of 7 patients and in 4 of the 8 G3 stage were for Filler formula.
Conclusions: The formulas based only on serum creatinine overestimate GFR. This is particularly true in early stages of CKD. When there is doubt whether a patient may have a reduced GFR, cystatin C should be determined.

P366
Voiding Cystourethrogram Indication Revisited. Utility Of The Combinated Morphological And Functional Renal Studies

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Introduction: Voiding cystourethrogram (VCUG) indication has changed along the years. Very often the result of VCUG is normal in children suffering from urinary tract infection or pyelectasis. The objective of this ambispective study is to analyse if the association of morphological and functional tests can predict a normal VCUG in these children making unnecessary to practice it.
Material and methods: We revised all records from 100 children (69V,31M) with normal VCUG and from 63 (42V,21M) with vesicoureteral reflux (VUR) [10 low grade (I-II), 26 medium grade (III) and 27 high grade (IV-V)]. All of them (n=163) had in their records at least sonography and maximum urine osmolality (MUO) obtained after desmopressin stimulus. N-acetilglucosaminidase/creatinine (NAG/Cr) and albumine/Cr ratios were calculated in 148 and 106 children, respectively. Pyelectasis was considered when renal pelvis longitudinal measure was between 0.5 and 2 cm.
Results: There were significant differences in MUO ($p<0.001$) and NAG/Cr ratio ($p=0.04$) in relation to VUR grade. There were significant differences in MUO between children with and without VUR ($p=0.004$). 70% (7/10) of children with mild RVU, 76.9% (20/26) with medium VUR, and 100% (27/27) with high degree VUR, exhibited some morphological and/or functional disturbance (FD). The most sensitive morphological disturbance (MD) pointing to VUR (30/63; 47.6%) were renal scars (2/7), atrophic or hypoplastic kidney (7/8), hydronephrosis (18/25) and pyelectasis associated to other lesions (3/6). Albumine/Cr and NAG/Cr ratios exhibited a low sensitivity but a high specificity (87.9%) to detect VUR. The highest negative predictive value (80.8%) was found when we included children with MD alone (not simple pyelectasia), children with FD alone, and children with MD and FD together. In this case the sensitivity for VUR diagnose was 85.7%.
Conclusions: Initially it is not necessary to practice VCUG in children with normal functional renal test (specially MUO) and no MD other than pyelectasis in the sonography.

P367
Circadian Rhythm Of Glomerular Filtration Rhythm And Sodium-excretion In Children With Enuresis

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Introduction: Although nocturnal polyuria in monosymptomatic enuresis (MNE) can largely be explained, other circadian rhythms in the kidney like blood pressure, prostaglandins and solute excretion seem to play a role. Recently an absent day/night rhythm was documented in a subgroup of refractory patients. The aim of this study was explore the importance of abnormal circadian rhythm of glomerular (GFR) and tubular (sodium, potassium) parameters in patients with MNE
Material and methods: Study-population n = 139 children with nocturnal enuresis (NE) 65 %♂/35%♀, 58% Monosymptomatic (MNE), 42%non-monosymptomatic (NMNE) to be used as control population for the MNE Methods : Retrospective study of a tertiary enuresis population (>5 years). Subsequent to a standardized screening (ICCS questionnaire, diary), 14 days diary for nocturnal enuresis and diuresis, and 24h concentration profile, measurement diuresis-volume,-rate, Na, K, osmolality and creatinine-excretion, and calculation of circadian rhythm
Results: There was a maintained circadian rhythm of GFR, sodium, osmotic excretion and diuresis-rate in both children with MNE and NMNE ($p<0.01$), and there was no difference between the two groups. Secondary analysis revealed that in patients with nocturnal polyuria (both with MNE and NMNE), circadian rhythm of GFR, sodium, osmotic excretion and diuresis-rate was lost in contrast with patients without nocturnal polyuria ($p<0.01$)
Conclusions: Circadian rhythm of the kidney is not different between NMNE and MNE. But the subgroup of enuresis with nocturnal polyuria have a diminished circadian rhythm of nocturnal diuresis, sodium-excretion and GFR in contrast with children without nocturnal polyuria. This observation cannot be explained by the vasopressin theory

P368
The Expression Changes Of Tgf-β1 In Obesity-related Glomerulopathy Rat Kidney Tissue

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Introduction: Objective: To explore the relationship of TGF-β1 and obesity related glomerulopathy and analyze the possible mechanism of ORG by detecting TGF-β1 expression levels in renal tissue in obese rats.
Material and methods: Choose rats fed with common and fat-enriched diets respectively and collecte their kidneys at 8weeks. Right kidney fixed、slicing and staining, immunohistochemistry was used to detect TGF-β1 protein ecpression; Real-time (RT)-PCR was used to detect the expression of TGF-β1 mRNA and then analyze the datas by semi-quantitative analysing; Western blot was applied to examine the expression of TGF-β1 protein.
Results: Compared with the control group, TGF-β1 expression in obese groups are significantly increased. Beyond that, TGF-β1 expression levels correlated with the degree of obesity.
Conclusions: The expression of TGF-β1 is increased in the kidney of obese rats; The leve of TGF-β1 correlate with that of obesity

P369

Hematuria, Wich Is The Diagnosis?

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Introduction: The hematuria is common in pediatric age and it is a diagnosis challenge.
Material and methods: The case of an adolescent with gross hematuria is described.
Results: Male adolescent, 14 years old, medicated with methylphenidate and risperidone with recurrent episodes of gross hematuria associated with lower left back pain after strenuous exercise. No relief family history. Normal renal function and hematoproteinuria. Additional laboratory studies were negative. The renovesical computed tomography revealed "variant anatomic venous characterized by duplication of the infrarenal inferior vena cava, in which the left renal vein drains into the inferior vena cava, which crosses the midline anterior to the aorta. Persistence of communication at the level of the iliac vein confluence without complete isolation of both, which explains an ectasia of the iliac and hypogastric veins bilaterally and symmetrically. The right inferior vena cava is small caliber in its infrarenal segment." The renovesical ultrasound doppler revealed "diameter slight reduction of retromesenteric portion of the left component of the inferior vena cava, which is permeable, however there may be a possible mild stenosis of this portion. There isn't however an evident renal veins dilatation, with no evidence of perirenal venous collateral circulation that suggests renal venous hypertension, particularly the left one". As there were no typical aspects of nutcracker syndrome, a renal venography was performed that showed "compression of the inferior vena cava probably by the aorta and not the renal vein." Under clinical surveillance, with restriction of physical activity and therapeutic with inhibitor of angiotensin conversion enzyme.
Conclusions: The present clinical case raises doubts. Venous malformation can just be a finding or the cause of hematuria and renal biopsy may be needed to confirm or exclude a glomerulopathy.

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Nutcracker Syndrome: Different Presentations Of The Same Disease

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Introduction: Nutcracker syndrome refers to compression of the left renal vein between the aorta and the superior mesenteric artery which is accompanied by left renal vein hypertension, leading to various symptoms such as microscopic or gross hematuria and some degrees of proteinuria.
Material and methods: Here we present three cases of nutcracker syndrome to point out the importance of scanning for renal vasculature in patients with non-contributory clinical and laboratory findings.
Results: Case 1: A 16-year-old girl presented with recurrent gross hematuria. Physical examination and the routine biochemical tests of blood and urine were normal. Bleeding from left ureteral orifice was seen on diagnostic cystoscopy. Eventually, compression of left renal vein between the abdominal aorta and superior mesenteric artery on MR angiography confirmed the diagnosis of nutcracker syndrome. Case 2: A 11-year-old girl was referred for the evaluation of proteinuria. She was asymptomatic. Physical examination and laboratory findings were entirely normal except orthostatic proteinuria. Doppler ultrasound indicated normal-sized kidneys but abruptly narrowed left renal vein between aorta and vertebra, which was the characteristic feature of posterior nutcracker syndrome. Case 3: A 10-year-old girl with left solitary kidney presented with a history of intermittent, painless, macroscopic hematuria in the last 2 months. There was no evidence of trauma, urinary tract infection or dysuria. Family history was negative for hematuria, deafness and end-stage renal disease. Physical examination and routine biochemical tests of blood and urine were normal. Left renal vein entrapment by the compression of aorta and superior mesenteric artery leading to hiler and gonadal vein enlargement that was demonstrated on CT angiography confirmed the diagnosis of nutcracker syndrome.
Conclusions: In children with hematuria or proteinuria, if any apparent cause is not proved, nutcracker syndrome should be suspected and appropriate imaging should be performed.

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Rickettsia Induced Atypical Haemolytic Uremic Syndrome - Case Report

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Introduction: aHUS is a genetic , devastating life threatening disease that may cause sudden death vital organ damage, with 65% may require permanent renal dialysis. It is a complement mediated Thrombotic Micro Angiopathy (TMA) with a clinical characteristic of thrombocytopenia, evidence of microangiopathic haemolysis and organ impairment or damage. Pathogenesis of aHUS is chronic uncontrolled complement activation which can be triggered by infection, autoimmune, surgery and pregnancy. Rickettsial diseases are characterized by the triad of high fever, headache and general malaise, and skin rash.
Material and methods: An 11 years old boy presented with itchy maculopapular urticarial rash over the thighs, petchial rash over the dorsum of both feet and Scattered nodular like erythematous lesions over the arms. This rash associated with high grade fever reached 39.5 degree, headache and generalized body pain and joint swelling. Systemic examination revealed hepato-spleenomegaly, generalized body tenderness, bilateral knee and ankle joint swelling some restriction of movement. Initial investigations showed mild proteinuria, microscopic haematuria, normal electrolyte, high CRP, high ESR, persistent unexplained low sodium, very high Creatinine Kinase and liver enzymes. Initial radiological assessment was completely normal. Several combination of antibiotics were used with no response and persistent fever for 35 days. All investigation of autoimmune causes including vasculitis, immune deficiency, malignancy and pyrexia of unknown origin were negative including all cultures except persistent high inflammatory markers. Fundus examination showed pre-retinal cheesy white infiltrates extending up to macula. Finally, Proteus OX 2 , OX K came positive which is suggestive if Rocky mountain spotted fever with context of the clinical presentation. Doxycline started with improvement of fever. Suddenly, the patient deteriorated in the form of acute renal failue, microangiopathic haemolytic anaemea, thrombocytopenea, high LDH, genealized convulsions. Renal biopsy was suggestive of TMA. Plasma exchange done with no response. Meanwhile, ADAMTS13 and genetic tests came to be normal with diagnosis of aHUS. Eculizumab started with good response after third dose of loading then started on maintenance therapy.
Results: All parameter normalized including LDH, Platelet and schistocytes count. patient progressed to end stage renal failure and dialysis dependent.
Conclusions: High clinical suspicion of aHUS is required in all patients presenting with TMA. Eculizumab is the drug of choice with a plan to continue for at least 1 year hoping of regain of renal function. We considered Rickettsia infection is the triggering factor for aHUS in our case.

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Urinary Tract Infection In Small Children: The Significance Of Low Bacterial Count

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Introduction: The role of low bacterial count in children with urinary tract infection (UTI) has been addressed only in a few scientific papers. The purpose of this study was to analyze the significance of low bacterial count in a cohort of small children with community acquired UTI.
Material and methods: Retrospective analyze of 429 children below age 1 year with first-time symptomatic UTI. All urine samples were from bladder aspiration. The material was grouped as low bacteria, below 100.000 CFU/mL, or high bacteria count, 100.000 CFU/mL or more.
Results: Eighty-three children (19%) had low bacterial count. There was no significant difference between the low bacteria and high bacteria group concerning gender (p=0.9), age (p=0.8), frequency of vesicoureteral reflux (p=0.8) or renal damage at follow-up DMSA scintigraphy (p=0.3). The low bacteria group had lower maximum temperature (p=0.003) and C-reactive protein (CRP) (p<0.0001). In this group leukocyturia and positive urine nitrite were found less frequently (p<0.001 and p<0.0001, respectively). Low bacteria count was more prevalent in non-E.coli infection (p<0.001). The risk of recurrent UTI was lower in the low bacteria group, 2/83 (2%) compared to the high bacteria group 31/347 (9%), but this difference was not significant (p=0.06).
Conclusions: UTI with low bacterial count in young children is common and seems to imply the same risk of VUR and renal damage as UTI with high number of bacteria. Still, the lower CRP and temperature related to low bacteria count indicates that this group is separated from those with high bacterial number. The explanation might be differences in host and/or bacterial properties.

P373
Response To Eculizumab In 4 Cases Of Pediatric Dense Deposit Disease

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Introduction: Dense-deposit disease (DDD) is a form of C3 glomerulonephritis, a rare disease characterized by the dysregulation of the alternative complement route and resulting in glomerular deposition of C3 degradation products. There is no consensus regarding the treatment of DDD. We report on the treatment of 4 pediatric DDD patients with eculizumab, a monoclonal antibody against complement factor C5.
Material and methods: Patients had been diagnosed with DDD in their native kidneys at a mean age of 8.0 ±2.8 years. All had low serum values of C3 and increased levels of sC5b-C9 and C3d. One patient was positive for C3 nephritic factor. Indications for eculizumab therapy were failure to respond to immunosuppressive therapy or the inability to tolerate plasmapheresis due to anaphylaxis. Eculizumab was given for a minimum of 3 months. Oral steroid therapy was either discontinued following start of eculizumab treatment or weaned over the course of months.
Results: In total, 5 episodes of nephritic syndrome were treated with eculizumab. In 3 episodes, the first eculizumab dose was preceded by extensive immunosuppressive therapy and in all, patients were on oral prednisolone. Over the course of 12 weeks renal function improved significantly (eGFR at treatment initiation 38 ±20 vs. 69 ±21 ml/min/1.73m2, p<0.05), as did urinary protein to creatinine ratio (1270 ±510 vs. 110±86 mg/mmol, p<0.005).
Conclusions: Eculizumab appears to be an effective treatment of severe DDD. These results underscore the need for a randomised trial of eculizumab in DDD.

P374
Which Equations Should And Which Should Not Be Employed In Calculating Egfr In Children?

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Introduction: The objective was to compare the reliability of eGFR equations in children as compared to the iohexol method (GFR-I); performed 417 times in 353 children > 2 years of life.
Material and methods: eGFR was calculated by equations based on scr: by Schwartz (1-GFR-Scr), by Cockroft-Gault (2.GFR-CG) and MDRD (3.GFR-MDRD), and based on creatinine clearance (4. GFR-U), or relying on serum cystatine C: by Hoeck (5.GFR-H), by Bokenkamp (6. GFR-B1 and 7. GFR- B2) and the tri-marker Schwartz (8. GFR-S3M). The mean relative error (RE) and the correlation coefficients to GFR-I were studied in all the children and in subgroups, at GFR < 60 ml/min/1.73m2, in children ≤12 and >12 years of life.
Results: The GFR-S3M equation underestimated the real GFR by the mean value of 25.9±16.6%; (p<0.0000, r=0.85), what was pronounced at high GFR values, while the conformity was excellent at GFR<60 ml/min/1.73m2. Similar tendencies were noted for the GFR-Scr equation (22 ±19.4%; p<0.0000, r=0.8). The GFR-B1 and GFR-B2 formulas, as well as MDRD ≤ 12 years overestimated the value of GFR (respectively: 53.1 ±37.8%; p=0.8; 35.1±31.6; r=0.8; MDRD < 12 years: 42.92±57 %, r=0.5; p<0.0000). The C-G equation showed a medium relative error of 0.75± 27.2%, with a significant deterioration of accuracy in children ≤ 12 years: 8.9±29.2% (p<0.0000). A high conformity was achieved employing the Hoeck equation, which at higher values underestimated eGFR results by the mean value of 12.2±20.9%; p<0.0000.
Conclusions: 1. Equations developed by Schwartz et al. for children demonstrate a high conformity at GFR< 60 ml/min/1.73m2, but underestimate the eGFR result at higher filtration values. 2. The MDRD and Bokenkamp equations should not be employed in children in view of the unacceptable error of the result. 3. The employment of the Hoeck equation in all children and the Cockroft-Gault formula in children > 12 years of life is possible.

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Clinical Perspective Of Streptococcal Pneumoniae-associated Hemolytic Uremic Syndrome (sp-hus) And Recent Clinical Trends

Introduction: Sp-HUS is rare but increasingly recognized as a serious cause of acute kidney injury in children with a significant risk of rapid progression to chronic renal failure (CRF). Our study aims to increase its awareness so that early appropriate treatment can help to reduce morbidity. Recent clinical trends were also examined.
Material and methods: This retrospective study was done in a single tertiary referral centre in Singapore over 2 decades. Demographic, clinical, laboratory data and treatment were analyzed. Diagnosis was based on CDC criteria.
Results: There were 15 patients: 13 pneumonia, 1 meningitis and 1 peritonitis. Patients were young (42.3 ± 30.8 months) with a male predominance (2.8:1). All patients with pneumonia had empyema, eight (31.5%) required intubation, 12 (92%) required surgical interventions. Onset of HUS was abrupt with a precipitous drop in hemoglobin (Hb) and platelets (Pt). All had evidence of hemolysis and 1 had renal biopsy showing thrombotic microangiopathy. Only 4 (30.8%) patients had positive Direct Coomb's test (DCT). Six (40%) patients had concomitant Disseminated Intravascular hemolysis (DIC). Ten (66.7%) patients required renal replacement therapy averaging 18 (6 – 51) days of duration. All had marked liver dysfunction and 6 had encephalopathy. There were 2 (13%) deaths. On follow up, 9 had normal renal function while 4 (30.8%)

had CRF with 3 rapidly progressed to ESRF. 5 recent cases had multi-resistant Sp. Two patients had serotype 19A – one was not vaccinated while the other had breakthrough infection after Pneumococcal vaccination (PCV13). One patient with prior PCV7 vaccination had serotype 3 infection.
Conclusions: Sp-HUS is the main cause of HUS in Singapore children. Its diagnosis must be suspected in early invasive Sp Infection with AKI. DCT negativity does not exclude Sp-HUS. Concomitant DIC must be managed cautiously. Emergent serotypes must be monitored to tailor for adequate PCV coverage. Definitive diagnosis demonstrating TF antigen-antibody activity is still lacking and constitutes an area of future research.

P376
Effect Of Colchicine Therapy On Physical Maturation In Prepubertal Children With Fmf

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Introduction: Familial Mediterranean Fever (FMF) is a genetic disease characterised by recurrent fever and polyserositis, mainly seen in people originating from Mediterranean region. Subclinical inflammation may result in growth failure in children. Colchicine prevents both attacks and subclinical inflammation. The aim of this study is to determine the effect of colchicine therapy on physical maturity in prepubertal children with FMF.
Material and methods: Medical records of pre-pubertal children diagnosed as FMF who were still at the pre-pubertal period at the study time in our clinic were evaluated retrospectively. Weight and length gain from the time of diagnosis to the study time were recorded.
Results: 59 children, 36 boys (61%), mean age of 89.6±26.4 months, were enrolled in the study. Mean follow-up period was 31.9±19.9 months; the time from beginning of symptoms to diagnosis was 18.6 ±16.2 months. Disease severity score at the time of diagnosis was intermediate in 47 (79.9%), severe in 6 (10.2%) and mild in 6 (10.2%). 24 patients (40.7%) have homozygote, 19 (32.2%) heterozygote and 16 (27.1%) compound heterozygote mutations. Colchicine therapy was given to all patients. 41 children (69.5%) had complete remission, while 16 (27.1%) in partial remission. Length standard deviation scores (SDS) were similar before and after therapy (0.09±0.68 vs 0.14±0.83, p=0.68). Weight standard deviation scores (SDS) were also similar before and after therapy (-0.10±0.67 vs -1.37±0.68, p=0.56).
Conclusions: We did not observe any positive effect of colchicine therapy on length gain, in contrast to the literature, which may be due to the high rate of patients with partial remission or low number of the study group.

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Effect Of Colchıcıne Treatment On Hematologıcal Parameters In Children With Familial Mediterranean Fever

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Introduction: Objectives: To evaluate hematological features of children with FMF at the time of diagnosis and during the treatment period.
Material and methods: The medical records of patients with FMF were reviewed retrospectively. Children were divided into two groups according to their age: group I<7 years, group II≥7 years.
Results: A total of 51 children, 25 girls (49.0 %), with a mean age of 7.47 ± 9.87 years at diagnosis and disease duration of 13.12 ±9.87 months, were included. Thirteen (25.5%) patients had parental consanguinity and 18 (35.3%) patients had family history of FMF. Seven (13.7%) patients were homozygous, 18 (35.3%) patients were compound heterozygous and 18 (35.3%) patients were heterozygous for MEFV gene. Eight (15.7%) patients had complex allele mutations (≥3 mutations). Colchicine treatment was started in all patients. The dosage of colchicine needed to control the disease symptoms was 0.95±0.31 mg/day. Comparison of the leukocyte, neutrophil, lymphocyte, monocyte and platelet counts at the time of diagnosis and in the first and third months of controls, revealed no significant differences (p>0.05 for all). But, mean hemoglobin level at time of diagnosis was significantly lower than the value in the third month of colchicine treatment (p=0.001). Hemoglobin levels of Group I were significantly lower than the group II; on the other hand lymphocyte count were significantly higher in the Group I at time of diagnosis (p=0.03, p=0.02, respectively). In group I, lymphocyte counts were higher than the third month of colchicine treatment compared to time of diagnosis (p=0.01).We did not observe leukopenia in any of the patients but one patient was found to have neutropenia at the time of diagnosis.
Conclusions: Hemoglobin levels were found to be increased in all FMF patients during colchicine treatment, which might be due to the chronic inflammatory characteristics of the disease. Colchicine treatment seems to have favorable effects on hematological parameters, particularly in young children (<7 years).

P378
Evaluation, Management And Complications Of Lower Urinary Tract Dysfunction In Children

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Introduction: Lower urinary tract dysfunction (LUTD) is a common problem in children. We analyzed the epidemiological data and outcomes of the patients without an overt uropathy and neuropathy treated in our unit.
Material and methods: A cross-sectional survey was conducted in 36 patients aged from 5 to 12 years (7.3 ± 2.2 years).The initial evaluation included a thorough history, focused physical examination, renal and bladder ultrasound, the use of a voiding diary and uroflowmetry with electromyography (EMG) of perineal muscles and minimal laboratory testing: urinalysis, urine culture and urine calcium-creatinine ratio. Other studies were reserved for patients who are not responsive to therapy. Urotherapy was started from the first evaluation.
Results: 64% of patients were girls .Symptoms and signs more common was as follows: incontinence 91%, urgency 75%, maximum voided volume decreased 78%, increased daytime frequency 60%, holding maneuvers 60%, enuresis 58%, urinary tract infection 47%, bowel dysfunction 42%, postvoid residual 30 %, straining 14% and hypercalciuria 8%. Uroflowmetry provided the following information: Qmax decreased 21%, EMG activity during voiding 41%, shape of urine flow curve (normal 63%, staccato 15%, plateau 10%, fractionated 9% and tower 3%). Dysfunction disorders, following ICCS definitions: overactive bladder 39%, associated with dysfunctional voiding in 31%. Upon ICCS scoring, urotherapy had 30% full or response and 50% partial response. In patients who fail conservative treatment, interventions included: anticholinergics 65%, biofeedback 25%, intermittent catheterization 5%, alpha adrenergic receptor antagonists 5% and others. Finally, response rate was 100% and full response 70%.
Conclusions: Overactive bladder is the most common LUTD. It is more useful a comprehensive description of the symptoms that your inclusion in specific groupings. Comorbid conditions associated with LUTD

include urinary tract infections and constipation. LUTD has a good prognosis if proper treatments are administered

P379

Incidence Of Antibiotics Resistance Of Uropathogens In Omani Children Presented With Single Episode Of Urinary Tract Infection

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Introduction: Urinary tract infection (UTI) is one of the most common community-acquired infections. Different organisms can be the cause of UTI in children, with resistance to antibiotics becoming a significant problem in the choice of treatment. Therefore, regular surveillance of local uropathogens and their antibiotic susceptibility is considered useful to guide empirical therapy. Worldwide studies have documented the prevalence of uropathogens in different countries. However, there is no previous study documenting the incidence of different uropathogens in Oman. In this study, we aim to report the most common uropathogens, and their antibiotic sensitivity pattern, in children presented with documented single episode UTI, at a tertiary hospital in Oman.

Material and methods: A retrospective analysis of all Omani children below 14 years presented with first documented UTI, to SQUH between September 2008 and August 2012. Data was obtained from patients' electronic records in the hospital information system. Data was then analyzed using SSPS (Statistical Package for Social Sciences program)

Results: On retrospective review of all urine cultures, 438 positive urine cultures were identified. Out of those 208 (47.5%) belonged to children with first episode of UTI. 33 patients were excluded according to exclusion criteria, 75 patients were finally analyzed. E. coli was the most frequently encountered uropathogen in our cohort (69%) followed by Klebsiella species (17%). 46.6 % of these two common organisms were resistant to Cotrimoxazole while 31% of them were resistant to Augmentin. 24% of E. coli and Klebsiella were resistant to Cefuroxime & only 10 % were resistant to Nitrofurantoin.

Conclusions: Augmentin and Cotrimoxazole should not be the first line antibiotics to treat UTI. Nitrofuratoin has the least bacterial resistance. We recommend to use Nitrofurantoin as the first line antibiotic therapy for community acquired urinary tract infection in Oman.

P380

Nocturnal Antibiotic Prophylaxis: Does It Increase The Risk Of Antibiotic Resistance And Atypical Urinary Tract Infection?

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Introduction: The aim of this study is to asses antibiotic resistance and occurrence of atypical urinary tract infection in children receiving nocturnal antibiotic prophylaxis.

Material and methods: We performed an observational retrospective cohort study. Clinical records of children admitted for urinary tract infection (UTI) from 1st July 2011 to 30th june 2013 in two hospitals in Córdoba (Spain) were reviewed. We recorded data from age, sex, urine collection method, presence of fever, WBC count, PCR ant PCT levels, prophylaxis, antibiotic treatment, urine cultures and recurrence factors (reflux, lithiasis, obstruction, bladder void dysfunction, neurogenic bladder).

Results: We collected data from 127 children (41% males) between 29 days and 13 years old (median 0,58 years). Males were significantly younger than females (0,75 vs 2,72 years). 25% of the patients had received antibiotic prophylaxis before the infectious episode due to reflux in most cases (48%). In this group, we found 2.4 -fold increased risk for resistances to any of the first line antibiotic treatment (third generation cephalosporin, gentamicin or amoxicillin-clavulanic) and 3.3-fold for atypical UTIs (bacteria no E. Coli) compared to those without prophylaxis. Multivariant analysis showed that antibiotic prophylaxis was an independent risk factor for these circumstances and reflux was only for atypical UTI. We could not found statistically significant differences regarding the presence of fever or biological markers between groups.

Conclusions: Nocturnal antibiotic prophylaxis to prevent UTI recurrence is independently associated to antimicrobial resistances and atypical processes in children hospitalized with urinary tract infection. It is recommendable an individual approach to use antibiotic prophylaxis and take it into account in antibiotic prescription treatment in children with recurrent UTI.

P381

Establishing A Nephrology Newsletter

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Introduction: The importance of regular education and support for nephrology patients and their families is pivotal in their overall care while providing a forum for recruiting to research studies. We wished to evaluate interest between nephrology patients and their families regarding a regular nephrology newsletter, preferred format and content.

Material and methods: A pilot survey was distributed amongst 10 adults at The Royal Children's Hospital (RCH), including doctors, nurses, cleaning staff and volunteers. Following their comments, the survey was amended and then distributed to patients and family in clinic, wards and in the haemodialysis unit.

Results: 15 patients responded to the survey; 3 female, 12 male, mean age 13±2.9 years. 10 (66%) patients were interested or very interested in receiving a newsletter from the department. 11 (73%) patients would prefer a paper based newsletter, 3 patients stated they would be very interested in a facebook based newsletter, however 4 stated that they would be not interested in facebook. 34 family members responded to the survey; 8 fathers, 23 mothers, 2 grandmothers and 1 aunt, mean age 43±12 years. 28 (82%) individuals were interested or very interested in receiving a newsletter. 22 (64%) individuals would prefer a paper based newsletter, 20 (58%) individuals were interested in an emailed newsletter and 15 (44%) individuals were interested in a facebook based newsletter. There was broad enthusiasm for all suggested content, including community activities and reminders, with the favourite topics including community activities, patient profiles and research. In free text, patients expressed interest in the latest research, friends groups and snack recipes while family members expressed interest in; community websites or support groups, menu ideas, and the latest research

Conclusions: Based on this project we have introduced "Nephrology News" as a paper based quarterly newsletter.

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Pediatric Cancer And Renal Disease: The Experience Of A Portuguese Tertiary Referral Hospital

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Introduction: Treatment of cancer and of its comorbidities in pediatric patients is associated with acute and late renal damage. Objectives: To analyse the population attending follow-up at both the oncology and nephrology pediatric outpatient clinics in a Portuguese tertiary referral hospital.
Material and methods: Clinical records of all patients attending both oncology and nephrology pediatric outpatient clinics during a 15 months period (January 2013 - March 2014) were reviewed. Data on cancer diagnosis, treatment and nephrological associated pathology were then analysed. Sixty patients were being followed-up in both clinics. Eight were excluded because no oncologic pathology was found or sufficient data was available.
Results: Of the 52 patients, 25 were female. They had the following oncological diagnosis: renal tumors -8, brain tumors -8, retinoblastomas -7, Ewing family of tumors -7, neurogenic tumors -4, leukemias -5, rhabdomyosarcomas -4, others -7. Two patients with a nephrological pathology had a tumor predisposition syndrome, without any actual cancer diagnosis. Forty-three patients underwent chemotherapy and, in 31 of them, it was the only treatment. One patient had renal agenesis. Of the chemotherapy-treated patients, seven also underwent nephrectomy and three radiotherapy (craniospinal and pelvic). Within chemotherapy-treated patients, 13 had cortical lesions, 12 tubulopathy, four stage 2 renal insufficiency and one stage 1 renal insufficiency. One patient with single kidney was diagnosed corticorresistant nephrotic syndrome. Eleven were under chronic medication regarding renal disease. In the whole group of patients 13 were also found to have some kind of hereditary or congenital renal disease.
Conclusions: Chemotherapeutic drugs, radiotherapy and surgery are associated with acute and late renal damage and hypertension in pediatric oncology patients. Antibiotics and infections may contribute for further nephrotoxicity. A multidisciplinary approach including Pediatric Oncologists and Nephrologists is crucial for the follow-up of these patients, to minimize renal damage and improve health later in life.

P383
Approach To Diabetic Nephropathy In Children - Evidence-based Review

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Introduction: Diabetes mellitus is a chronic disease with macrovascular and microvascular complications involving high morbidity and mortality, especially nephropathy. Our aim was to review the existing literature on how to approach diabetic nephropathy in children.
Material and methods: Searching the databases UpToDate, National Guideline Clearinghouse, Guidelines Finder, Canadian Medical Association Practice Guidelines Infobase, Cochrane, DARE, Bandolier and PubMed, with limited search for ages 0 to 18 years, articles in English, with the MeSH terms "Diabetes Mellitus", "Diabetic Nephropathies" and "Renal Insufficiency." In assigning strength of recommendation was considered the scale Strength of Recommendation Taxonomy (SORT) from American Family Physician.
Results: Were found 167 articles, 3 were selected guidelines. All recommend annual assay of microalbuminuria (grade B), with no consensus on the age of onset. The control of risk factors such as high blood pressure, dyslipidemia and glycemic variations may reduce progression of renal disease (level B). The use of ACE inhibitors or ARBs may reduce progression of proteinuria (grade C).
Conclusions: Appropriate control of diabetes mellitus and associated risk factors is recommended to decrease the progression of nephropathy, and its monitoring should be performed regularly with microalbuminuria assay (Grade B). More studies are needed to clarify the strength of recommendation on using ACE inhibitors or ARBs (Grade C).

P384
The Spectrum Of Mefv Clinical Presentations: Evaluation Of Children With Vasculitis

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Introduction: Familial Mediterranean fever caused by MEditerranean FeVer gene (MEFV) mutations is a common hereditary autoinflammatory disorder characterized by recurrent febrile attacks and polyserositis. In addition to the classical presentation, there have been reports of vasculitis associated with MEFV mutations. The aim of this study was to evaluate genotypic features of children with MEFV mutation associated vasculitis.
Material and methods: The medical records of patients with MEFV mutations who were analyzed between 2003 and 2012 in our department, were reviewed retrospectively. Children with vasculitis were included in this study.
Results: Out of the 656 children with MEFV mutations, 33 have been diagnosed as vasculitis. The study included 33 children, 12 females (36.4%), 21 males (63.6%), with a mean age 10.2±4.2 years. Their diagnosis were Henoch-Schonlein purpura in 27, polyarteritis nodosa in 4 and Behçet disease in 2. Eleven of 33 patients (33.3 %) were homozygous (M694V/M694V in 9, V726A/V726A in 1, E148Q/ E148Q in 1), 18 patients (54.5%) were heterozygous (E148Q in 9, M694V in 5, M680I in 1, E148V in 1, M680I in 1), and 4 patients (12.1 %) were compound heterozygous (E148Q/M694V mutations in 1 and L110P/E148Q mutations in 1).
Conclusions: We suggest that mutations of the MEFV gene may lead to predisposition to various diseases, such as vasculitis. Studies of larger cohorts would be able to examine the relationship of vasculitis subgroups and clinical findings with MEFV mutations better.

P385
Antimicrobial Susceptibility And Response To Empiric Antimicrobial Therapy Of Childhood Uti Caused By Esbl-Producing Bacteria

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Introduction: The aim of this study was to evaluate the antimicrobial susceptibility of extended-spectrum beta-lactamase (ESBL)-producing bacteria and their response to empiric antimicrobial therapy.
Material and methods: A retrospective study of 462 pediatric patients who were diagnosed with urinary tract infection (UTI) was conducted.154 patients who had UTI due to ESBL-producing bacteria (case group) were matched with 308 patients who had UTI due to non-ESBL-producing bacteria (control group). Clinical presentations (classified as symptomatic and asymptomatic), antimicrobial resistance, clinical and microbiological response to empiric antimicrobial therapy of the two groups were compared.
Results: Escherichia coli were found as the most frequent causative uropathogen in both groups. The total rate of symptomatic and asymptomatic children were similar among cases (69.5% symptomatic, 30.5% asymptomatic) and controls (75.3% symptomatic, 24.7% asymptomatic) ($p=0.180$). The ratio of ESBL-producing bacteria that were resistant to antibiotics was 41.8% for amoxicillin-clavulanic acid, 2.6% for amikacin, 37.2% for ciprofloxacin, 5.1% for nitrofurantoin , 0% for ertapenem. The resistance ratio for non-ESBL-producing bacteria was 9.8% for amoxicillin-clavulanic acid, 0% for amikacin, 8.2 % for ciprofloxacin, 1.2% for nitrofurantoin, 0% for ertapenem. Only nitrofurantoin and ertapenem resistance patterns were similar between the groups ($p>0.05$). Of the 103 patients from case group and of the 221 patients from control group were treated empirically mostly with cephalosporins. Among them, 44.1% of case group and 95% of control group responded

therapy clinically and microbiologically (p<0.001). From case group 9.7% and from control group 95.5% of the empirically treated patients had appropriate therapy according to their antimicrobial susceptibilities (p<0.001).
Conclusions: Although clinical presentation of childhood UTI caused by ESBL-producing and non-ESBL-producing bacteria is not statistically different, their antibiotic resistance patterns and response to empiric antibiotic therapy is significantly different. Nitrofurantoin should be the preferred drug for the empiric therapy of childhood UTI according to this particular study.

P386
Lower Urinary Tract Dysfunction And Congenital Midline Skin Lesions

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Introduction: Lower urinary tract dysfunction (LUTD) may cause recurrent urinary tract infections (UTIs) and upper urinary tract deterioration with renal scarring. No obvious and identifiable neurological lesion can be identified in children with LUTD although the distinction between neuropathic and non-neuropathic bladder dysfunctions may not be as clear as traditionally thought. Congenital midline skin lesions are the strongest marker of occult spinal dysraphism . The aim of this study was to investigate LUTD in children with reccurent UTIs and congenital midline skin lesions (CMSL).
Material and methods: This prospective study included 2 groups of children, the first consisted of 54 neurologically normal children (46 girls and 8 boys, mean age 6.3±1.3 years) with UTIs and CMSL, and the second, a control group consisted of 54 children of appropriate gender and age, who except allergic bronchitis had no other illness. A detailed voiding pattern and bowel history, clinical and neurological examinations were done in both group, while uroflow study, ultrasonography of the urinary tract, a voiding cysto-urethrography, dimercaptosuccinic acid (Tc-99m DMSA), spinal radiography and spinal magnetic resonance image (MR) were performed only in patients with recurrent UTI and/or LUTD.
Results: LUTD and opstipation were more common in patients with UTIs than in children from control group (p<0.01). Dysfunctional voiding was the most prevalent LUTD. CMSL were rare in (5.5%) children from control group. MR was normal in all investigated children.
Conclusions: LUTD and bowel dysfunction are common in children with CMSL, recurrent UTIs and normal spinal MR . CMSL may be a sensitive marker of non-neuropathic neuropathic bladder dysfunctions.

P387
Can Urinary Ngf And Bdnf Be Used In The Diagnosis And Treatment Follow-up Of Bladder Dysfunction In Children?

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Introduction: Over Active Bladder (OAB) plays role on the basis of children diagnosed as recurrent urinary infection and mostly under diagnosed. As the difficulty of urodynamic examination during childhood, the diagnosis of OAB gets more complex and is delayed. The aim of this study is to evaluate the usage of Nerve Growth Factor (NGF) and Brain Derived Neurotrophic Factor (BDNF) as a noninvasive method; both in the diagnosis and treatment follow up of children diagnosed as OAB by urodynamic study and also determine the genetic mutation and allelic frequency of NGF and BDNF during the OAB.
Material and methods: The study included 24 patients and 30 healthy children as control, aged between 5-15 years. Presence of urgency, frequency and night incontinence, whether the urge incontinence is present or not, in the absence of pathologic or metabolic factors are defined as symptomatic OAB. Urodynamic study was performed on all patients. During the filling phase, uncontrolled detrusor contractions exceeding the 12 cmH2O and being stable pelvic floor muscles during emptying phase called as OAB. All patients had gone on the urination dysfunction symptom scoring (UDSS), given the blood and urine samples before anticholinergic treatment. Clinical response to treatment was evaluated with UDSS, urinary NGF and BDNF levels on the 3rd and 6th months of treatment. NGF and BDNF levels were analyzed with ELISA method and the genetic analysis of NGF (Ala35Val) and BDNF (Val66Met) were done by PCR and RFLP methods.
Results: At the time of diagnosis, urinary NGF/cr and BDNF/cr ratios of patient group were significantly higher than the control group (NGF/cr ratios; 975 ± 827 vs 159 ± 84, p< 0.001 BDNF/cr ratios; 5.98 ± 5.78 vs 0.81 ± 0.70, p< 0.001). On the 6th months of treatment initial NGF/cr levels were decreased, but this was not statistically significant, whereas BDNF/cr decrease ratio was significant (NGF/cr; 975 ± 827 vs 723 ± 435, p=0.097 BDNF/cr; 5.98 ± 5.78 vs 2.24 ± 0.98, p=0.004). Spesifity of initial NGF/cr and BDNF/kr ratios were found as 100 and 83.3%; respectively. Sensitivity of NGF/cr and BDNF/kr ratios were 87.5 and 87.5%. The genotypic distribution of NGF (Ala35Val) and BDNF (Val66Met) (NGF-control p=0.301; BDNF-control p=0.556) and the allelic frequency (NGF-control p=0.139; BDNF-control p=0.442) weren't different from the healthy population
Conclusions: This study is the first research evaluating the importance of NGF and BDNF levels in the diagnosis and treatment follow-up of children with OAB and also genotypic and allelic frequency of OAB. This study was showed that urinary NGF and BDNF levels are significant markers of diagnosis, whereas during the treatment follow-up, BDNF is more valuable than NGF in OAB. In conclusion, for the diagnosis of OAB urinary NGF and BDNF and also for the treatment follow-up urinary BDNF levels can be used as noninvasive markers.

P388
Urinary Tract Infections: Comparing Infants After Pyelonephritis To Infants With Antenatal Hydronephrosis

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Introduction: Recurrent urinary tract infections (UTIs) may be associated with long-term renal damage. Children diagnosed with Vesicoureteral reflux (VUR), whether after a primary UTI or due to antenatal hydronephrosis (ANH), are treated with prophylactic antibiotics in order to prevent UTIs. The necessity of such treatment has been questioned. Our study goal was to determine whether children with VUR detected as a part of ANH assessment, are at risk for UTIs, compared to children after a primary UTI.
Material and methods: a cohort study based on the medical records of children who underwent a Voiding Cystoureterogarphy (VCUG) in "Assaf Harofeh" Medical center. In cases where follow-up time was less than six months, information was obtained by telephone-questioning the parents and primary physician
Results: After exclusion, our study group included 285 children, of whom 176 had a primary UTI and 109 had ANH. Follow-up time was at least 6 months, and over 12 months in 80% of patients. 28 UTIs were recorded. Among children following a primary UTI, the incidence of a recurrent UTI was 12.5% compared to 5.5% among children with ANH (P=0.049). Girls had a much greater risk for recurrent UTIs (HR up to 3.3) (P=0.044). Risk for recurrent UTIs did not differ between children with or without VUR
Conclusions: As females are at greater risk of recurrent UTIs, regardless of the presence of VUR, VUR degree, ANH or a previous UTI, clinical guidelines for UTI management should address females and males separately

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The Usefulness Of 'saccharomyces Boulardii' In Treatment And Prophylaxis Of Urinary Tract Infection In Children

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Introduction: Urinary tract infections (UTI) are a common clinical problem in children. Antibiotics can prevent complications of UTI such as pyelonephritis and renal scarring. On the other hand, long-term antibiotic prophylaxis reduces symptomatic UTIs, benefits should be considered against the risk of antibiotic resistance.
Material and methods: In this study, we examined the effect of probiotic [Saccharomyces boulardii, (SB)] with antibiotics (20 children) versus antibiotics alone (20 children) in children with first UTI. Also, we compared the effect of use of SB and a prophylactic antibiotic versus (20 children) prophylactic antibiotic alone (20 children) in children with recurrent urinary tract infections (RUTI). The patients were followed-up for one-year.
Results: There was a reduction in the risk of recurrences of UTI in children with UTI treated with SB in addition to antibiotics (OR=0.706, 95%CI=0.27-1.82). The annual average number of UTI was lower in patients who received antibiotic prophylaxis and SB when compared with patients who received antibiotic prophylaxis alone (p=0.001, respectively 65±1.08/year, 2.80±1.00/year). UTI recurred in all patients who received antibiotic prophylaxis but UTI was not observed in 25% of patients who received antibiotic prophylaxis with SB (p=0.024). It was determined that a significant reduction in the rate of extended-spectrum β-lactamase producing isolates among Enterobacteriaceae in patients who received antibiotic prophylaxis with SB compared to antibiotic prophylaxis alone ([OR1: 0.29 (0.16-0.53), p=0.014, OR2:1.08 (0.28-4.13), p=0.91]. Resistance of synthetic penicilin and third-generation cephalosporin were decreased in patients who received antibiotic prophylaxis and SB compared with antibiotic prophylaxis alone (p1=0.016, p2=0.03, respectively).
Conclusions: The use of Saccharomyces boulardii, as a probiotics, is more effective in reducing the recurrences of UTI after first and RUTI. The use of Saccharomyces boulardii can help reduce the antibiotic resistance in RUTI.

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Protective Effect Of Aliskiren On Renal Scar Formation In Experimentally Induced Acute Pyelonephritis

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Introduction: The aim of the present study was to investigate the effect of aliskiren on oxidant/antioxidant system, inflammation, fibrosis and apoptosis on E.coli induced acute pyelonephritis (APN) in rats and compare to ACEI and AT1 receptor blockers.
Material and methods: Acute pyelonephritis was induced by inoculating 0.1ml E.coli suspension (1010 bacteria/ml) into left kidneys of 48 female Wistar rats. Animals were stratified into Sham (Group-1), control without treatment (Group-2), aliskiren treated (Group-3), antibiotic treated (Group-4), aliskiren and antibiotic treated (Group-5), captopril and antibiotic treated (Group-6) and losartan and antibiotic treated (Group-7) groups. Blood samples were analyzed for TNF-α, TGF-β, IL-6 and IL-1β at 72nd hour. DMSA scan was performed to determine residual renal functions (RRF) at the beginning and 6th week. On the 42th day of inoculation, animals were sacrificed and tissue samples were obtained to measure malondialdehyde (MDA) and glutathion (GSH) levels. Apoptosis, tubular atrophy and dilatation, fibrosis, cellular inflammation and also collagen type 1, 3, TGF- β and α–smooth muscle antigen (α-SMA) were measured.
Results: Glutathione and MDA levels were similar, and TNF-α,TGF-β and IL-1β levels were under the cut-off value in all groups. Group-2 had significantly increased levels of IL-6 compared to Group-4, 5 and 6 ($p<0.05$). RRF in 6th week was significantly higher in Group-5 compared to Group-2 (p=0.002). Inflammation was less severe in Group-5 than Group-6 and 7 (p=0.007) but fibrosis was similar in all groups. Collagen type 1, 3 and TGF-β were not different than the controls, but α-SMA in Group-4 was significantly higher than Group-2 (p=0.002). Apoptosis was significantly increased in Group-3 compared to Group-2, 4 and 5 with DPA method ($p<0.05$), however, it was similar in all groups with ELISA.
Conclusions: No protective effects of aliskiren, losartan and captopril on oxidant/antioxidant system and fibrosis were observed in rats with APN. Early antibiotic therapy, given within 24 hours, is efficient to prevent inflammation. Aliskiren added to the antibiotic treatment contribute to preserve the RRF on DMSA.

P391

The Role Of Apob Mrna Editor In Renal Lipid Metabolic Disorder

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Introduction: To observe the unilateral nephrectomy adriamycin nephrosis rabbit biochemical change in blood and urine and the pathological changes in kidney .
Material and methods: 40 rabbits were separated into 2 experimental group: (1) the first group undergoing left proximal unilateral ren removal (URR) and injection adriamycin (ADM) after 1 week (n=20). (2) the second group with sham-operated rabbits (SOR) and injection ADM after 1 week (n=20). URR rabbits underwent left proximal unilateral ren is removal with 4-0 silk. The ureter was deligated. SOR underwent a sham laparotomy with ren manipulation through a midline incision. No antibiotics were given. Animals were anesthetized by intraperitoneal pentobarbital injection and sacrificed after 3 months post-removal, respectively. The compensation kidneys of URR and the left kidneys of SOR were harvested for various morphological and biochemical analyses (see below). Gather venous blood and 24 h urine before and after to be put to death respectively.
Results: ①24 h UPr and serum Scr, BUN, ApoB-100 and ApoB-48 in the cases group were significantly higher than sham-operated group significantly, while the serum TP and Alb were significantly reduced. ②adriamycin nephrosis rabbit renal epithelial cell swelling, mesangial cell proliferation, mesangial matrix, renal interstitial broadening, a large number of inflammatory cells infiltration, mainly increased in glomerular
Conclusions: Deploy the method that intravenous injection ADM(5mg/kg) after half nephrectomy to successfully establishment a model of NS, It is appearance that multiplicity albuminuria, hypoalbumin and conspicuous hyperlipoidemia, nephrology manifest focal affection, ApoB-100 and ApoB-48 express mult generally.

P392

Experimental Study Of Apobec - 1 Recombinant Adenovirus In Treatment Of Renal Hyperlipidemia

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Introduction: HLP is major risk factors for the progression and amplification of nephropathy. It has, therefore, been reasonable to assume that the treatment of HLP might be associated with reductions in cardiovascular morbidity and mortality and improvements in renal function in patients with CKD. Although tradition drug can heal hypercholesteremia, which is a frequent type of HLP,30 percent of patients who generate various drug tolerance need replace therapy.
Material and methods: 60 rabbits were separated into 3 experimental group: (1) the first group undergoing left proximal unilateral ren removal and injection adriamycin (ADM) after 1 week (n=20). (2) the second group with sham-operated rabbits and injection ADM after 1 week (n=20). (3) the third group is normal rabbits without operation and injection equal normal sodium (NS) after 1 week (n=20).Three groups were injected recombinant adenovirus Apobec - 1 via ear marginal vein respectively. URR rabbits underwent left proximal unilateral ren is removal. The ureter was deligated. SOR underwent a sham laparotomy with ren manipulation through a midline incision. No antibiotics were given. Animals were anesthetized by intraperitoneal pentobarbital injection and sacrificed after 3 months post-removal, respectively. The compensation kidneys of URR and the left kidneys of SOR were harvested for various morphological and biochemical analyses. Gather venous blood and 24 h urine before and after to be put to death respectively.
Results: ① Before URR be transformed by recombinant adenovirus of Apobec-1,24 h UPr, ApoB-100, ApoB-48, TG and TCH, VLDL, LDL-C higher than NR significantly, while 24h UPr was eased after the introduction of recombinant adenovirus of Apobec-1, ApoB-100 decreased significantly, ApoB-48 increased inconspicuously. ② Western Blot showed that the expression of Apobec-1 and ApoB-48 in the liver tissue of URR was significant.
Conclusions: The importation of Apobec-1 recombinant adenovirus can have a hypolipidemic effect in a certain extent, at the same time, it have not the effect of liver teratogenic and protecting kidney obviously yet.

P393
Risk Factors For Renal Scaring After First Febrile Urinary Tract Infection In Children

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Introduction: The urinary tract infection (UTI) is one of the most common paediatric infectious diseases and it increases the risk of renal lesion with progression to hypertension and end-stage renal disease. But this evolution is difficult to predict by the initial clinical evaluation. Objectives: Identification of risk factors for permanent renal injury after a first episode of urinary tract infection in children between 1 and 36 months.
Material and methods: Retrospective analysis of clinical and laboratorial data and renal imaging of children aged 1 to 36 months hospitalized between January 2010 and December 2012 with the first episode of febrile UTI, comparing the data with the results of late renal scintigraphy. Febrile UTI was defined as positive urine culture in a child with fever and urinalysis with pyuria, bacteriuria and/or nitrite test positive. Children with nephrourological or immunological disease were excluded.
Results: The sample included 77 children; 53 % were female and the median age of the UTI was 5 months, with Escherichia coli isolated in 95% of the cases. The renal scintigraphy realized at least 6 months after the acute episode, revealed renal scars in 19.5 %of the cases. Cystourethrography was done in 21 patients and vesicoureteral reflux identified in 3 (grade I to IV). There was no statistically difference between children with and without renal scarring regarding gender, age, body temperature, C-reactive protein, creatinine plasmatic levels, nitrites presence in urine, microbiological agent identified, presence of vesicoureteral reflux or recurrence rate of UTI.
Conclusions: The results of this study did not detect any clinical, laboratory or imaging data that may predict progression to renal scarring following a first episode of urinary tract infection. However, the retrospective nature and small sample size may limit the interpretation of these results, highlighting the importance of maintaining clinical research in this area.

P394
Follow-up Of More Restricted Indications Of Voiding Cystography In The Study Of Children With Urinary Tract Infection

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Introduction: Study protocols after a first febrile urinary tract infection (UTI) in children have changed in the last few years. The objective of our study was to asses the results of two different study protocols after 4 years of follow-up: one with voiding cystography (VCU) as a routine test (period 1) and another one with more restricted indications for VCU (period 2), in pediatric patients admitted because of an UTI
Material and methods: Patients admitted in the paediatric floor of a single teaching hospital because UTI in two different periods: January 2008- June 2009 (period 1) and July 2009-June 2010 (period 2) were followed for almost 4 years. New UTI and imaging tests of the urinary tract performed in the initial study and during the follow-up were recorded
Results: 120 patients were included (80 in period 1) with ages ranging 0-155 months (mean 12.5 months, SD 26.5), 62 males. In the initial work-up, renal ultrasound was performed in 100% of the patients (both periods), VCU in 81.2% of patients in period 1 (13.8% VUR) and 47.5% of patients in period 2 (15.7% VUR). During the next 4 years, 26.2% of the patients from period 1 and 32.5% from period 2 had a new UTI. VCU was ordered for 3 patients out of 15 in period 1 and for 2 out of 21 patients in period 2 which haven't had a VCU performed initially. None of the patients from period 2 had VUR, while the 3 patients in period 1 showed low grade VUR. DMSA was repeated in 2 patients from period 1 and in 7 from period 2, but none of them showed new scars.
Conclusions: No differences were found in the recurrence of UTI or new scars after 4 years of follow-up using more restrictive indications for VCU.

P395
Urinary Phytate (myo-inositol Hexaphosphate) In Healthy School Children And Risk Of Nephrolithiasis

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Introduction: Although the incidence of urolithiasis is lower in children than in adults, the number of children with urolithiasis is increasing. Phytate, a naturally occurring compound present in legumes, nuts and whole meals, has antilithiasic activity. The aim of this study was to assess the urinary levels of phytate in children and to correlate these levels with other urinary parameters related to crystallization risk and with general dietary habits.
Material and methods: Two urine samples (a spot sample and a 12-h overnight sample) were collected from each of 165 children aged 5-12 years. The concentrations of phytate and common urinary biochemical indicators of stone risk were measured in each sample.
Results: Of the 165 children, 44 (27.5%) had very low phytate concentrations (below 0.5 μM), whereas 31 (18.7%) had phytate concentrations above 1 μM, which can be considered normal. The urinary concentrations of both phytate and citrate were low in 27.5% of these children.Dietary assessment showed that children with low urinary phytate and citrate, consumed higher amounts of foods rich in animal protein, whereas

children with high urinary citrate and phytate consumed higher amounts of vegetables, legumes and fruits.
Conclusions: Since both substances are important inhibitors of crystallization, these finding suggests that these children are at risk of crystallization. Childhood consumption of diets rich in fruits, vegetables and legumes but moderate in animal protein may be effective in reducing the later incidence of nephrolithiasis during adulthood.

P396
Familial Glomerulocystic Kidney Disease

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Introduction: Renal cystic diseases are one of the most common genetic causes of kidney disease and comprise an heterogeneous group of entities with variable syndromic association. Glomerulocystic kidney Disease (GCKD) is a rare renal disorder with autossomal dominant transmission and underlying gene mutation identified: TCF-2/HFN1β responsible for familial hypoplastic glomerolocystic kidney disease (FHGCKD) and UMOD that leads do uromodullin disorders.
Material and methods: The presentation of this work aims to awareness for a rare disease that only in the recent years is being better characterized duo to developments in genetics research.
Results: We report a case of a 19 months-old male infant, first child of non-consanguineous parents with severe kidney disease and hyperechoic kidneys and renal cysts on first postnatal ultrassound. Pregnancy was complicated by maternal diabetes and chronic renal disease (CRD) and prenatal ultrasound at 33 weeks revealed hydramnios and large hyperecogenic kidneys. His mother was diagnosed solitary hypoplastic microcystic kidney by age 20 with CRD established by age 35 and her subsequent investigation showed extra-renal malformations. Family history elicited two maternal cousins with hypoplastic kidneys and hypertension in young age. His clinical outcome, maternal family background and ecographic images were suggestive of FHGCKD, being this diagnosis the most likely and the results of genetic study for gene TCF-2/HFN1β was confirmative.
Conclusions: Although GCKD is relative rare, it is far from being a new entity and its phenotype-genotype correlation is not established. Differential diagnosis of renal cystic disease remains a challenge. Imaging plays a major role by helping to detect and characterize many cystic diseases. Nevertheless, familial and clinical history and genetics will further help towards the diagnosis.

P397
Renal Abscesses In A 15-year-old Adolescent With Urologic Disease: A Case Report

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Introduction: Renal abscesses are rare, especially in pediatric age. They have a wide range of clinical presentations and can occur with bacteriemia or acute pyelonephritis in previously healthy children or in patients with risk factors such as immunosupression, diabetes mellitus and urologic disease. The election treatment is large-spectrum intravenous antibiotic treatment, associated or not to abscesses drainage.
Material and methods: Review of the patient clinical records.
Results: Case Presentation: A 15-year-old boy with history of recurrent urinary tract infection, hypospadias surgically corrected and urethral diverticulum presented with high fever, anorexia, bilateral lumbar pain and dysuria. On clinical examination he was febrile, hypotensive and with malaise. The abdomen was soft and nontender with bilateral Murphy sign positive. Laboratory tests showed leukocytosis with neutrophilic predominance, serum creatinine of 1.15mg/dL, blood urea nitrogen of 22 mg/dL and reactive c protein of 178mg/L. Urine analysis was positive for blood and leukocytes. Bacteriuria was 2x106 CFU/ml. The diagnosis of pyelonephritis was evoked and the patient admitted for intravenous antibiotic treatment with cefuroxime and gentamicin. At the fourth day of admission, clinical deterioration occurred with low urine output, persistence of fever and higher laboratorial parameters of infection. Abdominal ultrasound showed hydronephrosis and cortical nodular hypoecogenic lesions in the right kidney. Enterococcus faecalis was isolated in urine culture and the antibiotic treatment adjusted to ampicillin and gentamicin. He completed 21 days of antibiotic treatment (10 days of gentamicin) and was discharged clinically well.
Conclusions: The diagnosis of renal abscesses is mostly imagiological. Sometimes the nonspecific symptoms make clinical suspicion difficult delaying the diagnosis. Our patient´s outcome was favorable with only large-spectrum parenteral antibiotherapy.

P398
Diagnostic Imaging Of Renal Scar After A First Febrile Urinary Tract Infection –observational Prospective Cohort Study In Children Under 15 Years On A Terciary Hospital

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Introduction: Clinical guidelines for the imagiologic study of a first febrile urinary tract infection (UTI) are trending to a simpler and less invasive management. This study aims to identify risk factors for the development of renal scar after a first episode of febrile UTI and compare/correlate the results of different exams made during the investigation course.
Material and methods: Observational prospective cohort study during 13 months, including children under 15 years who went to a pediatric emergency department with a first febrile UTI. Division into two groups, according to the strategy of urinary tract imagiologic study: A – ultrasound, acute phase DMSA and late phase DMSA (if any alteration on the acute phase DMSA). B – ultrasound and late phase DMSA.
Results: Thirty four children (11 on group A, 23 on group B), between three months and 14 years old, were included. Twenty four percent developed renal scar. There was no statistical evidence of association between development of renal scar and age, body temperature, time occured until antibiotherapy onset, CRP, or the bacterial agent. There was only one altered ultrasound study (corresponding later to a renal scar) and there was no statistical evidence of association between ultrasound results and renal scar changes on late phase DMSA. Only 50% of the renal inflamation lesions seen on early phase DMSA persisted as renal scar on the late phase DMSA. Fourteen children were excluded because of uncomplete imaging evaluation. Within the total of 48 children, there were seven altered ultrasounds and four cases of vesico-ureteral reflux (one of those was included in the study).
Conclusions: Ultrasound scan can miss potential renal scar areas but helps to identify important pathology of the urinary tract. We found no clinical signs predicting the development of these scars.

P399
Successful Re-introduction Of Alarm Therapy In Children With Refractory Monosymptomatic Nocturnal Enuresis.

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Introduction: Therapy for monosymptomatic enuresis is standardised in primary care with both alarm and desmopressin with a grade I level degree of evidence. Little is known of refractory cases. The aim was to analyze the characteristics and outcome of patients with severe monosymptomatic enuresis (>5/7 days), refractory to conventional therapy, when they are submitted to a new alarm therapy trial.
Material and methods: A retrospective study was performed in a tertiary centre in 2012-2013. The study-population consisted of 73 patients with refractory monosymptomatic nocturnal enuresis (MNE) who started with the alarm therapy. They all fulfilling the criteria for monosymptomatic enuresis, namely absence of daytime symptoms at start of alarm. Daytime symptoms at the start of the alarm therapy was an exclusion criteria. Daytime symptoms in the past or associated anticholinergics were not exclusion criteria. In the same period 719 patients with non-monosymptomatic nocturnal enuresis were treated at the centre.
Results: There was a high response rate (74%) to a renewed treatment with the alarm, However, with 72% relapse rate. An increase of response rate was associated with an increasing age and the association of desmopressin therapy. No correlation with gender, latency, duration and type of previous therapies were found.
Conclusions: Refractory MNE is a minor population (±10%) in patients consulting a tertiary centre. This study demonstrates that in patients with a history of MNE, refractory to previous treatments, inclusive the alarm, a re-introduction of the alarm has a high response rate, although a relapse rate of 2/3 is important.

P400

Linear Adjustement Of Serum Creatinine Values Obtained By Jaffé Standardized And Enzymatic Methods In Infants

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Introduction: Objetives: To analyze the differences in serum creatinine levels obtained by Jaffé standardized and enzymatic methods in infants in order to achieve a mathematical correction.
Material and methods: Samples from infants were analyzed during the years 2012 and 2013 by the standardized Jaffé method (Creat St, Olympus 2700® analyzer) and by the enzymatic method (Creat E, creatinase). A linear statistical model was adjusted by the least squares method using statistical package SPSS®.The Creat St values were corrected according to the generated equations (Creat St C).
Results: A total of 701 double determinations were performed. Since a slope change seems to appear in the relation between both measures of creatinine a quadratic model was analized and compared with the linear one but, finally, the better adjustment was obtained with two linear models, according to Creat St value above or below 0.35 mg/dL. The following equations were obtained: • Creat St ≤ than 0.35 mg/dL : 0.090 + 0.764 x (Creat St) = Creat St C • Creat St > than 0.35 mg/dL : 0.052 + 0.943 x (Creat St) = Creat St C Correlation coefficient: R = 0.891 The next table shows a statistical description of the differences between Creat St and Creat E and also between the corrected values obtained from the linear equations (Creat St C) and Creat E. Creat St ≤ 0,35 mg/dL Creat St > 0,35 mg/dL Creat St - Creat E Creat St C - Creat E Creat St - Creat E Creat St C - Creat E N 465 465 236 236 Min -0,21 -0,13 -0,31 -0,28 Max 0,2 0,19 0,14 0,16 Median -0,04 0,01 -0,04 -0,02
Conclusions: The data suggest that creatinine values obtained with the standardized Jaffé method can be corrected with mathematical equations to approach the experimental values obtained with the enzymatic test.

P401

The Relationship Between Feeding Modalities And Metabolic Risk Factors For Urolithiasis In Infants

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Introduction: The aim of this study was to evaluate the relationship between infant feeding modalities and metabolic risk factors for urolithiasis in infants.
Material and methods: Total 70 infants (<12 months) with urolithiasis were included in the study. Patients with urinary tract infection, chronic disease, anatomic abnormalities, history of hospitalization in neonatal period and medication were excluded. A quastionnaire was performed to mothers. Dietary characteristics (breast and/or formula feeding, plus water supplementation) and family history for urolithiasis were determined. All patients were evaluated for presenting symptoms. Twenty-four hour urine were collected to analyze metabolic risk factors for urolithiasis.
Results: The mean age at diagnosis of stone disease was 4.47 ± 2.41 months. The major clinical symptoms of our patients were restlesness (45.7%) and vomiting (14.3%) whereas 24% of infants were asymptomatic. While the majority of patients (64.2%) were breast feeding, the rest were given formula with breast feeding. Twenty-four of 70 patients were supplied with water. Fifty infants (71.4%) had microlithiasis. At least one metabolic abnormality was found in 90% of the infants. There was not any significant differance for urinary metabolite excretions between microlithiasis and larger stone groups. Hypercalciuria and hyperuricosuria were detected in 40 and 47% respectively. We had not detected any effect of water supplementation on urinary metabolite excretion. Higher urinary phosphorus and uric acid excretion were detected in formula plus breast feeding group.
Conclusions: Urolithiasis in infancy stil remains a serious problem in our country. Infants with urolithiasis may present with non spesific symptoms. A positive family history for urolithiasis and feeding with formula may increase the occurence of urolithiasis in infants.

P402

Type 2 Cardiorenal Sydrome In A Child: What The Nephrologist Needs To Know

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Introduction: Cardiorenal syndrome (CRS) is defined as a disorder of the heart and the kidneys in which acute or chronic dysfunction in one organ may induce acute or chronic dysfunction in the other organ. Although it is well known that the main cause of mortality among patients with end-stage renal disease is cardiovascular events and all patients with renal failure followed for cardiovascular complications, However the cardiovascular causes in the etiology of chronic renal failure does not come to mind first.
Material and methods: We present 11 years-old girl patient with the diagnosis of type 2 CRS, chronic cardiorenal syndrome. She was being followed in another center with the diagnosis of chronic renal disease for 6 months.
Results: Her past medical history revealed that despite she was in health until 6 months ago, She had a viral infection and the physician determine that her blood urea nitrogen (BUN) and creatinine levels were between 50-100 mg/dl and 0.9-1.5 mg/dl respectively. They reported that voiding cystourethrography, renal cortical scintigraphy, renal ultrasonography, viral markers, complements levels, antinuclear antibody (ANA), anti-double stranded-DNA (Anti-ds-DNA) levels were all normal. There was only mild proteinuria and no hematuria in urine analysis. Then they referred the patient to our hospital for renal biopsy. The family gave the

information that she had complaint of cough since 6 months and she get tired quickly. There was cardiomegaly on her telecardiogram. Echocardiography showed severe left ventricular dysfunction and ejection fraction was 30%. The patient was diagnosed as dilated cardiomyopathy.
Conclusions: Although CRS is well known disease in the literature, awereness about this entity in children is less. This case was reported due to increase awereness about CRS in children. So the cardiovascular diseases must be evaluated in the etiology of patient with the diagnosis of chronic renal failure.

P403
Clinical And Radiological Features Of Patients With Acute Pyelonephritis Due To Esbl (+) Microorganisms

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Introduction: Urinary tract infection (UTI)s caused by extended-spectrum beta lactamase (ESBL) producing bacteria continue to increase. The aim of this study is to compare the clinical, laboratory and radiological characteristics of patients with first attack acute pyelonephritis (APN) due to community acquired ESBL (+) microorganisms to those with ESBL (-).
Material and methods: We retrospectively analyzed the hospital records of patients with first APN attack that were followed in our department between 2008-2013. Patients were grouped according to urine culture results; ESBL (+) and ESBL (-).
Results: A total of 300 (233 girls and 67 boys) patients were enrolled 59 patients had APN due to ESBL (+) microorganisms, 231 had due to ESBL (-) microorganisms and 10 patient had culture (-) APN. ESBL positivity was significantly higher in male patients than female patients (34% vs. 15%, respectively; P=0.001). ESBL (+) patients were significantly younger than ESBL (-) patients (8 months vs. 12 months, respectively; P=0.009). Laboratory features did not differ between the two groups. Pathological sonographic findings were significantly lower in ESBL (+) patients than in ESBL (-) ones (15.7% vs. 29.4%, respectively; p=0.02). Pathological DMSA scintigraphy, voiding cystourethrography findings and recurrence of UTI did not differ between the two groups.
Conclusions: Twenty percent of the patients with first APN attack had infection with ESBL (+) microorganisms. Male and small patients seem to be more succeptible to ESBL (+) infections. ESBL positivity doesn't predict underlying urinary tract anomalies.

P404
Scarring In Dmsa Scintigraphy After The First Acute Pyelonephritis Episode

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Introduction: Urinary tract infection (UTI)s are one of the most common infections in children. Renar scarring is an important complication of UTIs which can lead to deleterious effects. The aim of this study is to compare the clinical, laboratory and radiological characteristics of patients with acute pyelonephritis (APN) who had developed renal scarring on Tc-99m dimercaptosuccinic acid (DMSA) scintigraphy after the first episode with those who had no scars.
Material and methods: We retrospectively reviewed files of patients with first APN attack who applied to Ankara University Pediatric Nephrology Unit between 2008-2013. Patients were grouped according to their scintigraphic findings, scar (+) or (-).
Results: A total of 300 (233 girls and 67 boys) patients were enrolled in the study. There were 226 patients who underwent scintigraphic evaluation at their 6th month after APN. Forty four (19.5%) patients showed renal scarring on scintigraphy and 182 (80.5%) patients had no abnormality. There were no statistically significant differences between two groups regarding gender, age at diagnosis, symptom duration before diagnosis and laboratory tests. Among scar (+) patients ultrasound abnormalities were significantly higher than scar (-) ones (56,8% vs 20,9%, p<0,01). In scar (+) group vesicoureteral reflux (VUR) was found to be 3,6 times higher than the scar (-) group (p<0,001). On clinical follow up scar (+) patients had 3,3 times more frequent UTIs than scar (-) group (p<0,001).
Conclusions: Patients who developed scars after the first APN attack had more ultrasound abnormalities and VUR as an expected finding. These patients should be closely followed for possible recurrent UTIs.

P405
Atypical Haemolytic Uremic Syndrome In A Child With Neuroblastoma Treated With Cisplatin

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Introduction: Haemolytic uremic syndrome (HUS) is a clinical entity defined by nonimmune haemolytic anaemia, thrombocytopenia and acute renal failure. Rarely it can be secondary drugs, namely chemotherapy.
Material and methods: Describe the clinical characteristics of HUS in a child with neuroblastoma and discuss dilemmas raised in the treatment of a rare and serious disease.
Results: A two year old boy with a metastatic and MYC-N amplification abdominal neuroblastoma, diagnosed at December.13 has been submitted to an intensive chemotherapy regimen with 10 days cycles interval that included cisplatin, carboplatin, etoposide, cyclophosphamide and vincristine. Two days after the end of the sixth chemotherapy course, he developed oedema, nonoliguric renal failure, haematuria, nephrotic proteinuria and hypertension. About ten days after the beginning of the symptoms, due to persistent anaemia and thrombocytopenia, transfusion dependent, a non-immune microangiopatic hemolytic anemia and trombocitopenia, high DHL, undetectable haptoglobin levels, schisocytes and helmet cells were apparent. The diagnosis of HUS was made, probably related to cisplatin. Serum complement C3c, C4 and C1 were normal. ADAMTS 13 activity was normal. He started plasmapheresis for a total of twelve sessions with gradually normalization of overall clinical and laboratory picture although he maintains a mild plasmatic increase of creatinine levels and a non-nephrotic proteinuria. At this point we could proceed to restaging his oncologic disease and we are now considering surgery of primary tumor. Genetic testing is ongoing.
Conclusions: The authors point out important dilemmas that this case has raised: rarity of this disorder and myelossupresion due to chemotherapy delayed the diagnosis, importance of urgent treatment and resolution the HUS in order to restart oncologic treatment in a child with a malignant aggressive tumour; when to consider alternative therapeutics in an atypical HUS and finally, what are the chances for recurrence of HUS with continuation of cancer treatment which should include autologous marrow transplant.

P406
Urinary Lithiasis In Children – An Increasing Problem?

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Introduction: The objective of this study was to determine the incidence of urinary lithiasis in children and to analyze factors associated with renal calculus formation.
Material and methods: A retrospective review was performed of the records of children with urinary tract calculi followed in Pediatric Nephrology during a 20-year period (1993-2013).
Results: Medical charts of 48 children with a mean age of 9.6 (±4.2) years were reviewed; 10 diagnosed between 1993-2003 and 38 between 2003-2013; 62,5% of the children were male. Thirty-nine had upper and 9 had lower urinary tract calculi. Family history of kidney stones was positive in one third of patients. The presenting symptoms were the following: abdominal pain or colic (26 cases), hematuria (20 cases), urinary tract infection (8 cases), pyuria (6 cases), diagnosed by ultrasonography for different reasons (4 cases), incidental finding on abdominal x-ray (2 cases), passage of a calculus (2 cases). Metabolic risk factors for stone formation were identified in 25 patients who underwent evaluation. Hypercalciuria, the most common metabolic risk factor, was identified in 19 patients, hypocitraturia in 11 patients, uricosuria in 4 patients, low urinary magnesium level in 3 patients, idiopathic or mild hyperoxaluria in 3 patients, cystinuria in 2 patients. No metabolic abnormalities were found in the remaining. Nine patients had recurrent stone episodes. A group of patients (8 cases) developed stones in association with a preexisting urinary tract abnormality of whom 4 had uretero-pelvic junction, 2 had neurogenic bladder, 1 megaureter with reflux, 1 medullary sponge kidney. Two patients had a combination of metabolic and anatomic abnormalities. Coexisting urinary tract infection occurred in 7 patients.
Conclusions: The incidence of kidney stones increased during a 20-year period. Underlying metabolic risk factors were identified in most patients: hypercalciuria was the most frequent metabolic abnormality found.

P407
Role Of Dmsa In Children With Neuropathic Bladder From Spinal Dysraphism, Welsh Experience, uk.

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Introduction: Spinal dysraphism is one of the common reasons for neuropathic bladders. This group of children need regular medical and surgical management to prevent renal damage.
Material and methods: We retrospectively analysed DMSA scans of children with neuropathic bladder from spinal dysraphism followed at University Hospital of Wales, Cardiff, UK. Our aim was to review the value of DMSA scan in these patients.
Results: We analysed 80 children ranging from 6 months to 16 years. Only, 52 (65%) children had DMSA scan throughout the study period. Scarring was seen in 14 children (26.9%). Of the children with scarring, ultrasound was normal in 50% of the children and the rest showed minor abnormalities but no parenchymal defect. Among the 14 children, one patient had small kidney on ultrasound but no urinary tract infection (UTI). Hence, dysplasia could not be excluded. The remaining 13 children had evidence of UTI's and abnormal urodynamics findings. Four of these 13 children had vescico-ureteric reflux (VUR) and multiple UTI's. The DMSA happened after the documented UTI's which makes it difficult to rule out congenital scars. Of the 26 children who did not have DMSA, eight (31%) had UTIs and reflux was seen only in two children. It was clear in our study that DMSA scan is necessary to pick up renal parenchymal damage especially in children with abnormal urodynamics.
Conclusions: Urodynamics is a dynamic investigation that should be carried out in all children with neuropathic bladder to increase renal survival. As this cohort of children are more prone for UTI's and could have associated dysplastic kidney, we in our unit currently advocate early DMSA scan to help us differentiate the two. We also recommend carrying out urodynamics in children who showed scars on subsequent DMSA scan after an UTI irrespective of the regular studies to assess bladder function.

P408
Performance Characteristics Of Urİnalyses For The Dİagnosİs Of Pedİatrİc Urİnary Tract İnfectİon

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Introduction: In childhood urinary tract infection (UTI) have an important place. Simple diagnosis of UTI, it is important to put in a cheap and easy way. Urinary tract infection in cases of doubt heard, until culture and antibiotic sensitivity, saves time for physicians in the diagnosis and treatment of immersion test is a reliable method. The purpose of this study is to determine urinalysis (UA) is as accurate as laboratory-performed routine urinalysis (immersion test) diagnosing urinary tract infections (UTIs) in the pediatric hospital (PH). Therefore immersion test is a reliable method and saves time for physicians in the diagnosis and treatment until .
Material and methods: This was a retrospective series of children (0-20 years old) seen at a tertiary care PH from 2010 to 2014 in whom UA and urine culture were obtained. Urinalyses were considered positive if leukocyte esterase and/or nitrites were positive. Performance characteristics for the 2 types of UAs were calculated using urine culture as the reference standard.
Results: A total of 524 specimens were sent for laboratory-performed routine urinalysis and culture, examples of 58% (n=305) were female, 42% (n=219) were males. Both nitrite and leukocyte esterase positive, 42 samples, 34 patients (81%) were positive. 165 samples had positive leukocyte esterase and nitrite negative, of these 34 samples (20%) had positive cultures have.
Conclusions: Suspected urinary tract infection in children, both in routine urinalysis is positive for leukocyte esterase and nitrite treatment can begin safely.

P409
The Use Of Renastart In Belgium: A Trial

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Introduction: Infants and children with hyperkalaemia due to kidney disease require potassium (K^+) restricted diet. In the past, there was no suitable infant formula available in Belgium therefore infants received mixtures of formulas, energy supplements and medication, which often led to poor control of hyperkalaemia. Side effects of medication enhanced feeding difficulties experienced in CKD. In addition, the introduction of solid foods at the appropriate age was postponed because of their higher K^+ level. This delay promoted failure to accept different textures of food, prolonged feeding times and chewing difficulties. Older children with CKD may require tube feeding and until recently there was no suitable tube feed in Belgium. These children received mixtures of existing adult formulas which were not always the most appropriate solution, and were deficient in many essential nutrients. The aim of this abstract is to report our experience with a new formula to treat hyperkalaemia and avoid or reduce the use of medication.
Material and methods: We introduce a trial with Renastart (Vitaflo®), a new high energy powdered module with low levels of protein, calcium, chloride, potassium, phosphorus and vitamin A, containing whole protein, carbohydrate, fat, vitamins, minerals, trace elements and long-chain polyunsaturated fatty acids in 15 patients with hyperkalaemia (> 4,8 mmol K^+/l). The infants on a normal formula or breast milk and/or medication were started on Renastart. The dose was adjusted depending on the blood K^+ levels. They received Renastart only or a combination

Renastart with normal formula or breast milk and adjusted when necessary. For infants on solid food the dose of Renastart was adjusted depending on the blood K^+ levels with the aim being to maximise the intake of solid foods. For older children Renastart was given as a tube feed during periods of acute illness or inadequate nutritional intake.
Results: In this trial the use of Renastart resulted in normal values for K^+ (3,6 – 4,8 mmol K^+/l) for each infant or child. For most patients medication could be stopped or avoided.
Conclusions: Previously, giving the infant or child a diet low in K^+ was a challenge with many limitations and it was not always successful. In our trial we have shown the use of Renastart allows the K^+ to be lowered during infancy by adapting the dose in combination with normal formula thereby providing sufficient energy and nutrients. By using Renastart while weaning we could give the normal amount solid food at the appropriate age. By replacing normal milk by Renastart there was more freedom to keep the rest of the diet as normal as possible. All the patients accepted the new taste of Renastart and had no problems with (weekly) changes in the dose of Renastart/normal formula. For older children, Renastart was an acceptable tube feed during acute illness or where there were difficulties in lowering the K^+ in the diet.

P410
Single-center Laser Lithotripsy Experience

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Introduction: The aim of this report is to evaluate the reliability and efficacy of laser lithotripsy in children with urolithiasis.
Material and methods: 33 stones disintegrate with laser lithotripsy for 27 patients between 2011 –2014. Semirigid (Ultrathin) Ureterorenoscope (4.5/6.5fr) was used for ureteral access, 9,5fr cystoscope was used for vesical and urethral access and lithotripsy was performed by StoneLight® Holmium Yag Laser. The age of patients ranged from 2-18(mean 4,2) years. Stone localization was renal pelvis in 3, upper part of the ureter in 5, mid-ureter in 1, lower ureter in 16, bladder in 6 and urethra in 2. Stone diameter ranges were 5.5-17mm.
Results: No ureteral dilatation required except three patient in whom ureteral entrance was achieved via guide wire. Two sessions were performed to 2 of the ureteral and one of the bladder stone patients. Despite two sessions of laser lithotripsy, one patient cannot be achieved stone-free. JJ stents were placed to 4 patients with ureteric stones and 2 patients with renal stones. All other operations were successfully performed in a single session without the need of a stent. All fragmented stones were left to pass spontaneously instead of extraction. Postoperative ultrasonography revealed no sign of hydronephrosis and stone-free status was achieved in all of the patient.
Conclusions: Endoscopic laser lithotripsy is safe and reliable in pediatric patients with urinary stone disease. There is no need to collect the stone fragment after lithotripsy procedure in children. Although there are no comparative studies in the literature about postoperative stenting in pediatric patients, our experience suggests that there's no need to place a stent except for complicated cases in ureteric stones.

P411
Analysis Of Renal Biopsies (native And Transplanted): A Single Center Expirience

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Introduction: Today performance of a kidney biopsy with carrying out light, immunohistochemical (immunofluorescent) and electron (according to the indications) microscopy is necessary for routine diagnostics and competent therapy of glomerular and tubulointerstitial pathology.The aim of our study is retrospective analyses of the most common indicatons and distribution of pathological findings of native and transplanted (Tx) kidneys biopsies in children from Republic Center of Pediatric Nephrology and Renal Replacement Therapy in Minsk/ Belarus.
Material and methods: All patients who underwent renal biopsy from 2010 till 2013 yrs were included in the study (n=282). For the establishment of the disease histochemical, immunohistochemical methods of coloring of preparations and electron microscopy were used.
Results: There was a 271 native and 11 Tx kidneys biopsies perfomed. Boys were 127 (45%), girls 155 (56%), median age 11.6 ±2.0 yrs. The main indications for the biopsie were persistant urinary abnormalities (73%), nephrotic syndrome and acute nephritic syndrome were noted in 13% and 7.7% patients respectively. Primary glomerulopathies were diagnosed in 68% cases. The most common were IgA-nephropathy (17.7%), minimal change disease (13.2%) and focal segmental glomerulosclerosis (FSGS) in 12%. The diagnosis of secondary nephritis was established at 13.4% patients, most of the cases were lupus nephritis (53.5%) and Schonlein-Henoch purpura nephritis (24.9%). In 4 cases of Tx kidneys the disease of acute cellucar rejection (Banff 4 IA) was made, in 2 cases chronic allograft nephropathy Grade I, in 1 antibody-mediated rejection Grade II and in 1 calcineurin inhibitor nephrotoxicity were documented. The reccurent glomerular disease was seen in 3 patients: lupus nephritis class I (n=1) and FSGS (n=2).
Conclusions: Renal biopsy provided great value in diagnosis, treatment and outcome in children with kidney disease.

P412
Renal Monitoring In Patients Treated With Csa For Atopic Dermatitis

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Introduction: Cyclosporin A (CsA) is an immunosuppressive drug of the calcineurin inhibitors group. Its use is approved in frequent autoinmune disorders, such as severe atopic dermatitis (AD). Experience in children is still limited, but its use in infants older than twelve months has not produced different side effects than adults yet, and it has no specific contraindications. Since major adverse effects are related to nephrotoxicity, renal function and blood pressure should be regularly monitored.
Material and methods: To assess a series of patients with severe refractory AD treated with CsA, evaluating the efficacy and side effects, mainly renal ones. Methods Retrospective study of patients with AD requiring treatment with CsA between January 2009 and March 2014.
Results: (Preliminary) We analyzed data from 40 patients (60% male). Median age at the beginning of treatment was 7.8 years (range 14). The most frequent type of DA was generalized eczema (70.7%) with facial involvement in up to 39%. Median age of AD at onset was 12.2 months (range 176.7). 100% of patients had previously received other treatments (87.8% topical steroids, 87.8% oral steroids, 73.2% topical immunomodulators, 36.6% oral antibiotics). The average starting dose of CsA was 4.24 mg/kg/day (SD 0.62), and the response after one month of treatment was excellent in 38.1%, good in 23.8%, fair in 16.7%, and poor in 11.9% of cases. 28 patients needed to associate another treatment occasionaly (66.7% topical steroids). 50% suffered mild side effects: 2.5 % hyperuricemia 14.3% hypostenuria 35.7% hypertrichosis, 38.1% gingival hyperplasia. Although transient in most cases, treatment was stopped in 7.1% of patients. Median treatment time was 4.2 months. In 21.4% of patients

treatment was cancelled due to lack of response (median 3.9 months; range 4.8).
Conclusions: CsA is an effective treatment in childhood AD, showing a response rate good or excellent in at least 60% of patients. However, we must take into account that its administration requires close clinical and laboratory monitoring because of the side effects risk.

P413
Prediction Of Spontaneous Resolution Of Vesicoureteral Reflux In Children

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Introduction: To identify potential contributing factors for spontaneous resolution of vesicoureteral reflux (VUR).
Material and methods: A retrospective chart review of 124 children with primary VUR (96 girls-28 boys) was performed. Age groups (0-24 months, 25-60 months, >61 months), grade of reflux, gender, lower urinary tract dysfunction (LUTD), breakthrough lower urinary tract infections (bUTI), DMSA findings were recorded as possible factors that contribute to resolution of VUR. Cystography, DMSA scan were performed in all patients at the presentation and were repeated with an interval of one year. Analyses were performed on the basis of the renal units and patients, separately. In addition, renal units with VUR were divided two groups as non-dilating (grade I-II) and dilating (grade III-V).
Results: In all 248 renal units, 184 refluxing (nondilating VUR in 90, and dilating VUR in 94) renal units were evaluated. Mean age at diagnosis was 53±46 months, and mean follow-up period was 24±10 months. Overall resolution ratio was 46%. Surgical correction was performed in 11 children (9%). None of the defined contributing factors differed statistically in patients with non-dilating VUR. However, in group with dilating VUR children younger than 2 years at diagnosis had higher resolution frequency than the other age groups (63%, 23%, 24%, p=0.002). Presence of LUTD significantly decreased resolution ratio when compared patients without LUTD (21% vs 56%, p=0.005). Renal units with normal DMSA at diagnosis had higher resolution ratio than with abnormal DMSA (59% vs 33%, p=0.017). Interestingly, the influence of bUTI on resolution of VUR was not detected.
Conclusions: Younger age (<2 years), absence of LUTD, and normal DMSA finding at diagnosis were important contributing factors for spontaneous resolution of dilating VUR.

P414
Rational For The Use Of Azithromycin In Post Diarrheal Hemolytic And Uremic Syndrome

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Pediatric Nephrology Chu Robert Debre

Introduction: Post diarrheal hemolytic and uremic syndrome (D+HUS) is the first cause of acute renal failure in children and 30% of them had renal sequelae at one year . To this day, all specific therapies used in D+HUS failed to improve the renal outcome. The use of antibiotics remains controversial. Indeed, some antibiotics could increase the shiga toxin release and could worsen the D+HUS prognosis. However, experimental results evidenced that azithromycin is efficient first, to decrease the shiga toxin production, and second, to improve the outcome in animal models undergoing D+HUS. We attempted to assess whether an azithromycin antibiotherapy during the acute phase of D+-HUS could reduce the severity of D+-HUS and improve the renal outcome
Material and methods: Patients admitted in Robert Debré hospital for D+HUS between 2002 and 2012 were considered for inclusion. Patients treated with azithromycin (AZI+) were compared to untreated patients (AZI-). Both groups received the same supportive care. Severity of D+HUS was analyzed for each patient including renal, severe digestive tract and neurological involvement and hemolysis. Renal outcome was assessed one year after D+HUS onset.
Results: From the initial 94 patients, 69 were considered for analysis. 23 were excluded because of previous antibiotherapy. 29 patients were treated with azithromycine and 40 not. During the acute phase of D+HUS, no difference between AZI+ and AZI- was demonstrated. But at one year, AZI+ presented a significant reduction of renal sequelae (24.1% vs 58%, p=0,009). GFR was significantly higher in AZI+ group (100 vs 85 ml/min/1.73m^2; p<0,05).
Conclusions: This single center retrospective study highlighted promising results for the use of azithromycin in D+HUS. By contrast to other antibiotics studied before, the use of azithromycin does not worsen the D+HUS outcome and seems to improve the renal recovery.

P415
Indications And Results Of Renal Biopsy In Children: A 35-year Review From A Single Pediatric Center In Southern Italy

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Introduction: This study was conducted to retrospectively investigate the indications for renal biopsy in native kidneys and to analyze pathological findings in the last 35 years in a single tertiary pediatric hospital in Southern Italy.
Material and methods: All patients who underwent renal biopsy at our hospital from 1979 to 2013 were included in the present study. Renal biopsies of transplanted kidneys were excluded. All the renal biopsies were performed under ultrasonographic assistance. All renal tissue specimens were studied under light and immunofluorescent microscopy, while electron microscopy was performed only for specific clinic indications.
Results: The study group included 200 patients (46% female) who underwent 210 percutaneous native kidney biopsies. Median age was 10.3 years (range 0.6-24 years). The most frequent indications for renal biopsy were nephrotic syndrome (44.8%), proteinuria (26.7%), asymptomatic hematuria (17.1%) and acute kidney injury (10.5%). Gross hematuria appeared after biopsy in 12% of the patients, but only one of them needed blood transfusion. Adequate renal tissue sample was obtained in 95.2% of the renal biopsies. Primary glomerulonephritis (GN) was the most common finding (70.0%), followed by secondary GN (13.5%), tubulointerstitial diseases (4.0%) and hereditary nephropathy (2.5%), while in 10.0% of case a normal renal tissue was found. According to histopathological diagnosis, the most common causes of primary GN was IgA nephropathy (IgAN) (19.5%), followed by minimal change disease (MCD) (17.5%) and focal segmental glomerulosclerosis (FSGS) (12.5%). Noteworthy, before 1996 IgAN was the most common GN, while after 1997 the diagnosis of MCD and FSGS raised probably due to more aggressive policy in performing renal biopsy in nephrotic syndromes.
Conclusions: The epidemiology of glomerular disease in our single-center cohort is similar to that showed in other national and international reports. Moreover our study shows that percutaneous ultrasound-guided renal biopsy is a safe, reliable and effective technique in children.

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What Advice Do District Hospitals Need From A Paediatric Tertiary Renal Centre: A Review Of Practice In A Large Uk Centre

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Introduction: To evaluate the telephone advice service provided by a tertiary paediatric nephrology centre, including looking at the most frequent reasons to seek advice and proportion of care delivered locally. Our service covers South East England, the third largest region in England with population of 8.5 million at time of study.
Material and methods: Retrospective analysis of 300 randomly selected electronically documented telephone consultations during 2009-2013 at Evelina London Children's Hospital. A consultation was defined as all telephone calls regarding one patient during one hospital admission or outpatient clinic visit.
Results: 34 hospitals sought advice. Of the 300 consultations, 10% took place out of working hours; 48% were during the afternoon. 51% were taken by junior doctor. 82% of calls were regarding patients not previously known to our service and 96% were concerning inpatient care. Half of all consultations (51%) involved one telephone conversation, 18% necessitated two calls, 12% required three and one fifth more than three telephone calls. Most common reasons for consultation were elevated blood pressure (15%), impaired renal function (14%), electrolyte disturbance (13%), relapse of nephrotic syndrome (12%) and haematuria (7.5%). 8% of patients required transfer to the tertiary centre for further management. Reasons included the need for kidney biopsy, commencement of renal replacement therapy, management of congenital kidney anomaly or severe electrolyte disturbance. Interestingly, despite the majority of patients being referred because of high blood pressure (n=45) only two patients needed transfer to our centre.
Conclusions: We present a detailed review of telephone advice sought from a paediatric nephrology centre including when and why the unit is contacted, enabling us to evaluate this service in depth. The analyses highlights that the majority of children discussed remain in the referring hospital, with ongoing telephone contact with the nephrology unit. This emphasises the importance of building strong networks with the regional hospitals to ensure they receive appropriate renal support.

P417

Clinical Characteristics And Prognostic Factors Of Vesicoureteral Reflux

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Introduction: Persistent vesicoureteral reflux (VUR), a major cause of urinary tract infection (UTI) in children, could result in serious renal complications, such as reflux nephropathy and chronic renal failure. The authors evaluated clinical characteristics and prognostic factors of VUR.
Material and methods: During the period from December 1993 to May 2011, we had 117 children with vesicoureteral reflux who were admitted to the Department of Pediatrics and Urology because of UTI, Chungbuk National University hospital. The patients were managed medically or surgically.
Results: VUR was a little more prevalent in males than females (55%). The degrees of 161 refluxing ureters, classified by the International Reflux Study Committee, were as followings; grade I, 15 ureters; grade II, 32 ureters; grade III, 54 ureters; grade IV, 26 ureters; grade V, 34 ureters. 161 renal units (115 cases) underwent a 99mTc-DMSA renal scan, 62% showed abnormal findings. The incidence of renal cortical defects showed a direct correlations with the severity of VUR. 94 refluxing ureters were followed up medically, and 66 ureters (67%) were disappeared or improved, however, 9 refluxing ureters persisted. The spontaneous resolution rate of VUR seemed to be higher in the younger patients with lower grades of reflux and without renal cortical defects. 67 refluxing ureters (41%) were treated surgically and 62 ureters (92%) were disappeared, 5 ureters (8%) persisted.
Conclusions: The incidence of renal cortical defects in patiients with UTI were 62% in a 99mTc-DMSA renal scan, showed a direct correlations with the severity of VUR. The spontaneous resolution rate seemed to be lower in the patients with higher grades of VUR, older age (over 4 year-old), and diffuse renal cortical defects.

P418

Specifics Of Course Of Pyelonephritis In Children Infected With Herpes Viruses.

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Introduction: Goal: to define the specifics of course of pyelonephritis in children infected with herpes viruses (HSV I-II type, CMV).
Material and methods: Complex clinical examination of 291 children from 2 months to 16 years of age with acute or chornical pyelonephritis. Tnzyme blood immunodetection for detection of HSV I-II type and CMV antibodies. Index of avidity of antibodies IgG to CMV. Urine examination using polymerase chain reaction for detection of CMV DNA.
Results: Herpes and CMV infection are provocative factors of development and exacerbation of pyelonephritis. Acute pyelonephritis in children infected by herpes viruses is characterized by the prevailance of intoxication symptoms. After the onset of pyelonephritis in children infected with herpes viruses, the disease had the tendency to develop a chronic course (53,1%). The recurrence of pyelonephritis in children with herpes virus infection is accompanied with the increase of protienuria (87,2%) , as well as more than 1gr/l in spot urine (15,4%). In children infected by HSV, CMV with onset of pyelonephritis during the first year of life, it was noticed that chronic pyelonephritis developed at an earlier stage during the first 3 years of life (15,8%).
Conclusions: In children infected by herpes viruses the tendency of recuring and continuously recurrent course of pyelonephritis was noticed, with the decrease of urinary ducts function, which requires further study of the effects of herpes viruses on nephron tubules in children.

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Epidemiology, Clinical Profile And Long Term Outcomes Of Hus In Children In Belarus: 2005-2013

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Introduction: To evaluate the clinical and laboratory profile, mortality and long term outcomes of HUS.
Material and methods: Retrospective study of 169 children, median of age 1,42 year (min 0,25, max 15,33y), m:f 87:86, D«+» 163 and D«–» 6. 113 (66,9%) required dialysis: 20-HD, 93-PD, 15-combinations of HD, PD or CVVH(D). Data on demography, CNS involvement, proteinuria, hypertension, duration of oliguria, dialysis were recorded. On follow-up CNS involvement, proteinuria/albuminuria, BP, GFR and deaths were noted in 89 children, median time after HUS 5,1y (min 0,5y, max 8,5y).
Results: Median rate of HUS was 21 cases per year (12,1 cases per million 0-17 years population, 3,1 cases per 100,000 0-5 years population). Distribution of HUS cases in country is uneven: maximum in the capital city – 45 (26,6%) and minimum in the biggest region – 13 (7,7%). Most children had O(I) – 38,9% and A(II) – 29,9% blood groups. Distribution of HUS cases among seasons was no unevenly too: 75 cases (44,4%) in summer and 18 (10,7%) in winter; maximum in June and minimum in December. On admission median Hb was 81 (min-max, 48-138) g/l, platelets - 55 (min-max, 18-160)×109/l, creatinin - 282 (54-1270) μmol/l. Median day of recovery of platelets number was 7 (1-17), urine output 8,5 (3-30), on dialysis 11d (2-36). 99% of patients required infusions of red blood cells, 56,6% - fresh-frozen plasma and 15,6% - platelets. The

duration of hospitalization was less in children without dialysis (17,9±5,7d compare with on HD 31,9±9,9d and on PD 32,3±11,9d, p<0,05). Using of PD allowed to decrease mortality considerably from 22,1% in 2004y to 2,4% (4 cases) in 2005-2013 (p<0,05). Proteinuria and albuminuria on follow up was presents in 15 (17%), hypertension in 34 (38,2%), CNS involvement in 2 (2,2%), GFR<90 ml/min/1,73m2 – 3 (3,4%).
Conclusions: HUS is still a serious problem in childhood and the main reason of acute renal failure requiring dialysis therapy in patients less 5 years old. Introduction of acute PD in 2004 allowed decreasing mortality from HUS considerably.

P420
What Is The Role Of Voiding Cystography In Infants After Acute Febrile Urinary Tract Infection?

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Introduction: Vesicoureteral reflux (VUR) has been associated with increased risk of urinary tract infection (UTI) in children. It is usually diagnosed after febrile UTI by voding cystography (VCUG), although newer methods emerge. VUR can cause renal scarring, the risk is higher in grade III-V, however, scars can occur in the absence of VUR. According to recent guidelines, there has been decreasing priority and emphasis in VCUG performance in children after the first UTI.
Material and methods: We performed a retrospective review of 184 patients (84 boys, age 8.8 months ± 6months) that underwent VCUG after the first or recurrent febrile UTI. Febrile UTI was diagnosed by the following crteria: fever>38ºC, significant bacteriuria, CRP>20mg/l. US of urinary tract was performed to assess morphology of the kidney and the urinary tract. VCUG was done to diagnose VUR and its degree. Patients with VUR were divided into two groups- with low grade VUR (grade I-II) and with high grade VUR (grade III-V). The results of both imaging modalities were explored.
Results: Overall VUR was diagnosed in 39/184 (21%) patients. VUR was seen in 23/156 (15%) patients in the group of patients after the first febrile UTI, in comparison to 16/28 (57%) patients with recurrent febrile UTI (statistically significant difference, p < 0,0001). 8/156 (5%) patients after first febrile UTI had significantly lower occurrence of high grade VUR compared to 11/28 (39%) patients after recurrent febrile UTI (p< 0,0001).
Conclusions: We confirmed the low incidence of VUR and high grade VUR in patients with a history of a single febrile UTI. Based on the results of our study it can be concluded that US may obviate the need for performing VCUG in most of the patients after first febrile uncomplicated UTI. VCUG should be reserved for children with complicated or recurrent febrile UTI and for patients with abnormal US findings.

P421
Is Antibacterial Prophylaxis Necessary For The Patients With The Neurogenic Bladder Using Clean Intermittent Catheterisation (cic)

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Introduction: The use of antimicrobial prophylaxis is controversial for the patients who have neurogenic bladder and CIC application. In this study, we aimed to investigate the effect of antibiotic prophylaxis in having symptomatic infection and renal scar development in the patients that have CIC application.
Material and methods: 22 patiets were included in the study. All of the patient have neurogenic bladder secondary to neural tube defect and they under CIC application. Patients were followed antibiotic prophylaxis for one year (nitrofurantoin, trimethoprim) and then prophylaxis were stopped. We evaluated prospectively symptomatic infections (vomiting, nausea, fever, cloudy urine), resistance patterns of microorganisms and the development of new lesions on DMSA.
Results: The patients median age is 12.9 years (7-19), 15 of them are girl and 7 of them are boy. In the period of prophylaxis usage, 19 of 22 patients had reproduction on routine urine analysis and they also had pyuria. We found no statistical difference between in symptomatic infection frequency between with and without prophylaxis period (respectively 11 patients had %57.9, 10 patients had %52.6, p: 0.26). There were more antibiotic resistance frequency in the period within prophylaxis (respectively 17 mikroorganisms - %94.8 and 14 microorganisms - %77.8). There is no difference in forming new lesion in DMSA between prophylaxi used and nonused interval (2 patient had new lesion on DMSA both of the period). There is no difference in their urodinamic pattern that could lead to the development of new urinary tract infection or new lesions in DMSA.
Conclusions: We found that using antibiotic prophylaxi in CIC applied neurogenic bladder patients have no prevention at symptomatic enfection and new lesion development in DMSA. We saw more resistant microorganism in antibiotic prophylaxis used period and think that no need routine antibiotic prophylaxis in these patients.

P422
The Influence Of Body Mass Index On Pediatric Urolithiasis

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Introduction: The obesity in children and adolescents is an increasing health problem in many countries in the world. The association between obesity and urolithiasis has been well-documented in the adults. However, while it is well-established that the prevalence of high body mass index (BMI) is increasing in the pediatric population, the relation between obesity and urolithiasis is still not clear. Herein, we aimed to investigate the influence BMI on urolithiasis in children.
Material and methods: Eighty-four children, being followed-up for urolithiasis in our pediatric nephrology and urology departments, were recruited in our study. We stratified patients into 3 BMI categories including LBMI (low percentile BMI), NBMI (normal percentile BMI) and UBMI (upper percentile BMI). All patients had 24-hour urine analysis results from the unique laboratory.
Results: Eighty-four patients (42 girls and 42 boys) participated in the study. Mean age at diagnosis was 8.4±4.8 years. Mean BMI was 21.6±2.9 kg/m^2. LBMI was found in 52 (61.9%) of the patients, NBMI in 20 (23.8%) and UBMI in 12 (14.3%). 24-hour urine analysis revealed that the NBMI group had the highest and the UBMI group had the lowest average calcium excretion, respectively (p=0.02). For the oxalate, the highest average level of excretion was notified in the NBMI group, whereas the lowest average levels were in the LBMI group (p=0.03). The highest level of uric acid excretion was found in LBW group, while the lowest level were in UBW (p=0.01). No significant difference was detected between the three groups in terms of urine citrate and magnesium values (p=0.05 and p=0.60, respectively).
Conclusions: As it is known that calcium-containing stones (especially calcium-oxalate) are most commonly seen in children, we conclude that our NBMI group has increased tendency towards urolithiasis. In contrast to adult studies, the relation between UBMI and urolithiasis could not been specified in our study.

P423
What Affects The Size Of Post-pyelonephritic Scars?

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Introduction: Around 5% of children overcoming first-time urinary tract infection (UTI) will have renal parenchymal defect on imaging. The risk factors that promote the formation of the post inflammatory scars have not yet been clearly identified. The aim of the study was to test which of the studied factors (sex, age, therapeutic delay and response time, C-reactive protein, leukocytemia as well as TLR4 A(896)G polymorphism and interleukin-8 receptor genetic variants determined by means of polymerase chain reaction) has the largest impact on the size of scars in kidneys after overcoming of a UTI.
Material and methods: The study group included 106 children treated for upper UTI. Each patient received 14-days long antibiotic treatment. All of them underwent dimercaptosuccinic acid (DMSA) renal scintigraphy 6-months after the UTI. The images of static scintigraphy were evaluated according to Hitzel et al. (J Nucl.Med. 2004). The results were statistically evaluated.
Results: CRP values did not influence significantly (p=0.8) the range of scars, but leukocytemia was significantly higher in children with the largest scars of the kidney (p=0.02). The correlation between the therapeutic response time and the size of scars was not significant (p=0.2), but the scarring was larger in children with delayed antibiotic therapy (p=0.03). Girls had more extensive scars than boys (p=0.01) in the group. One of the examined polymorphisms, the TLR4 A(896)G polymorphism, was present significantly more frequently in patients with more extensive scars (p=0.02).
Conclusions: Several factors are associated with formation of post inflammatory scars – it appears that ineffective immune reaction just as delayed treatment can lead to scarring of the kidney. We hypothesize that the TLR4 A(896)G polymorphism may retard the effective immune response by delaying the recruitment of neutrophils in the sites of inflammation.

P424
Eculizumab For The Treatment Of Thrombotic Microangiopathy Associated With Acute Renal Failure In A Boy With Mcp Deficiency

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Introduction: A 13 y.o. boy was admitted for acute renal failure and bloody diarrhea following food poisoning.
Material and methods: On admission the patient was edematous and oliguric; laboratory investigations showed microscopic hematuria and mild proteinuria, elevated serum creatinine (5.6 mg/dl), transaminases (AST/ALT 234/282 IU/l) , LDH (4165 IU/L), direct bilirubin (3,01 mg/dl); low levels of C3 and normal ADAMTS13 activity.Research of verotoxin producing E. Coli in the stool was negative while a staphylococcal toxin was found in the food ingested the day before. The study of complement factors showed a deficiency of MCP.
Results: In the following days he developed transient thrombocytopenia, became lethargic with EEG and TC scan showing diffuse encephalopathy. Because of marked oliguria we started hemodialysis and plasmapheresis. After 16 sessions of plasmapheresis in a month the child had no neurological signs, an increased urine output but persistent renal insufficiency. A renal biopsy showed patent glomeruli with no immune deposits, mild interstitial infiltration and thrombotic microangiopathy (TMA); an aspecific mucosal linphocytic infiltration was found in a rectal biopsy.
Conclusions: Eculizumab was admnistered (900 mg i.v. weekly for a month and 1200 mg i.v. every 15 days) after meningococcal vaccination. Hemodialysis was discontinued after a month, serum creatinine decreased to 3.3 mg/dl and serum C3 was in the normal range after two months. No blood transfusion was needed. Eculizumab has been showed effective in the treatment of atypical Hemolitic Uremic Syndrome associated with complement deficit. In this case acute renal failure was associated with MPC deficiency and TMA but not anemia; Eculizumab improved renal function. We recommend to investigate complement deficiency in all cases of acute renal failure of uncertain etiology associated with systemic symptoms and use eculizumab in case of evidence of TMA.

P425
Streptococcus Pneumonia-associated Hemolytic Uremic Syndrome

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Introduction: Hemolytic uremic syndrome (HUS) is defined by acute hemolytic anemia, thrombocytopenia and acute kidney injury. Early recognition of HUS is important because of its potential to improve morbility and mortality but the management of SpHUS is still controversial.
Material and methods: We report a case of a child with Streptococcus pneumoniae HUS.
Results: A 8-month-old previously healthy girl presented to the Emergency Department with a 3-day history of fever, cough and vomiting. On physical examination she was irritable and tachypnoeic. Blood investigation showed elevated inflammation parameters. Chest X-ray and ultrasonography confirmed the diagnosis of pneumonia with loculated large pleural effusion. She was started on cefotaxime and vancomycin and submitted to thoracotomy with chest tube drainage. Blood and pleural fluid cultures were positive for Streptococcus pneumoniae serotype 14 and, according to antibiotic sensitivity tests, the antibiotics were changed to penicillin. She was admitted to Paediatric Intensive Care Unit and over the next 24h, her status worsened with anasarca, oliguria followed by anuria, hypertension and epistaxis. Laboratory test showed anemia with schistocytes on the peripheral smear, negative Direct Coombs test thrombocytopenia, normal coagulation tests, renal failure (Glomerular filtration rate (GFR) by Schwartz formula 24 ml/min/1.73m2), decreased haptoglobin and high lactate dehydrogenase. With a diagnosis of aHUS, she was administered fresh frozen plasma and started hemodiafiltration with a decrease in creatinine levels and improvement of edema and hypertension. Hemodiafiltration was discontinued after 7 days. There was a gradual improvement of renal function at discharge (GFR 39 ml/min/1,73m2) and at last consultation she had a GFR of 47 ml/min/1,73m2. Investigation of the complement system was normal.
Conclusions: SpHUS is a well-characterized condition that has limited data due to its rarity and lack of awareness. Better understanding of its pathophysiology is imperative since it conditions the management.

P426
Efficacy Of Anakinra In A Patient With Systemic Amyloidosis Presented With Amyloidoma

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Introduction: Amyloidosis is a heterogeneous group of disorders characterized by extracellular deposition of unique protein fibrils. The least common presentation of an amyloid deposition is as a discrete mass called amyloidoma or amyloid tumor. It has been reported in many anatomic site including the respiratory, genitourinary, and gastrointestinal tracts, as well as internal viscera, the central nervous system, skin, breast, and soft tissues.
Material and methods: We report a case of a soft tissue amyloidoma in the abdomen of an 16-year-old girl diagnosed with systemic amyloidosis.

Results: A 16-year-old girl was admitted to the hospital with the complaint of abdominal pain and artralgia for 4 months. She was referred to our hospital with a pre- diagnosis of a retroperitoneal mass documented with an abdominal ultrasonography and tomography. Her physical examination was normal except pretibial edema. Proteinuria, hypoalbuminemia, hypertriglyceridemia and nephrotic range proteinuria was found in laboratory examination. She underwent a surgery for complete resection of the lesion and routine histopathological examination with Congo red and crystal violet dyes verified the diagnosis of an amyloidoma. Immunohistochemical study for AA protein is positive. Nephrotic syndrome was diagnosed and renal biopsy was compatible with AA amyloidosis. A search for systemic disease was performed. Further investigations, for the etiology of the systemic amyloidosis; only heterozygous V726A was detected. Since the other causes of secondary amyloidosis were ruled out, the diagnosis of familial Mediterenean fever was made and treatment with colchicine and anakinra (1mg/kg/day sc) were started. After 3 months of the anakinra treatment, laboratory findings returned to normal and excessive proteinuria disappeared.
Conclusions: Amyloidoma is an unusual cause of soft tissue mass in the abdomen however a systematic approach incorporating clinical, radiological and pathological assessments will lead one to reach the diagnosis. Anakinra treatment is effective in the treatment of kidney and GIS amyloidosis.

P427
Renal Hydatid Cyst: A Case Report

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Introduction: Hydatid disease is a rare condition caused by the Echinococcus parasite. Renal hydatid cyst constitute only 2-4% of all cases of hydatid disease. They might remain asymptomatic for years; nevertheless abdominal mass, lumbar pain, hematuria as well as symptoms caused by compression of adjacent structures can be present. Ultrasound, computed tomography scan (CT-scan) and serologic studies are important for establishing the diagnosis, with its pathognomonic sign being hydaturia. Surgery has been the treatment of choice, but conservative approach can be used in specific cases.
Material and methods:
Results: A 14-year-old male, was admitted to the emergency department with hematuria after lumbar trauma. The lumbar ultrasound and CT-scan showed an encapsulated lesion measuring 9x9x6 cm with calcified foci, with post-traumatic haemorrhage without infiltrative or obstructive component. For a better characterisation of the lesion, magnetic resonance imaging was performed which confirmed an exophytic nodular formation, predominantly cystic located in the renal sinus. Laboratory tests revealed elevated erythrocyte sedimentation rate (40mm/hr) and the presence of Echinococcus granulosus antibodies, without hydaturia. The diagnosis of kidney hydatid cyst, with post-traumatic haemorrage was assumed. Since the lesion was in the renal sinus and the surgical treatment implied nephrectomy it was decided for a conservative medical treatment with albendazole 400 mg twice daily, during 4 cycles of four weeks. No adverse effects were recorded. Cyst reduction was confirmed in the ultrassound (3.2x2.8 cm), with no changes after eighteen months of follow-up. The Echinococcus granulosus antibodies became negative.
Conclusions: Renal hydatid disease is extremely rare in children. Although in most cases surgical approach remains the treatment of choice, conservative methods such as ultrasound or CT-scan guided Percutaneous Aspiration, Instillation (hypertonic saline or another scolicidal agent), Re-aspiration (PAIR), and antiparasitic therapy with albendazole, as in our case, represent eligible options aiming kidney preservation.

P428
Secondary Pseudohypoaldosteronism Type 1 Due To Urinary Tract Infection – A Case Report

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Introduction: Secondary pseudohypoaldosteronism type 1 (PHA1) is due to transient aldosterone resistance, resulting in impaired sodium absortion and potassium excretion, and is often associated with urinary tract malformation and/or infection.
Material and methods:
Results: A two-month infant presented with a week long history of irritability and poor feeding. On examination, he was dehydrated, with an estimated weight loss of 8%. Dipstick analysis of urine obtained by suprapubic aspiration was positive for leukocyte esterase and nitrites. A Escherichia coli was isolated in the urine culture. Renal ultrasound revealed a mild unilateral renal pelvis dilatation. Blood work revealed hyponatremia, hyperkalemia and metabolic acidosis with normal creatinine and urea blood nitrogen. A diagnosis of urinary tract infection and congenital adrenal hyperplasia was presumed and he was started on amoxicillin and clavulanic acid, hydrocortisone as well as intravenous fluids (sodium chloride 0.9%). The 17-hidroxyprogesterone, adrenocorticotropic hormone (ACTH) and cortisol levels were later revealed as normal, leading to discontinuation of hormone supplementation. Aldosterone and renin levels were high, which supports the diagnosis of secondary pseudohypoaldosteronism type 1. A progressive resolution of the serum electrolyte abnormalities was achieved with the treatment of the urinary tract infection.
Conclusions: Secondary pseudohypoaldosteronism type 1 presents with failure to thrive, dehydration, hyponatremia, hyperkalemia and metabolic acidosis. The pathophysiology of secondary PHA1 is still unclear but it usually develops in infants younger than three months of age with urinary tract malformation and/or infection. The differential diagnosis includes congenital adrenal hyperplasia (CAH). A normal hormonal evaluation (17-hidroxyprogesterone, ACTH and cortisol) differentiates PAH1 from CAH. Management of PAH1 includes correction of the electrolyte abnormalities and treatment of the underlying cause (antibiotic therapy and/or surgical intervention).

P429
Infrared Spectroscopy In Urolithiasis In Children

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Introduction: Nephrolithiasis is increasingly recognized in children in the last years, although the prevalence of urinary stones in children is lower than in adults.We evaluated metabolic alterations of patients with urinary calculi, related to qualitative analysis of the stones obtained after spontaneous stone passage.
Material and methods: We studied 252 patients with symptoms compatible with urolithiasis, afferent to our Unit from January 2005 to December 2013. We retrospectively reviewed urinary stone composition and metabolic evaluation in 28 patients (18 males) mean age 8.5 years (range 0.7-14). Evaluation included serum biochemistry (azotemia, creatinine, uric acid, electrolytes, acid-base equilibrium) and urine analysis of calcium, oxalate, citrate, creatinine, electrolytes in 24h, or in random urine samples in non-toilet-trained patients. Urinary tests for oxalate and citrate were performed by HPLC. Infrared spectroscopy was used for stone analysis (FTIR).

Results: The composition of examined stones was: mixed stones 50%, Calcium Oxalate Dihydrate (COD) 17.8%, Calcium Oxalate Monohydrate (COM) 14.3%, CaCO3, 10,7%, uric acid 7,1%. Hypocitraturia was the mean metabolic disturbance associated with pure stones of COM in all patients. Pure stones of Calcium Oxalate Dihydrate were predominantly associated with Hyperoxaluria mainly of female gender. Mixed stones were associated with moderate Hyperoxaluria with no sex correlation

Conclusions: The most frequent stones in our population are the mixed ones. FTIR analysis of renal stones allows to establish a focused metabolic evaluation and a proper treatment in order to reduce the risk of recurrence.

P430

Abdominal Mass In A Neonate: A Case Report

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Introduction: Abdominal masses in the neonatal period are common occurring 1 infant in 1000 live births. However, neonatal renal tumours are rare, with only 2.5-7% of all tumours in this period arising from the kidney. Congenital mesoblastic nephroma, the most common renal tumour in neonates, usually presents as a palpable abdominal mass in early infancy. There are three histological types of this neoplasm: the classical, the cellular and the mixed. We present a case of a neonate with a coincidental finding of classical mesoblastic nephroma.

Material and methods: Case report: A phenotypically normal male neonate 37 weeks' gestation was born to a 35-year-old woman with an uncomplicated pregnancy. Prenatal screening was reported normal and polyhydramnio was not recorded. An abdominal mass was detected antenatally during the first clinical examination.

Results: Renin, creatinine levels and urine analysis were normal and the patient was normotensive. Renal ultrasound showed a heterogeneous mass in the lower pole of the right kidney measuring 4 x 5cm. Abdomen CT showed an intensely contrast-enhanced heterogeneous renal mass with no invasion of perinephric tissues and no calcifications. Chest CT was normal. The neonate was treated by right radical nephrectomy on the 8th day of life with an uneventful postoperative course. Histologic analysis identified classic congenital mesoblastic nephroma.

Conclusions: Congenital mesoblastic nephroma is a relatively rare infantile abdominal tumour. The classical histological type is the most common in the neonatal period as in our patient and has the most favourable prognosis. Radical nephrectomy seems to be the only treatment required.

P431

Successful Conservative Treatment Of Partial Obstructive Renal Cadidiasis In Infant With Vesicouretheral Reflux

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Introduction: Renal candidiasis is an increasingly described entity. Currently there is no consensus regarding the management in pediatric population. The objective of this case report is to present the treatment of renal candidiasis with bilateral fungal balls that caused partial obstruction of pyeloureteral segments.

Material and methods: The patient was born at 32 weeks gestation, with a birth weight of 1530 g. She received venous antibiotic therapy due to neonatal sepsis. At the age of 55 days candiduria (C. albicans) was first observed. Fluconazole per os was added for a total duration of 21 days. Hyperechogenic renal pyramids were detected by ultrasound. Calciuria and phosphaturia were within normal range. At the age of 3.5 months results of urinalysis showed reappearance of candiduria. At this stage ultrasound clearly depicted fungal balls in both kidneys, accompanied by dilatation of renal pelvises. The patient was treated with amphotericin B lipid complex (ABLC) during 6 weeks with premedication, without the need for invasive procedures. During treatment she developed urosepsis caused by Klebsiella pneumoniae ESBL. Subsequently conducted voiding cystourethrogram proved bilateral vesicoureteral reflux.

Results: The treatment was completed without serious side effects of amphotericin B application. Clinical improvement was accompanied by normalization of urinalysis and repeatedly confirmed sterilization of urine. Ultrasonographically detected signs of fungal infections withdrew completely. Retrovesical ureteral dilatation is still present, as a consequence of high grade VUR.

Conclusions: In this case conservative management with ABLC was sufficient to achieve complete healing of renal candidiasis with partial obstruction.

P432

Comparison Of The Two Protocols For Management Of The First Febrile Urinary Tract Infection In Children

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Introduction: To compare two protocols for evaluation of the first febrile urinary tract infection (UTI) in children regarding the detection of high-grade vesicoureteral reflux (VUR) and scarring.

Material and methods: All patients aged 2-36 months admitted for the first episode of febrile UTI in 2008. and 2009. were included. The study compared two protocols: the first protocol included ultrasound examination of the urinary tract, voiding cystourethrography and DMSA scintigraphy 6 months after febrile UTI, while the second protocol was according to the Italian Society of Pediatric Nephrology ISPN (Ammenti A et al. Acta Paediatrica 2012).

Results: A total of 125 children (70 females, 56%) with the first febrile UTI were included in the study. The mean age was 8.4±7.4 months. Ultrasound examination of the urinary tract was normal in 106 patients (84.8%). VUR was present in 28 patients (22.4%), while high-grade VUR was found in 8 patients (6.4%). According to the ISPN protocol VUR would be missed in 19.7%, and high-grade VUR just in 2.8%. In addition, 58.8% of children without VUR would avoid VCUG. The DMSA scintigraphy was performed in 86 patients, and it revealed kidney damage in 19 of them (22.1%). ISPN protocol would miss kidney damage in 8.9%, but 76.1% of children without kidney damage would avoid DMSA.

Conclusions: The protocol suggested by Italian Society of Pediatric Nephrology enables satisfactory detection of VUR and kidney damage, allowing reduction of unnecessary imagining tests (VCUG, DMSA scintigraphy).

P433

Urinary Incontinence And Related Problems Of Children In Kosovo

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Introduction: Urinary incontinence is one of the major urinary symptoms in children and adolescents and can lead to major distress for the affected children and their parents. Our purpose was to investigate the prevalence and associated risk factors also to look on child with this problem and other related comorbidities.

Material and methods: Collected data of patients who were followed for more than three months, complete physical and neurological examination, micturition and defecating observations. Other urodynamic studies were done to patients with pathological observations, observation charts, neurological deficits, resistant in therapy.
Results: Monosymptomatic enuresis was found in 28.4% of children with no gender difference, The prevalence of nocturnal enuresis declined with age. Daytime incontinence was found on 28.5% and the dominance was found in the female gender. Overactivity was found 1%. Extraordinary daytime frequency syndrome in 0.5%. Most comorbidities were constipation in 22% of cases. Spina bifida in 2% of cases. Low envoirment conditions was found as a problem especialy resulting with a behavioral problems, and voiding disfunction.
Conclusions: Our findings showed that incontinence problems are a common health problem in children. In an effort to increase awareness of medical practitioners for a special examination and treatment for children with voiding problems couse this health problem is not simple as it looks.Enuresis is a pediatric public health problem and efforts at all levels should be made such as preventive, etiological and curative.

P434

Renal Biopsies In Pediatrics – A Single Center Experience

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Introduction: Renal biopsy is an important tool in the diagnosis and prognostic of multiple nephrological and systemic pathologies. The aim of this work is to review and characterize the pediatric cases undergoing renal biopsy in the past 16 years of a pediatric nephrology department.
Material and methods: Retrospective study of renal biopsies (excluding renal transplant) performed in pediatric age between 1997 and 2012. Comparison of the results obtained in the periods between 1997-2004 and 2005-2012.
Results: Were carried out 177 biopsies during this period, with an average of 11 biopsies per year (minimum 2; maximum 21) and constant distribution in recent years. There was a slight female predominance (54.8%), with a mean age of 11 years at the time of biopsy. The main reasons for performing a renal biopsy were nephrotic syndrome (46.9%), followed by the urinary anomalies (32.2%) and acute nephritic syndrome (12.4%). Comparing the two periods, it turns out that the nephrotic syndrome is the main reason for both groups, having been a reduction in the number of biopsies for urinary anomalies over the past eight years. The three main diagnoses were IgA nephropathy (16,4%), IgM mesangioproliferative glomerulonephritis (14.7%) and minimal lesions disease (11.9%). Inside the nephrotic syndrome there is an increase in the prevalence of minimal lesions disease and a decrease in IgM mesangioproliferative glomerulonephritis in the period 2005-2012. There have been only two cases complicated with macroscopic hematuria.
Conclusions: With a rate of complications practically negligible, the biopsy has been an important and safe diagnostic method in pediatric nephrology. The main indication for their achievement in pediatrician remains the nephrotic syndrome. The primary diagnosis of our sample was IgA nephropathy. In recent years there has been an increased prevalence of the disease of minimum injuries.

P435

A Complicated Case Of Atypical Hemolytic Uremic Syndrom With Frequent Relapses Under Eculizumab.

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Introduction: Atypical hemolytic uremic syndrome (aHUS) is a form of thrombotic microangiopathy (TMA) covering as well those with uncontrolled activation of the alternative complement pathway with consecutive generation of the terminal complement complex. About 5% of HUS cases are attributable to aHUS and show mostly a recurrent course. Mortality is increased particularly in the first year. Current therapeutic options for restoring complement regulation enclose plasma therapy and terminal complement blockade through the anti-C5 monoclonal antibody eculizumab. Eculizumab prevents the activation of the terminal portion of the complement cascade and the formation of the potentially lytic terminal complement complex (TCC).
Material and methods: Retrospective case report. We want to report on a complicated case with aHUS who did not respond satisfactory to eculizumab treatment.
Results: A 3-year-old boy with complement associated relapsing aHUS due to a previously not described heterozygous complement Factor H (CFH) mutation in combination with pathogenic polymorphisms carries the permanent risk of recurrence despite eculizumab treatment. A constantly elevated TCC evidences ongoing complement activation, although the classical and alternative complement pathway are maximally suppressed.
Conclusions: Not every patient suffering from aHUS due to uncontrolled complement activation shows an optimal effect on eculizumab under the recommended dosing regimen, that is avoidance of relapses after restitution of thrombocyte and erythrocyte count as well as renal function. Alternative outcome measures to determine the efficacy of treatment have yet to be defined. A constantly elevated TCC rather shows a non-response - despite maximal suppression of the alternative and classical way.

P436

Effects Of Eculizumab On Long-term Clinical Outcome Of Ahus Patients

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Introduction: Atypical hemolytic uremic syndrome (aHUS) is a disorder that is associated with dysregulation of the alternative complement pathway. Eculizumab is a recombinant, fully humanized monoclonal antibody that targets C5. The aim of this study was to describe the disease characteristics of aHUS patients receiving eculizumab.
Material and methods: Medical records of aHUS patients treated with eculizumab were reviewed retrospectively.
Results: Nine patients (4 girls, 5 boys) were included in the study. All patients except one were aHUS and only one patient had a familial aHUS history. Mean age of aHUS diagnosis was 9.85±5.6 years (range; 5 days-16,5 years). All patients except one had a history of plasma exchange/plasma infusion therapy. Four patients were under hemodialysis and two were under peritoneal dialysis at the time of eculizumab initiation. Six patients had still oligo-anuria after plasmatherapy. Eculizumab was started at a median 6 months after the aHUS diagnosis (range; 1-53 months). Mean duration after eculizumab therapy was 17.2± 5.6 months (range; 11-28 months). In six patients aHUS diagnosis was confirmed by a renal biopsy. Four patients had control biopsy to monitor the disease progression. Molecular analysis revealed homozygous MCP, homozygous CFH and heterozygous C3 mutation in three separate patients. After

eculizumab, complete hematological remission was observed in all patients within one week. Urine output was increased and renal replacement therapy was ceased in all six patients. Also, dosage and number of antihypertensive treatment was decreased in all patients. Patients with renal remission had an estimated GFR between 90-120 ml/min.1.73m2 at the last visit. Three patients without renal remission had eculizumab at median period of 4 months after aHUS diagnosis.
Conclusions: This series illustrates a long-term favorable outcome of aHUS patients with eculizumab with earlier intervention associated with greater benefit.

P437
Urolithiasis In Asian Children :evaluation Of Metabolic Factors
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Introduction: Childhood Urolithiasis is common in some parts of world; mainly Asian counteries. This study was conducted to review urolithiasis in Asian children with a focus on urinary metabolic factors.
Material and methods: A literature search of Pub Med and Google identified pertinent articles from 20 different Asian countries which were subsequently reviewed
Results: A totally of 12.913 children (M/F ratio of 2.37 /1) were enrolled in the studies. Hypercalciuria, hyperuricosuria, hyperoxaluria, hypocitraturia and decreased urinary magnesium excretion were reported in 652 of 4509 (14.45%), 276 of 3137 (8.8%), 1053 of 3973 (26.5%), 1940 of 2846 (68.2%), 32 of 240(13.3%) of subjects, respectively. Cystinuria was noted in 112 of 4106 (2.7%) and mixed metabolic abnormalities were found in 175 of 724 (24.2%) patients. Association of urinary tract infection with stone disease was common in our series [2454 of 6430; (38.16) cases]. Urologic abnormalities were uncommon and recorded in only 447 of 9788 patients (4.5%). The etiology of stone formation was idiopathic in 731 of 2731 (26.8%) patients. Analysis of 3977 stones indicated that 983 (24.9%) were pure Ca stones, whereas 1579 (40%), 411 (10.4%), 38 (0.95%) and 288 (7.35%) were mixed Ca, uric acid or urate, cystine and struvite stones
Conclusions: The study showed that hypocitraturia and hyperoxaluria are the most common metabolic abnormalities. Overall, calcium was the main component of stones with the except that bladder stones were composed of urate or uric acid alone or in combination with calcium. In addition, uric acid stones which are uncommon among American children were frequently reported in Asian children. Keywords: Urolithiasis, Asia, children, urinary metabolic abnormality, urinary tract Infection, chemical stone composition, urological anomalies

P438
Urinary Stones In First Two Months Of Life

Introduction: incidence of pediatric urolithiasis is 1-4%, with 20% of cases aged <2years. We reviewed clinical, imaging and biochemical details of urolithiasis in first 2 months of life.
Material and methods: In an eleven-year period (October 2002 to 2013)77 of 1172(6.8%) Children aged ≤ 60 days with diagnosis of urolithiasis enrolled a retrospective study .They included 75 (97.4%) term and 2 (2.6%) preterm infants; 50(64.9%) male and 27(35.1%) female subjects (M/F=1.85) who aged 4-60 (43.18±16.7) days. Metabolic evaluation including urine analysis, measurement of calcium, uric acid and creatinine in random urine, serum creatinine and electrolytes (Na, K, Ca, P) were checked in majority of patients. Urine culture were obtained in 62 (80.5%), serum uric acid, magnesium, venous blood gesometry, urine Cyanide nitroprosside test and measurement of oxalate in random urine were done in 58(75.3%), 27(35.1%) and 65(84.4%), 47(61%) and 51(66.2%) of patients respectively.
Results: The most common symptoms were irritability (37.6%). Nine teen cases (19.5 %) were asymptomatic and diagnosed during ultrasonography. Family history of stone was negative in 23 (29.9%), and positive in 38 (49.4%) patients. Bilateral and unilateral stones were reported in 41 (53.2%) and 36 (46.8%) cases respectively. The main locations of stones were kidney pelvises or calyces. No cases of ureteral or bladder stones were found. The sizes of stones were 0.5-6 (2.3±1.37) mm. In initial evaluation 8 (10.4%) infants had urinary tract infection, 21 of 62 (33.8) cases had hypercalciuria (ca/cr ≥ 0.8). Hyperuricosuria and hyperoxaluria were not found in any patients. Vesicoureteral reflux was reported in 9 (11.7%) patients underwent voiding cystourethrography for different reasons. No cases needed interventions for stone removal.
Conclusions: urolithiasis was not uncommon in neonates and small infants. Hypercalciuria was the only defined metabolic abnormality. Clinical course in majority of patients was favorable in short time follow up. Key words: Urolithiasis, infants, metabolic abnormalities, hypercalciuria, Vesicoureteral reflux

P439
Impact Of Oxidative Stress On Renal Tubular Function In Beta Thalassemia
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Introduction: The purpose of this study is to describe the functional abnormalities of the kidney in patients with beta thalassemia and provide evidence that increased Oxidative stress might be one of the factors responsible for the damage.
Material and methods: Sixty beta thalassemic children with mean age (9.6±5.1) years and male/ female ratio: 1.06/1, mean Hct (23.9±5.1) with various disease severity were studied. The patients were divided into three groups, 26 patients with severe disease (Hct<25%) on hypertransfusion program and no desferal therapy with mean age (9.8±5.3) years and mean Hct (21.4±1.9),15 patients with moderate anemia Hct>25% with mean age (6.2±2.3) years and mean Hct (31.1±4.8), 19 with severe anemia with mean age (12±5.5) years and mean Hct (21.7±2.3) on a hypertransfusion program and desferoxamine therapy
Results: The results were compared with 22 normal children as controls. Significantly higher levels of proteinuria and low molecular weight proteinuria were found in all patients compared with controls, thalassemic patients had significantly lower morning urine osmolarity, higher malondialdehyde (MDA an indicator of lipid peroxidation). Patients with severe anemia had significantly higher low- molecular proteinuria Than those with moderate anemia.
Conclusions: Our data confirmed the high frequency of renal abnormalities in beta thalassemic patients and indicated some degree of proximal tubular dysfunction that may be secondary to oxidative lipid peroxidation mediated by iron overload.

P440
The Functional Activity Of Mast Cells (mc) And Their Possible Role In The Formation Of Renal Disease In Children
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Introduction: The investigation of the functional activity of MC and determination their possible role in the formation of renal disease.
Material and methods: The portions of the renal tissue (capsule, parenchyma, the hilus of kidney), obtained in 6 fetuses and 10 dead newborns at different gestational ages (22 to 38 weeks of gestation). From women with the kidney disease 8 samples (study group), and 8 samples have been taken from women without renal disease (control group). To identify mast cells staining method modified by H. Leffler, to determine the NADPH-diaphorase activity of cells - histochemical method developed by B. T Hope has been used. Visualization was obtained with the use of video-computer system.

Results: Due to comparing the results in the study and control group a local ischemia, gestational age, stillbirth, and life time of the fetus have been established to be the determining factor in the response of MC. Mast cells in the samples of the control group were found small groups with large granules in the cells. Evaluation of MC populations of the fetuses main group identified the expressed of their activity. The most numerous population of mast cells was encountered in samples of the gate (from 2,33 ± 0,58 to 13,67 ± 1,15 a stillborn fetuses and infants who have lived less than a day, and from 6,0 ± 1,0 to 23,67 ± 4,04 in infants who have lived more than a day). Defined statistical significance of differences in the performance of the MC in the gate and renal parenchyma samples, regardless of life expectancy (P <0,001). The presence active mast cells indicates their functional response to the damaging factor.
Conclusions: Taken into account the functional activity of MC in the relation to regulation of microcirculation and the formation of blood vessels, mast cells can participate in the maturation of the kidneys nephron.

P441
Mutations In Anks6 Cause A Nephronophthisis-like Phenotype With End Stage Renal Disease

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Introduction: Nephronophthisis (NPHP) is one of the most common genetic causes of chronic kidney disease (CKD); however the underlying genetic abnormalities have been established in less than 50% of cases.
Material and methods: We performed genome-wide analysis followed by targeted re-sequencing in a Turkish consanguineous multiplex family.
Results: We identified a canonic splice site mutation in ANKS6 as the cause of an NPHP-like phenotype. Furthermore, we identified four additional ANKS6 variants in a cohort of 56 unrelated patients diagnosed with CKD due to nephronophthisis, chronic glomerulonephritis, interstitial nephritis, or unknown etiology. Immunohistochemistry in human embryonic kidney tissue demonstrated that the expression patterns of ANKS6 change substantially during development. Furthermore, we detected increased levels of both total and active b-catenin in precystic tubuli in Han:SPRD Cy/+rats.
Conclusions: Overall, these data indicate the importance of ANKS6 in human kidney development and suggest a mechanism by which mutations in ANKS6 may contribute to an NPHP-like phenotype in humans

P442
Peg Related Problems In Children With Cystinosis

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Introduction: Cystinosis is a major cause of Fanconi's syndrome in infancy; it results in elevated intracellular cysteine levels causing end organ damage, particularly affecting kidneys. The management involves reduction of urinary fluid loss with Indomethacin, correction of acidosis and salt replacement with tricitrate, bicarbonate and Cysteamine as disease modifying medication. Fluid requirements are large and medications are unpalatable; percutaneous endoscopic gastrostomies (PEGs) are therefore useful. We present data on 3 patients with cystinosis who suffered from leakage around PEG entry-site.
Material and methods: Aims: To determine whether PEGs are appropriate in small children with cystinosis Methods 1. Retrospective analysis of case notes of all patients with cystinosis. 2. Database of one experienced surgeon of all PEGs inserted over the past 5 years (2008-2012)
Results: Of 7 cystinotic patients, 3 were managed with PEGs; all developed leakage from around the PEG site. One had to be removed, the other two were managed conservatively. During the same time period, 48 PEGs were inserted by the same surgeon, with only three PEG related complications in non-cystinotic patients. Number of episodes of leakage in children with cystinosis was significantly higher than expected; $p<0.001$ $\chi 2$.
Conclusions: We suggest that the PEG leakage in this cohort is due to the irritant nature of the drugs required and necessary fluid volumes. This is in keeping with the literature on frequent and regular changes of MIC-KEY gastrostomy buttons in cystinotic patients Recommendation Careful consideration before PEG insertion in young children with cystinosis

P443
Familial Hypomagnesemia With Hypercalciuria And Nephrocalcinosis: New Cases And Novel Cldn16 And Cldn19 Mutations

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Introduction: Familial hypomagnesemia with hypercalciuria and nephrocalcinosis (FHHNC) with/without severe ocular involvement is an autosomal recessive tubular disorder caused by mutations in the CLDN16 and CLDN19 genes, respectively. These genes encode the tight junction proteins claudin-16 and claudin-19, which are important for the paracellular reabsorption of calcium and magnesium in the thick ascending limb of Henle's loop. Claudin-19 is also expressed in the retinal epithelium. FHHNC is characterized by excessive urinary losses of magnesium and calcium, nephrocalcinosis and progressive renal failure. Here, we describe the clinical manifestations and genotype of eleven new patients with this disease.
Material and methods: The medical records of three girls, four boys (aged 2 to 14 years) and four adults (two males and two females, aged 35 to 45 years) diagnosed with FHHNC were examined. The CLDN16 and CLDN19 genes of patients and relatives was analysed by PCR amplification of their coding regions and DNA sequencing. Bioinformatics tools were used to predict the consequences of mutations.
Results: Clinical data showed hipomagnesemia, hypercalciuria and nefrocalcinosis. Eight patients had myopia and nystagmus or macular colobamata. Of the four adult patients, three had undergone kidney transplant and the other had renal function impairment. The genetic analysis revealed homozygous CLDN19 p.G20D and p.G122R mutations in seven patients and one patient, respectively, a novel homozygous CLDN19 mutation, p.G130C, in two brothers, and a new heterozygous CLDN16 mutation, p.A93T, in the other patient. Mutation p.G130C was predicted to cause loss of a donor splice site with consequent aberrant claudin-19 protein production.
Conclusions: We described two novel mutations causing FHHNC. Our results with the four adults patients suggest that this rare disease may be underdiagnosed. This work was supported by RenalTube, a project (grant PI11/00342) co-financed by Fondo de Investigación Sanitaria (Spain) and the European Regional Development Fund "A way to build Europe".

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Renal Lesions In Children With Tuberous Sclerosis

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Introduction: Tuberous sclerosis complex (TSC) is an autosomal, dominantly inherited, systemic malformation syndrome and affects up to 1 in 6000 individuals. About 50% of people with Tuberous Sclerosis develop some abnormality in the kidneys. Renal lesions, including angiomyolipoma, renal cysts (simple and polycystic kidney disease) and renal cell carcinoma, develop in patients with tuberous sclerosis complex The aim of this study was the evaluation of incidence and morbidity and mortality of renal lesions in children with Tuberous sclerosis.

Material and methods: Since 1995 children with tuberous sclerosis complex at our center have undergone renal imaging by ultrasonography, and if necessary computerized tomography to monitor renal lesions. Laboratories data such as serum urea, creatinine , urinalysis and urine culture evaluated for all intermittently. A total of 24 girls and 16 boys 2 to 18 years old were followed for TSC and kidney complications for 16 years.

Results: A total of 40 patients (24 male and 16 female) were entered in this study. Renal lesions were found in 8/40 (22.5%) cases. The frequency of renal lesions were included: angiomyolipoma 5 (12.5%), simple cysts 2 (5%), and renal hamartoma 2 (5%). 77.5 % of patients had no renal lesions during this follow up. Three patients had a history of urinary tract infection and 2 had enuresis. Blood pressure, urea and creatinine were normal in all. The proportion of males and females with renal lesions did not differ significantly.

Conclusions: Our results showed renal lesions in Tuberous sclerosis complex are infrequently symptomatic and rarely fatal. None had end-stage renal disease while being followed in this study. Therefore, we emphasize that, although close follow-up is critical for all patients with renal involvement, the rate of significant renal morbidity in the overall TSC population is low.

P445

Spironolacton Is Not A Safe And Sensitive Drug For Distinction Between Liddle Syndrome And Apperent Mineralocorticoid Excess

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Introduction: Therapeutic response to spironolactone has been reported to be effective in differential diagnosis of Liddle Syndrome and apperent mineralocorticoid excess (AME).

Material and methods: A 4.5-year-old boy presented with hypertensive encephalopathy, poliuria, polidipsia, failure to thrive, low birth weight (1800gr/38 weeks) lethargy and high blood pressure (BP) (185/135 mmHg; family history revealed consanguineous parents and IU death of the first child at the 3rd trimester. Laboratory investigations showed values of plasma sodium 146 mEq/L, potassium 1.6 mEq/L, chloride 97 mEq/L, bicarbonate 31.3 mEq/L, creatinine 0.6 mg/dl; urine sodium 45 mEq/L, potassium 15.2 mEq/L, chloride 52 mEq/L, calcium 9.4 mg/dl, creatinine 13 mg/dl. Supin plasma renin activity was 0.02 ng / ml / h (0.05-2.5) and the aldosterone level was 15 pg / ml (20-180).

Results: Nitroprusside continuous IV infusion was initiated then spironolactone was initiated and the dosage was increased up to 12 mg/kg/day. However BP could not be controlled in spite of the continued nitroprusside infusion. Combined triamterine (8mg/kg) and hydrochlorothiazide (4mg/kg) was prescribed while spironolactone was withdrawn. BP control was achieved on the 8th day. Parents' consanguinity and the lack of family history of hypertension urged to test spironolactone again for the diagnosis of AME. On the 11th day of hospitalization 12 mg/kg/day spironolactone was reinstituted and triamterine and hydrochlorothiazide were withdrawn. His BP rose up to180/110 mmHg and triamterine and hydrochlorothiazide were prescribed again. The urinary steroid metabolomics analysis by gas chromatography-mass spectrometry revealed the pathologic ratio of (tetrahydrocortisol+5α-tetrahydrocortisol) / tetrahydrocortisone (7.39; normal: <2.5) and definitive diagnosis was established as AME. He is now on triamterine and hydrochlorothiazide and spironolactone.

Conclusions: Spironolactone test is not a safe and sensitive method for differential diagnosis of AME and Liddle syndrome in clinical practice.

P446

Early Bone Marrow Failure In A Six-year-old Boy With Cystinosis

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Introduction: Patients with infantile cystinosis usually develop end-stage renal failure in the first decade if untreated. Hematological symptoms, most with late onset, are reported in only 6 case reports with cycstinosis. Here we present a boy with infantile cystinosis as he, unexpectedly, had severe hematological symptoms in his very early years without renal failure.

Material and methods: A six-year-old boy, offspring of a consanguineous marriage, presented with prolonged epistaxis. Predominant symptoms were severe anemia in infancy and thrombocytopenia causing epistaxis since 4 years of age. Splenectomy was performed because of hypersplenism at the age of 5 years but he was still transfusion dependent. He was stunted (height 84 cm and weight 11 kg, both below 3rd percentile), had pallor, massive hepatomegaly (17 cm below right costal margin) and was bleeding. Laboratory test results on admission were: white blood cells 29200/μL, hemoglobin 5.71 g/dL, MCV 88.3 fL, platelets 16.4X103/μL, creatinine 0.8 mg/dL, sodium 134 mEq/L, potassium 2.80 mEq/L, calcium 6.6 mg/dL, phosphorus 1.3 mg/dL, blood pH 7.30, serum bicarbonate 15.8 mmol/ L, 25-OH vitamin D 9.4 ng/mL. Urinalysis revealed (+) glucose and (++) protein. Parathormone and TSH, were 212.5 pg/mL (15-65 pg/mL), 9.6 μIU/L (0.4-4 μIU/mL), respectively.

Results: Trephine bone marrow biopsy revealed 90% cellularity, moderate decrease in erythroid precursors but normal megakaryocytic and granulocytic series, increase in reticuline fibers and also widespread macrophages packed with cystine crystals. Leukocyte cystine level was 36.6 nmol ½ cystein/mg of protein confirming the diagnosis. In the first month of follow-up in our center, he had a sudden unexpected death during night sleep.

Conclusions: Symptomatic bone marrow involvement is very rare in infantile cystinosis patients and could cause delay of the diagnosis because of severe hematologic symptoms in primary care. Widespread cystine crystals and myelofibrosis of the bone marrow are the reasons of pancytopenia.

P447

Whole-exome Sequencing As A Diagnostic Tool For Distal Renal Tubular Acidosis

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Introduction: Distal renal tubular acidosis (dRTA) is characterized by metabolic acidosis due to impaired renal acid excretion. dRTA can be transmitted as either an autosomal dominant or an autosomal recessive trait. Whole-exome sequencing is useful to evaluate the disease pathogenesis and to recognize new pathogenic genes or mutations associated to disorder, specially in Mendelian disorders. In this regard, this study aimed to evaluate the usefulness of whole exome sequencing for genetic diagnosis of dRTA.
Material and methods: We selected two unrelated families in a total of four children with dRTA and their parents, to perform whole-exome sequencing. Hearing was preserved in both children from family one, but not from family two, wherein a twin pair had severe deaf. All patients were submitted to a systematic protocol including clinical and nutritional evaluation, laboratory measurements, renal ultrasonography and genetic analysis. We performed whole exome sequencing in two pooled samples and the findings were confirmed with Sanger Sequencing. method.
Results: Two mutations were identified in the ATP6V0A4 and ATP6V1B1 genes. In family one, we detected a novel mutation in the exon 13 of ATP6V0A4 gene with a single nucleotide change GAC → TAC (c.1232G>T) that caused a substitution of aspartic acid to tirosine in position 411. In family two, a homozygous recurrent mutation with one base-pair insertion (c.1149_1155insC) in exon 12 of ATP6V1B1 gene was detected.
Conclusions: Our results confirm the value of whole-exome sequencing for the study of rare and complex genetic nephropathies, allowing the identification of novel and recurrent mutations. Furthermore, we clearly show the application of this next generation molecular method in the genetic diagnosis of renal tubular acidosis.

P448
Atherosclerosis-related Proteins Identified In Urine Of Non-obese Children With Hypercalciuria And Kidney Stones

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Introduction: We compared the function of differentially abundant urinary proteins in children with hypercalciuria and kidney stones (HKS) and healthy controls (HC). We hypothesized that HKS and HC would display unique protein profiles that could be used for comparative pathway analysis.
Material and methods: Quantitative proteomic comparison of pooled urine from HKS (N=10, 6 females, age 11.64 +/- 4.46 years) versus age and gender matched HC (N=10), using liquid chromatography-mass spectrometry (LC-MS/MS). Relative protein abundance was estimated using spectral counting. Proteins of interest were selected based on patient/control abundance ratios of >5 or <0.2, as a threshold to be well above observed technical variations in MS experiments. A 0.1% FDR cutoff was used for positive peptide identification. Fisher test compared the spectral counts between HKS and HC.
Results: Of the 1484 proteins identified, 128 met the above criteria, with 40 proteins found only in HKS pool, and 24 proteins uniquely identified to the HC pool. Function analysis revealed 6 selected proteins involved in lipid metabolism, 5 in oxidative stress and 19 in cell adhesion. Interestingly, 5 lipid metabolism-related proteins known as promoters of atherosclerosis were up-regulated in HKS (Angiopoietin-related protein 3, Fatty acid-binding protein adipocyte, Fatty acid-binding protein liver, Apolipoprotein C-III, and Apolipoprotein A-IV). Sortilin, protective against atherosclerosis, was found mostly in HC compared to HKS (10 spectral counts vs 2 spectral counts, $p<0.05$). These findings were confirmed using an ELISA approach. Protein-protein interaction modeling of selected proteins identified syndecan-1 as the key node, a protein associated with lipid metabolism and adhesion pathways.
Conclusions: Children with HKS have a different urinary polypeptide profile compared to HC. Adhesion, oxidative stress and alterations in lipid metabolism may play a role in kidney stone formation in children with hypercalciuria. Additionally, these findings may imply a relation between atherosclerosis and kidney stone and requires further investigation.

P449
Is Cyclosporine A Efficient In Charcot-marie Tooth Disease Associated Nephropathy?

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Introduction: Charcot-Marie-Tooth disease (CMT) is an autosomal dominant of recessive neuropathy with distal motor and sensory disorder rarely associated with proteinuric nephropathy with a progressive course and FSGS as most common pathology. Recently a mutation in INF2 gene was demonstrated to cause both CMT and FSGS (Boyer et al., 2011) by disorganization both podocytes and Schwann cells.
Material and methods: Here we report a case of 11-years old girl with unremarkable family history and physical examination who developed proteinuria up to 3,5 g/24h without edema and hypoalbuminemia, with normal GFR, C3, C4 and anti-DNA. She turned to be resistant to standard 6-week presnisolone course and kidney biopsy revealed minimal change nephropathy, negative immune staining and focal fusion of foot processes. Cyclosporine A (CsA) was initiated in daily dosage 3,8 mg/kg resulting in decrease of proteinuria below 0,3 g/24h within 5 months of treatment and preservation of GFR at 135 ml/min/1,73 m2.
Results: However, clinical symptoms of CMT disease were noted few months later including pes equinus together with a specific electromyography changes confirming diagnosis. No mutation in genes PMP22 and MPZ responsible for isolated CMT were found, so that gave a reason to suspect INF2 gene mutation responsible for CMT with nephropathy. So, CsA treatment initiated without knowing the true nature of the disease produced remission of proteinuria. We did not find any previous report demonstrating CsA efficacy in CMT associated nephropathy.
Conclusions: We conclude that antiproteinuric efficacy of CsA in case which turned to be a CMT associated nephropathy needs to be considered as a possible treatment modality resulting in direct action on podocytes. Further studies are necessary to evaluate the effect on a progression of renal disease.

P450
Increase In Burden Of Severe Infections Over Time In Patients With Pediatric Esrd And 30 Years Of Renal Replacement Therapy

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Introduction: Patients with pediatric end-stage renal disease (ESRD) have a 30 times increased mortality risk. Recently, we found a change over time from cardiovascular disease to infection as main cause of death in a long-term follow up study of pediatric ESRD. Here, we aimed to explore the total burden of severe infections during 30 years of Renal Replacement Therapy (RRT) as well as the trend of severe infections over three decades.

Material and methods: The cohort comprised all 234 Dutch patients, born before 1979, with onset of RRT at age <15 years in 1972-1992, alive in 1980. We analyzed data on hospital admissions covering 1980-2010. We calculated the rate of Hospital Admission (HAR) per 100 patient-year (py) and the HAR infection/non-infection Ratios (HARRs) to adjust for changing HAR in general. Poisson regression models were used to examine trends over time.
Results: Overall HAR decreased significantly over time for all patients. HD-related HAR for infections decreased between 1980-1989 and 1990-1999, but not further in 2000-2010. PD-related HAR for infections decreased significantly over the 3 decades. Transplantation related HAR for infections did not change over time. Infection/non-infection HARR increased significantly only in transplanted patients (1980-1989: 0.25 (95% CI 0.2-0.3); 1990-1999: 0.50 (0.4-0.6); 2000-2010 1.0 (0.79-1.27, p<0.0001). Transplantation-related HAR for urinary tract infections increased significantly, starting from 3.3/100 py (3.2-3.4) in the 80's to 4.4/100 py (4.2-4.5) in the 2000's (p < 0.0001).
Conclusions: In conclusion, we found evidence for a significant increase in clinically important infections in transplanted adult patients with pediatric ESRD over the last 10 years, which should be taken into account in the management of these patients.

P451
Glucosuria In Lowe Syndrome : Fanconi Or Not Fanconi ?

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Introduction: Fanconi syndrome (FS) is a dysfunction of renal proximal tubules affecting the reabsorption of numerous substrates, including sugars and polyols. Recently, no overt glucosuria was observed in Lowe syndrome, suggesting that this syndrome is a selective proximal tubulopathy rather than FS. This study aimed to examine the urinary excretion of sugars and polyols in patients with Lowe syndrome with a sensitive chromatographic technique, and to compare it with two forms of FS, nephropathic cystinosis and ifosfamide-related nephrotoxicity (IFS).
Material and methods: In 46 patients with Lowe syndrome (n=8), cystinosis (n=32) and IFS (n=6), urinary sugars and polyols (treitol, erythritol, arabinose, fucose, xylitol, arabitol, ribitol, xylose, fructose, allose, galactose, glucose, mannitol, sorbitol, galactitol, myoinositol, lactose and sucrose) were measured by liquid chromatography-tandem mass spectrometry (LC-MS) and compared with age-corrected references provided by our laboratory.
Results: The urinary concentrations of myo-inositol, glucose, fructose, erythritol, fucose and mannitol exceeded the age-corrected reference values in Lowe syndrome in 75%, 63%, 50%, 13%, 25%, 13%; in cystinosis in 78%, 81%, 22%, 22%, 3% and 31% and in IFS in 67%, 50%, 0%, 17%, 50% and 0% of the patients respectively. For the remaining polyols, 0-11% of patients exceeded the reference value. Glucosuria, expressed in μmol/mmol creat, was lower in Lowe syndrome (median 69, range 17-252) compared to cystinosis (median 1116, range 9-21400, p=0,19) and IFS (median 102, range 22- 1220, p= 0,20) (reference value 4 -28). If a dipstick test, which has a detection limit for glucose above 4 mmol/l, was used , we would have missed glucosuria in all patients with Lowe syndrome.
Conclusions: Our study showed increased urinary excretion of sugars and polyols in patients with Lowe syndrome. Because glucosuria is lower in Lowe syndrome than in other genetic or acquired forms of FS, LC-MS is required for correct measurements in these patients.

P452
Proteinuria In Dent Disease – A Survey Of The Literature

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Introduction: Dent disease (DD) is an X-linked recessive tubulopathy due to mutations in CLCN5 or OCRL. It is characterized by incomplete Fanconi syndrome, hypercalciuria, nephrocalcinosis and slowly progressive renal failure. LMW-proteinuria due to impaired tubular re-absorption is an obligate finding. As a rule, total protein excretion is low in tubular proteinuria as opposed to glomerular disease. However, several authors have published cases with nephrotic proteinuria and FSGS in DD. Therefore we analyzed total protein excretion in DD by systematic literature review.
Material and methods: Pubmed and Embase were searched for cases with documented CLCN5 or OCRL mutations. Data on protein excretion were available on 126 patients from 39 publications (albustix=30], protein-creatinine ratio [P/C=14], timed protein excretion [TPE=89]. Nephrotic range proteinuria (NP) was defined as albustix 3+, P/C>1.8 mg/mg or TPE>40 mg/m2/hour. GFR was estimated by Schwartz or MDRD equation. Data were analyzed non-parametrically and expressed as median [interquartile range]. If more than one parameter was available, the most reliable (TPE>P/C>Stix) was used for classification.
Results: 22 patients were OCRL , 104 CLCN5 positive. Age and GFR were 7 [4-10] vs. 9 [4-13] years and 113 [95-122] vs. 97 [79-131] ml/min/1.73m2 (n.s.). TPE in OCRL was 55.5 [38-81] vs 48.9 [34-78] mg/m2/h in CLCN5 (n.s.). P/C ratio was 2.34 mg/mg [1.12-3.41] vs. 2.10 [1.03-5.05] (n.s.). 15/22 (68%) vs. 52/104 (50%) patients had NP (n.s.). Serum albumin was reported in 17 patients and normal in all. There was an inverse relationship between TPE and GFR (beta -0.498, p=0.019). LMW-proteinuria was present in all patients. There were insufficient data to calculate timed LMW-protein or albumin excretion
Conclusions: More than half of Dent patients have nephrotic range proteinuria irrespective of underlying mutation. No patient met the other criteria of a nephrotic syndrome. In nephrotic range proteinuria without edema or hypoalbuminemia LMW proteins should be measured and Dent disease be excluded.

P453
Evaluation Of Pediatric Urolithiasis In Elbasan In 10 Years

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Introduction: Pediatric urolithiasis is a significant medical problem. We aimed to find the changes happening with incidence, spread and risk factors with urolithiasis in children of Elbasan.
Material and methods: From 2004-2014, 79 children detected with urolithiasis in ultrasonography were included in our study. We divided the years in two periods and compared the data gathered..The first period was from 2004 to 2009; the second period was from 2009 to 2014.
Results: The incidence is 0.045% in the first period and 0.05% for the second period. The average age is: 9.8 years in the first period and 8.8 years in second period. The M/F ratio is 1.17 :1, in the first period and 1.47 :1 for the second period. The predominant age is 11-13 years for the first period and for the second period the peak is at the age 8-11 years. The family relation is identified in 37.8% in first period, and 50% in second period. In the first period we found pelvic stones in 89.1% of cases; ureteral stones in 8.3 %; bladder stones in 2.7 % of cases. In the second period we found

pelvic stones in 95% and ureteral stones in 5%. Hypercalciuria is detected in 45% of cases in the first period and 48% in the second period. Hypomagnesuria is detected in 42% of cases. Calcium /creatinine ratio average is 2.009 in the children with hypercalciuria and Sodium/potassium ratio average is 11. Infrared spectroscopy method showed calcic stones in 60% of cases in the first period and 72% of cases in second period.
Conclusions: The incidence of kidney stone is increasing in children of Elbasan. The age of disease onset has been decreasing. Hypercalciuria is the most important metabolic cause.

P454
Nephroblastomatosis Progressing To Wilms' Tumour In A Child With Beckwith-wiedemann Syndrome

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Introduction: The fetal kidney develops from metanephric blastema surrounding the ureteric bud. Fetal renal tissue matures into normal renal parenchyma prenatally but occasionally it persists into infancy as nephrogenic rests. Nephroblastomatosis refers to the presence of multifocal or diffuse foci of nephrogenic rests within the kidneys which occur in 1% of infants but usually regress early in childhood. They are precursor lesions that have the potential of malignant transformation into Wilms' tumour.
Material and methods: A 5 month old boy presented with right hemihypertrophy, macroglossia and an umbilical hernia. Renal ultrasound showed an enlarged right kidney with right lower pole scarring on DMSA scan. An abdominal CT scan revealed right diffuse and left multifocal nephroblastomatosis. DNA testing showed a mosaic paternal uniparental disomy of chromosome 11 consistent with the diagnosis of Beckwith-Wiedemann syndrome.
Results: He received actinomycin D and vincristine as per the SIOP Wilms' tumour 2001, nephroblastomatosis protocol. The right kidney was noted to enlarge in size on MRI after initially responding to chemotherapy. It was difficult to differentiate between nephroblastomatosis and Wilms' tumour on histology from a core biopsy of the right kidney. He was treated with doxorubicin and later underwent a right wedge nephrectomy. Histology was consistent with a viable Wilms' tumour. Post-operative chemotherapy included cyclophosphamide, etoposide and carboplatin, as per the group C regimen of relapsed Wilms' tumour. Treatment was mainly complicated by febrile neutropenia requiring G-CSF and blood product support.
Conclusions: There was no evidence of disease on the end of treatment MRI scan and subsequent MRI's have shown no recurrence of disease or metastasis. He developed left-sided high-frequency hearing loss in his left ear as a result of treatment. He is followed up regularly with chest X-rays and renal ultrasound and he remains well 8 months post-treatment.

P455
A Case Of Atypical Hemolytic Uremic Syndrome With Homozygous Cfh Gene Polymorphism Previously Linked To Dense Deposit Disease

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Introduction: Atypical hemolytic uremic syndrome (aHUS) and dense deposit disease (DDD) both are renal disorders with uncontrolled activation of alternative complement pathway as a pathophysiology. Previously, a mutation of complement factor H (CFH) was postulated as a most common genetic basis for both diseases.
Material and methods: We've observed a 3 years old girl who developed a STEC-negative HUS with non-oliguric renal failure (creatinin 117 μmol/l), Kumbs-negative anemia (Hb-65 g/l), thrombocytopenia 140 ×109/l and LDH 1300 u/l, normal C3 and C4 and anti-DNA, mild proteinuria and microhematuria. Supportive treatment, blood transfusion and prednisolone 2 mg/kg brought to resolution of clinical signs of thrombotic microangiopathy (TMA) with a creatinin drop to 35 μmol/l. Kidney biopsy demonstrated mild mesangial hypercellularity, thickening of capillary walls, mild tubulointerstitial lesions, recanalyzed thrombi in some arterioles, negative immune staining. By electron microscopy no deposites were found, fibrinoid infiltration of GBM typical for HUS.
Results: A direct sequencing of CFH gene revealed a homozygous polymorphism c.1204C>T which was previously described in patients with membrano-proliferative glomerulonephritis type II (MPGN II) of DDD (Abrera-Abeleda et al., 2006). To our knowledge, no case of aHUS with that type of gene polymorphism was reported. Moreover, homozygous mutations in CFH are mostly attributed to MPGN II whereas in aHUS mutations are heterozygous (Goodship, 2006).Considering that findings the patient started with Eculizumab therapy to prevent possible disease relapse.
Conclusions: We suppose, that the same CFH gene polymorphism c.1204C>T may be associated with two different disease phenotypes – aHUS and DDD.

P456
Urinary Ascites And Perirenal Urinoma In A Newborn With Trisomy 8 Mosaicism

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Introduction: Urinoma is a rare complication of congenital obstruction of the urinary tract, and it occurs most commonly following renal trauma. In rare cases, urinomas are caused by congenital obstruction of the urinary tract. In more than 70% of cases, perirenal urinomas and urinary ascites are associated with the posterior urethral valves. Other reported pathologies are UPJ obstruction, ureteral valves, ureterocele, urethral atresia, bladder neck obstruction with reflux, and sometimes without any evidence of obstructive uropathy.
Material and methods: We present the unusual case of a female newborn baby with unilateral renal agenesis who developed massive abdominal distention due to massive urinoma caused by severe UPJ obstruction. Neonatal perirenal urinoma developed possibly due to trauma during delivery. Percutaneous drainage was performed successfully.
Results: Chromosome analysis was performed because of multiple congenital abnormalities including colpocephaly, prominent forehead, strabismus, low-set ears, high and narrow palate, narrow shoulders, deep palmar and plantar furrows, camptodactyly, zygodactyly, sandle gap of toes, hypoplastic toenails, colpocephaly, agenesis of the corpus callusum and renal agenesis. Chromosome analysis of the peripheral blood confirmed: 46,XX[6]/47,XX+8[35].
Conclusions: Trisomy 8 mosaicism appears rarely with a frequency of 1:25000 to 50000 births reported by this time. This is the first report of a female newborn baby with trisomy 8 mosaicism presenting abdominal distention due to massive urinoma. Urinoma should be considered in the differental diagnosis of neonates presenting with abdominal distention.

P457
Urinary Excretion Of Transforming Growth Factor-β1 (tgf-β1), Monocyte Chemotactic Protein 1 (mcp-1) And Endothelin-1 (et-1) In Children With Autosomal-dominant Polycystic Kidney Disease (adpkd).

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Introduction: ADPKD progresses to renal insufficiency in >50% of patients and is characterized by interstitial inflammation and fibrosis in the end stage. Ongoing renal tissue damage in the course of ADPKD is

associated with local release of an array of biologically active factors, including ET-1, TGF-β1 and MCP-1. In this study was evaluated the relationship of urinary excretion ET-1, TGF-β1, MCP-1 with renal and cardiovascular damage.
Material and methods: 35 children (17M/18F) with ADPKD and normal renal function (CKD 1 st) were examined. The median age was 11.0 (IQR: 5.0;14.0) years. The control group consisted of 12 age-matched healthy children with normal renal function. Total kidney volume (TKV) (cm3) assessed by ultrasound, corrected for standard body surface and estimation by centile tables. Standard two-dimensional echocardiogram was performed. LVM was corrected for body surface area in g/m2,7. Laboratory tests included serum creatinine, urinary MCP-1, ET-1, TGF-β1 levels (were corrected for urinary creatinine excretion). MCP-1, ET-1, TGF-β1 levels was assayed using the ELISA. CRF was calculated using the Schwartz formula. None of the patients was treated with renoprotective drugs.
Results: Urinary excretion rates of each of biomarkers did not differ between ADPKD and controls: 26,3 (15,4;51,7) vs 25,9 (19,6;39,6) pg/mmol Cr (p=0,64) for MCP-1; 1,5 (0;20) vs 0,21 (0;0,35) fmol/mmol Cr (p=0,34) for ET-1; 247,8 (143,5;478,4) vs 292 (251,4;410,9) ng/mmol Cr for TGF-β1. The urinary excretion of MCP-1 and TGF-β1 (uMCP-1, uTGFβ1) was highest in patients with LVMI≥90‰ compared with children with LVMI 90‰: 48,8 (33,6;100,5) vs 21,4 (8,4;41,4) (p=0,01) for MCP-1, 460,3 (270,7;600) vs 229,3 (130,6;288,9) for TGF-β1. Significant positive correlation was found between LVMI and uMCP-1 (R=0,8, p=0,0001), LVMI and uTGF-β1 (R=0,5, p=0,05). uMCP-1 was highest in patients with TKV (cm3/1,73m2)≥97‰ compared with children with TKV 97‰: 48,11 (25,4;60,3) vs 16,45 (6,35;35,6) (p=0,03). Couldnt find relationship between uTGF-β1, uET-1 and the TKV. uET-1 was inversely correlated with GFR (R=-0,46, p=0,03). The correlation between GFR and uTGF-β1, uMCP-1 was no significant. MCP-1 and TGF-β1 excretion were interrelated (R=0,55, p=0,006).
Conclusions: Urinary excretion rates of MCP-1, TGF-β1, ET-1 did not differ between ADPKD and controls, that is probably related to the initial stage of the disease. Was revealed the relationship between urinary excretion of MCP-1, TGF-β1 and LVMI, urinary excretion of MCP-1 and TKV, urinary excretion of ET-1 and GFR, that suggested the involvement of these cytokines in renal and cardiovascular damage in the early stages of ADPKD. A positive correlation between urinary TGF-β1 and MCP-1 excretion indicates an interdependent nature of their generation.

P458
Focal Segmental Glomerulosclerosis In A Child With Marfan Syndrome And Novel Fibrillin Gene Mutation.

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Introduction: Marfan syndrome, the founding member of connective tissue disorder, is an autosomal dominant disease characterized by involvement of three main systems: skeletal, ocular, and cardiovascular caused by deficiency of the microfibrillar protein fibrillin-1. More than 500 mutations of in fibrillin–1 gene (FBN1) on chromosome 15 were found to cause Marfan syndrome. Nephrotic syndrome (NS) was described before in patients with Marfan syndrome in few cases due to memebranoproliferative glomerulonephritis secondary to infective endocarditis and focal segmental glomerulosclerosis (FSGS) was also reported but no mutational analysis was performed to these marfan patients with NS.
Material and methods: We present a family: parents, three daughters and a son with Marfan syndrome. The son was presented by NS secondary to FSGS son. FBN1 mutation analysis was done
Results: A heterozygous novel missense FBN1gene mutation c.6388G>A (p.Glu2130Lys) was detected in exon 52 in son with NS as well as his mother two of his sisters. However their Father and oldest sister were negative.
Conclusions: Nephrotic syndrome with FSGS may occur in patients with Marfan syndrome with c.6388G>A FBN1gene mutation. More reports are required to confirm this phenotype-genotype correlation.

P459
Eculizumab Therapy In A Patient With Mpgn And Hemolytic Anemia Associated With Factor H Mutation

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Introduction: MPGN comprises a collection of morphologically related but pathogenetically distinct disorders. The disease was initially classified into three types based on electron microscopic findings. MPGN type II is characterized by complement-containing dense deposits within the lamina densa and is accepted as a C3 glomerulopathy, a new, recently described entity. In recent years, eculizumab, anti-C5 monoclonal antibody, becomes a new approach in the treatment of MPGN resistant to other immunosuppressive therapies.
Material and methods: Here we report a 15-year old boy with factor H mutation presented with MPGN and hemolytic anemia treated with eculizumab.
Results: CASE: One year old boy presented with nephrotic proteinuria, hemolytic anemia, low C3 and factor H levels. Renal biopsy revealed MPGN with granular staining for C3. He was treated with corticosteroids, cyclophosphamide, cyclosporine A and ACEIs for proteinuria and had erythrocyte transfusions regularly for severe hemolytic anemia for almost 14 years. But at the age of 15, massive proteinuria which did not respond to any treatment was still persistent (40mg/m2/hour), so a second biopsy was performed which revealed similar findings as in the first one. Genetic screening showed homozygous V62I and H402Y mutations in exon 2 and exon 9, and heterozygous E936D mutation in exon18 in the complement factor H gene. With this new data, he was treated with eculizumab and the patient who was refractory to other immunosuppressive therapies had a good response to therapy. Proteinuria decreased to 23mg/m2/hour and he didnt need erythrocyte transfusion for 6 months. When eculizumab therapy skipped for only one dose, proteinuria increased to 127mg/m2/hour and hemoglobin decreased to 7.4gr/dl at 7th month. At his last visit, 9th month of the therapy, proteinuria was 55mg/m2/hour and hemoglobin was 8.7gr/dl with eculizumab.
Conclusions: Eculizumab appears to be an effective and well tolerated treatment of MPGN associated with Factor H mutation and hemolytic anemia resistant to other immunosuppresive regimens

P460
Mutations Of Nphp1 Are Responsible For 60% Of The Nephronophthisis Cases In Hungarian Children

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Introduction: Juvenile nephronophthisis (NPH), an autosomal recessive chronic tubulointerstitial nephropathy, is responsible for 6-10% of ESRD in childhood. Genetically it is highly heterogeneous, with more than 10 genes identified thus far. Out of them, NPHP1 is the most commonly mutated. Our aim was to introduce the mutational screening of NPHP1 in Hungary.
Material and methods: Within the cohort of 116 Hungarian children and young adults with cystic kidney disease or chronic renal failure without hematuria, proteinuria or urinary tract malformation, 25 patients from 21

families have been diagnosed with NPH, based on clinical symptoms, recessive inheritance and renal morphology. Six cases were syndromic with either associated neurologic symptoms (Joubert syndorme – JS), retinopathy (Senior-Loken syndrome – SLS) or hearing impairment. No family was consanguineous. NPHP1 homozygous deletion was screened first by the amplification of exons 7, 19, introns 2, 18 and a control region. Second, a heterozygous deletion was screened by MLPA. Once a heterozygous deletion identified, the 20 coding exons and the intronic junctions were directly sequenced.
Results: Thirteen of 21 families carried NPHP1 mutations (62%). Nine of them harboured a homozygous deletion of the whole NPHP1 gene. Four patients carried a heterozygous deletion associated with either a point mutation (c.489delT, p.Phe163Leufs*19), a short deletion (c.84_87delTTCT, p. Ser29Argfs*4) or a deletion of exons 18-20. Two of these associated mutations were novel. The clinical phenotype was particular in three cases. The retinopathy of a patient with SLS is extremely severe: his visual acuity at the age of 29 years is lost one side and 0,25 on the other. One patient with JS was treated with autism, which is not exceptional in JS, but has not been reported in patients carrying NPHP1 mutations. Finally, one child is treated with sensorineural hearing impairment which is rarely associated to NPH.
Conclusions: The mutation rate of NPHP1 is high in Hungarian children with nephronophthisis. Its screening thus greatly helps the differential diagnosis of cystic kidney diseases. The associated extra-renal symptoms can be more extreme than previously found.

P461
Dent's Disease: Clinical Presentation And Follow Up Of Four Patients

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Introduction: Dent's disease is an X-linked proximal tubulopathy characterized by hypercalciuria (HC), low-molecular-weight proteinuria (LMWP) and progressive renal failure. The aim of this study was to review the clinical presentation and long-term evolution of patients with this disease.
Material and methods: We reviewed retrospectively the clinical presentation and evolution of four patients with genetic diagnosis of Dent's disease.
Results: Patient 1: An 11- year- old boy with Fanconi syndrome (FS), HC, LMWP, and severe clinical signs of rickets. Genetic study revealed CLCN5 gene mutation (p.Y502X). At age 14 he began with impairment of renal function. At last visit at age 19 he is on stage 3 chronic kidney disease (CKD). Patient 2: A 2- year- old boy, with asymptomatic FS found at screening performed by having a brother with Dent's disease (Patient 1). The patient also had HC and LMWP. The genetic study revealed the same mutation in CLCN5 gene (p.Y502X). At last visit at age 11, he remains with normal renal function. Patient 3: An 11-month-old boy with FS, mild proteinuria, and normal renal function. The patient was diagnosed with idiopathic FS. At age 11 he began with impairment of renal function. At age 23 he developed nephrolithiasis and LMWP was evidenced. The genetic study revealed mutation p.416fsX17 in CLCN5 gene. At last visit at age 29, he is on stage 3 CKD. Patient 4 was a 5-month-old boy with asymptomatic LMWP and microhematuria. The genetic study revealed mutation p.G466D in CLCN5 gene. At last visit at age 10, he remains with normal renal function.
Conclusions: Dent's disease should be considered in the differential diagnosis of males with asymptomatic proteinuria and/or idiopathic FS. A high proportion of patients present deterioration of renal function in adolescence and CKD progression in adulthood.

P462
Hypophosphatemia And Osteomalacia: Iatrogenic Fanconi Syndrome In Childhood

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Introduction: Renal Fanconi syndrome (FS) is a generalized dysfunction of proximal tubular epithelial cells leading to the urinary leak of essential metabolites like phosphate, calcium, sodium bicarbonate, potassium, sodium, magnesium, uric acid, glucose, aminoacids and low molecular weight proteins. The congenital causes of FS include rare diseases like primary Fanconi syndrome, cystinosis (the most common), galactosemia, hereditary fructose intolerance, tyrosinemia, Wilson disease and mitochondrial disorders. The acquired causes of FS include amyloidosis, multiple myeloma, renal transplantation, antiretroviral drugs, ifosfamide, cadmium and lead, and other drug-induced-forms. We report two interesting cases of children with a FS caused respectively by Isofosfamide and Sodium Valproate use.
Material and methods: Case Reports: The first case is of a little girl, 2 years old, followed by the Oncohaematology Unit of our Clinic, because of a vaginal embryonic rhabdomyosarcoma diagnosed at 1 year of age. She had no previous history of renal disease. She received three cycles of chemotherapy with Ifosfosfamide, Vincristine, Actomicine D. The tumor responded to treatment and the patient proceeded to radiotherapy. After 6 months from the chemotherapy, she developed a complete renal FS with severe osteomalacia and rachitism. The second case is that of a boy, 6 years old, with a severe epileptic encephalopathy of unknown etiology. He was treated with Topiramate, Phenobarbital, Clonazepam and Valproate. At the age of 4°yrs he developed a severe FS with severe hypophosphatemia and bone fragility with two subsequent fractures.
Results: We analyzed and compared the tubular function paramethers of our patients. In both the more difficult goal was the correction of serum phosphate level
Conclusions: Conclusion: The most common causes of FS in children are inborn error of metabolism (as cystinosis), while the acquired forms, due to exogenous toxin are more frequent in adults; nevertheless pediatricians must be vigilant because there are chemioterapic agents and antiepileptic drugs of common use, which can cause severe SF also in children.

P463
Clinical Presentation And Metabolic Features Of Urolithiasis In Children

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Introduction: The frequency of urolithiasis in children is high in Turkey. The wide geographic variation in the incidence, composition and clinical characteristics of urolithiasis is related to dietary, climatic and socioeconomic factors. Urinary stones were etiological factor in 8% of Turkish children with chronic kidney disease. The aim of this study was to investigate the clinical, radiological and metabolic features in children suffering from urolithiasis.
Material and methods: We evaluated 74 children (32 girls) with urolithiasis or microlithiasis (if the image of a calculus was measured as <3mm on the renal ultrasound scan) who had been referred our pediatric nephrology division between July 2013 and March 2014. The records of the patients were retrospectively reviewed for age, sex, presenting symptoms, family history, physical, laboratory and radiological findings. Urine samples were analyzed for calcium, citrate, oxalate, uric acid and cystine.
Results: The mean age was 5.72±5.24 year (range: 0.22-18.18) The most common presenting symptoms were restlessness or pain (62.2%) and

hematuria (25.7%) followed by, whereas 10.8% of the patients were detected incidentally during the assessment for other medical conditions. Four patient were presented with acute kidney injury. All of the patients had normal blood pressure. Urine analyses revealed metabolic abnormalities in 32 (43.2%) of the patients. The most common metabolic risk factors were hypocitraturia (21.6%) and hyperuricosuria (9.5%). Hypercalciuria and hyperoxaoluria was found in 8.1% and 4.1% of patients, respectively. Hydronephrosis (8.1%) was the most common radiological finding. Urinary tract infection was present in 24.3% of the patients. Calculi were located in the kidneys (95.9%), ureters (2.7%) and bladder (1.4%). A family history of calculi was found in 47.3% of the patients and 17.6% were born to consanguineous marriages.
Conclusions: Urinary metabolic abnormalities are very common in children with urolithiasis. Eligible assessment of urinary metabolic features can lead us to correct diagnosis and treatment.

P464
Renal Silica Calculi In A Child Without Magnesium Trisilicate Intake

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Introduction: Silicate urinary calculi are rare in humans. Most of adult cases are related to excess ingestion of silicate, characteristically by taking magnesium trisilicate as an antacid. Urinary silica calculi in children are extremely rare and have also been associated with excess intake of magnesium trisilicate. Hereby, we report an unusual case of renal silica calculi without magnesium trisilicate intake.
Material and methods: Case: A 2-year-old boy was referred to our hospital with a 2-months history of abdominal discomfort and hematuria. His mother reported that she had found a gray stone in his diaper. Family history was unremarkable, but a renal calculi in his father. Physical examination revealed normal findings. He was well nourished and grown. Peripheral blood count was normal except anemia (hemoglobin level: 9.8 g/dL). Blood chemistry was unremarkable. Urinalysis revealed a pH of 6.5; neither leukocytes nor erythrocytes were detected in the sediment examination. No metabolic abnormalities were noted in the urine. Plain urinary system radiography and ultrasound assessment were normal.
Results: Infrared spectrophotometry of the stone fragment revealed silicate as the major component. His blood silicate level was high [583 ug/L (N<230 ug/L)] although his mother denied usage of any antacid or powder including magnesium in his baby, and also never used milk formula. In the analysis of tap and spring water, silicate levels were normal. At the most recent visit 8 months later after his first admission) he had macroscopic hematuria and, a small stone (4mm) was found in the right kidney without any dilatation.
Conclusions: Siliceous deposits in the urinary stones may be more common than anticipated and, as observed in our case, it is not necessarily related to treatment with silicate-containing nutrient or drug. The underlying pathophysiology of increased silicate absorption remains to be elucidated.

P465
Nephropathic Cystinosis- A Single Pediatric Center Experience

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Introduction: Nephropathic cystinosis (NC) is a rare autosomal recessive disease caused by impaired lysosomal transport of cystine and its intracellular storage. It is characterized by progressive multisystem involvement and during childhood usually presents with renal tubular Fanconi syndrome, growth retardation, photophobia and end stage renal failure (ESRF). Although the true incidence of NC in Poland is unknown the disorder seems to be significantly less frequent than in Western Europe. Based on current data of Polish Registry of Hereditary Tubulopathies (POLTube) only 13 diagnosed patients live in Poland.
Material and methods: Based on medical records we present own experiences with patients treated due to NC at our institution in the last years.
Results: The study comprised 4 patients (1 boy, 3 girls) from 3 families. The median age of diagnosis was 1.8 (0.5-7.8) years. All patients were treated with cysteamine, however only in 2 sisters the drug was started <2 year of age and the monitoring of leucocyte cysteine concentration was possible which showed a significant decrease in intracellular cysteine < 0.5 μmol/g protein. Both girls are currently at age of 3 and 5.4 years, show satisfying psychomotor and physical development with a linear growth at 3rd and 10th percentile, respectively and have normal renal function. In contrast, a male patient with delayed diagnosis of NC at the age of 7.8 years developed ESRF one year later and then received a renal graft. The remaining female patient with poor medication compliance was dialyzed since 10.8 years of age and died 2 years later as a result of choking. Both ESRF patients showed a growth significantly <3rd percentile, severe rickets and ocular problems. In addition, a girl suffered from hypothyreosis.
Conclusions: The early start of specific and symptomatic treatment of cystinosis, sufficient patient's/parents' compliance and meticulous follow-up are crucial for the outcome.

P466
Recommendations For The Follow Up And Transition Of Adolescents And Adults With Cystinosis In Spain

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Introduction: Outcome of cystinosis is related to compliance with cysteamine (Cystagon®) treatment. CKD progression, extra-renal involvement and shorter survival are more pronounced in those less treated. A recent survey in Spain demonstrated lack of adherence and inadequate follow up of the disease in more than 1/3 patients with cystinosis older than 11y old. Objective: to describe an expert-opinion based consensus to guide the care of young adults and adults with cystinosis.
Material and methods: Multidisciplinary professional team of experts in the disease from 5 hospitals in Barcelona elaborated a consensus document defining optimal and minimal follow up of cystinosis in clinical practice.
Results: The consensus document included tools for diagnosis, treatment and care in the following areas: nephrology, dialysis, transplantation, ophthalmology, endocrinology, neurology, laboratory (intraleukocyte cystine monitoring), genetic counselling, nursing, pharmacy, adherence and transition. Practical and detailed recommendations are provided for a better patient follow up.
Conclusions: Defining optimal and minimal care protocols in cystinosis, is expected to reduce the impact of the disease, improve patients survival and provide a reference tool for professionals throughout the country. Patients´ support and education will likely reduce the lack of cysteamine compliance and extra-renal disease follow up observed during the transition process in adolescents or in the affected adults.

P467

Mutation Analysis Of Primary Hyperoxaluria Type 1

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Introduction: Primary hyperoxaluria type 1 (PH1) is a rare, autosomal recessive disease caused by defect in AGXT gene encoding hepatic peroxisomal alanine glyoxylate aminotransferase (AGT), which is responsible for the conversion of glyoxylate to glycin. Defective protein synthesis causes oxalate accumulation throughout the body. The deposition of oxalate in the kidney parenchyma results in renal failure, which in turn leads to systemic oxalosis.
Material and methods: AGXT gene sequence analysis was performed in 80 patients clinically suspected to have PH1 (hyperoxaluria and nephrolithiasis/nephrocalcinosis with or without renal impairment).
Results: In 13 patients from 11 families disease causing mutations have been found, three of which were new mutations (c.458T>A (p.L153X), c.733_734delAA (p.Lys245Valfs*11), c.52 C>T (p.L18F)). All patients had either nephrolithiasis (5) or nephrocalcinosis (2) or both (6) in ultrasound examination. Eleven patients were undergoing dialysis (ESKD), two patients had stage 1 CKD. Cardiac (2), vascular (2), neurologic (2) and joint abnormalities (2) were seen in a few patients. There were 3-year lag time between initial symptoms and the time of PH1 is suspected and 5.5-year lag time between initial symptoms and definitive diagnosis. There was no phenotype-genotype correlation for predicting progressive clinical course. Consanguineous marriage was detected in 78% of the patients. Family members had CKD in 50% of the patients and kidney stone in 71%. After genetic diagnosis, one patient received combined liver-kidney transplantation.
Conclusions: Patients with nephrocalcinosis and/or recurrent nephrolithiasis should be evaluated for PH. PH subtype specification is critical in hyperoxaluric patients. PH1 should be distinguished from other subtypes due to its progressive course and its specific management strategies. Since PH1 requires liver or combined liver-kidney transplantation in the case of ESKD, its exact diagnosis is critical. AGXT gene sequence analysis which gives highly heterogeneous results should be performed as a noninvasive diagnostic tool before planning future therapeutic interventions.

P468

Mild Persistent Hyperkalemia: An Important Diagnostic Clue In Short Stature

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Introduction: The case is of a 10-year-old female who presented as a diagnostic dilemma to multiple paediatric physicians with key features short stature & hyperkalemia. She initially presented with Perthes disease of both hips was then noted to have a height on the 3rd centile, with mid-parental height expectation of a 10th centile. She was found to be normotensive (50th centile), and without dysmorphic features.
Material and methods: Investigations revealed a persistent hyperkalemia (average = 6.2 (3.5-5.5mmol/L)), in the presence of low/normal aldosterone level (55U/L), and low renin ≤0.2 (1.0-4.0). Plasma creatinine was normal (36 mmol/L)) as was urinary potassium excretion (91 mmol/L). A venous gas demonstrated a mild metabolic acidosis (pH 7.32, BE = -4).
Results: A diagnostic trial of hydrochlorothiazide was successful in resolving her hyperkalemia. The clinical & biochemical picture is consistent with that of Type II pseudohypoaldosteronism (PHAII), specifically Spitzer-Weinstein syndrome.
Conclusions: A rare disorder, inherited in an autosomal dominant manner involving the WNK1 and WNK4 genes. WNK kinases are named so due to a lack of lysine in the ATP binding cassette of the catalytic region. The proposed mechanism of disease is that PHAII patients have increased distal chloride reabsorption, thereby decreasing the electrochemical gradient for potassium secretion. In vitro studies demonstrate WKN4 mutations leading to decreased expression of ROMK, and lead to increase chloride permeability. Treatment with hydrochlorothiazide not only improves biochemical parameters, it has also reportedly improved growth & pubertal development, highlighting the need for early diagnosis. This case highlights the challenge of patients who pose a diagnostic dilemma, and the need for overall review of a patient, especially when individual specialists are treating individual symptoms.

P469

Tubulopathies: 15 Years Of A Transition Nephrology Paediatric-adults Consultation

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Introduction: Renal tubulopathies are chronic diseases whose diagnosis should be made ideally in childhood; however, the follow-up into adulthood is also essential. The main objective of this study is the characterisation of adults with diagnosis of tubulopathies.
Material and methods: Descriptive analysis of patients with tubulopathies diagnosed during childhood and followed in a Transition Nephrology Paediatric-Adults Consultation in Hospital de Santa Maria during a 15-year period. Data collected was registry-based and statistical analysis was performed using SPSS.
Results: Eighteen patients were referred (10 males, 8 females) with tubulopathies, corresponding to 12% of the prevalent conditions. The mean age at diagnosis was 5 ± 4 years, the mean age at transition date was 22 ± 5 years and the current mean age of patients is 32 ± 7 years. Patients are followed for an average of 25 ± 9 years (6-38 years). Hypophosphataemic rickets was the most prevalent tubulopathy, accounting for 28% (n=5) of cases, followed by congenital tubulopathies in 22% of cases (n=4), renal tubular acidosis (n=3), idiopathic hypercalciuria (n=3) and primary hyperoxaluria (n=2). In five patients (n=28%) were registered bone deformities. At the transfer date only one patient had a glomerular filtration rate less than 60 ml/min/1.73m2, which is currently in haemodialysis. There were 4 cases of dropout (24%). Only 3 (23%) of the remaining patients had evidence of progression of chronic kidney disease during follow-up after transfer to the Adult Consultation.
Conclusions: Renal tubulopathies are rare disorders in which replacement therapy prevent extra-renal manifestations, which is your main complication. Nevertheless, at transfer date many patients already have physical consequences of the underlying disease, which can only be minimized with an early diagnosis, a difficult role to be performed by Paediatricians.

P470

Ruvbl1 Forms Part Of Disease-associated Protein Complexes At The Ciliary Base And Is Essential For Tubular Architecture In Vivo

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Introduction: Genetic cystic kidney diseases, including polcystic kidney disease and nephronophthisis (NPH), are among the most common causes of end stage renal disease both in children and in adult patients. While there has been substantial progress e.g. in the identification of underlying genetic causes of NPH, the overall cell biological events resulting in cyst formation remain incompletely understood. There is nowadays wide agreement that dysfunction of primary cilia results in cystic kidney disease. Disruption of protein complexes crucially involved in ciliogenesis or ciliary function results in a cystic renal phenotype.
Material and methods: We used a combined biochemical, cell biological and in vivo approach to identify and characterize novel cilia-associated proteins.
Results: In an immunoprecipitation-based proteomics screen we identified the evolutionarily highly conserved RUVBL1 as a novel member of the NPH protein complex. RUVBL1 is an AAA ATPase involved in diverse cellular functions that are related to RUVBL1's role as a chaperone or adaptor protein e.g. in the assembly of large protein complexes. We observed a localization of RUVBL1 at the ciliary base in cellular mordels and detected RUVBL1 as part of human ciliopathy protein complexes. To study Ruvbl1 function in vivo we generated a conditional knockout mouse. Strikingly, deletion of Ruvbl1 in the renal distal tubule and collecting duct in mice results in a PKD-like phenotype displaying dilated tubules, hyperproliferation and impaired ciliation.
Conclusions: In addition to other well-known functions we identify RUVBL1 as a novel ciliopathy-associated protein both in vitro and in vivo.

P471
Bone Impairment In Nephropathic Cystinosis: A Report On Two Clinical Cases

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Introduction: Hypophosphatemic rickets and short stature can be observed in nephropathic cystinosis. Bone impairment, although rare, has been linked to copper deficiency and cysteamine overdose.
Material and methods: Two patients with genetically-confirmed cystinosis displayed severe bone deformation and underwent a bone biopsy (BB) after tetracycline double-labeling.
Results: Patient 1 was diagnosed at 5 years of age; she developed progressive genu valgum requiring surgical correction (and BB) at 13 years of age (eGFR 13 mL/min/1.73m2) while she was receiving growth hormone, alfacalcidol and calcium carbonate. Thyroid hormone, copper, phosphate, bicarbonate and calcium concentrations were normal; PTH level was 141 ng/L. Under cysteamine bitartrate, leukocyte cystin level was within the target range. The BB showed normal mineralization with active areas for both bone resorption and formation. Patient 2 was diagnosed at 2 years of age; in addition to an autistic phenotype of unknown etiology, he developed severe bone deformation with a complete impairment of walking ability from age 12. He received 5 pamidronate infusions because of decreased bone density (last infusion 2 years before BB). He also developed cutaneous side effects of cysteamine bitartrate, improving as daily dose decreased; despite standard doses adjusted on body surface area, hemicystin levels were in the lower range, reflecting likely cysteamine overdose. Copper deficiency was also found but oral copper supplementation did not improve bone deformations. A surgical correction (and BB) were performed at 14 years of age (eGFR 72 mL/min/1.73m2) as he was given alfacalcidol, calcium carbonate and phosphate supplementation. Thyroid hormone, phosphate, bicarbonate and calcium concentrations were normal; PTH was 22 ng/L. BB showed active areas of mineralization and bone formation, with extended and unusual areas of bone resorption.
Conclusions: Copper deficiency and high-dose cysteamine regimens may worsen the clinical picture, but the exact pathophysiology of bone impairment in cystinosis remains to be defined.

P472
Fractional Excretion Of Magnesium And Renal Function In Cystic Fibrosis

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Introduction: Cystic Fibrosis (CF) is a multisystem disorder and the most common cause of chronic suppurative lung disease in Caucasian children. It is caused by a defect in the cystic fibrosis transmembrane conductance regulator (CFTR) gene.. Patients with CF are at risk of magnesium deficiency due to: gastrointestinal losses (malabsorption and steatorrhea), renal losses, and drugs causing magnesium wasting (aminoglycosides and proton pump inhibitor therapy). The prevalence is suggested to be 3% and it is less frequently reported in children than in adults. We sought to examine FeMg in subjects with CF during treatment with aminoglycosides.
Material and methods: Patients aged ≤ 6 years were recruited when commencing IV aminoglycosides and have urinary and serum sampling of creatinine and magnesium on days 1, 4, 5, 7 and 10-14. Estimated glomerular filtration rate (eGFR) was calculated using the Zapitelli, Bouvet and Schwartz CKiD formulae.
Results: 6 patients, aged 0.53-6.87 years, 3 males, 3 gentamicin and 3 tobramycin, have been recruited to date. A total of 44 patients will be recruited. Mean eGFR (±SD) was 102.7(±11.3)ml/min/1.73m2 by the Zapitelli formula, 59(±21.9)ml/min/m2 by the Bouvet and 107(±16.3)ml/min/1.73m2 by Schwartz. FEMg was considered elevated if >1.4%. Mean (±SD) FEMg on day 1 was 3.95(±2.78)%, rising to 9.3(±2.35)% on day 5 and dropping back to 3.64(±1.66)% by day 10-14.
Conclusions: Aminoglycosides are widely used in CF and are introduced at a younger age, as more children are diagnosed following newborn screening. There are concerns that aminoglycosides contribute to renal disease in patients with CF. The effect of aminoglycosides on FEMg has not previously been studied. The proposed action of Mg in CF is incompletely understood. These results suggest that the metabolism and excretion of Mg in CF warrants further study, and that aminoglycosides considerable alters Mg excretion.

P473
Study Of The Relationship Between Clinical Phenotype And Genetic Mutation In Col4a5 Gene Of Two Pedigrees With Alport Syndrome

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Introduction: To investigate the clinical phenotype in XLAS families, also detect the genetic mutation of COL4A5 gene.
Material and methods: 1.We screened patients in our hospital, then analyzed the clinical features of AS cases. 2.We investigated two pedigrees with XLAS and mapped the family pattern (Family A and Family B), and collected the clinical features and specimen. 3.We carried out IF staining of α5(IV)chain of EBM, also extracted leukocyte genomic DNA. 4. Each exon of COL4A5 gene was amplified and analyzed by SSCP, and pleomorphic exon was sequenced directly.
Results: 1. The proband, also his little sister and mother of Family A showed hematuresis and proteinuria; his older sister and father showed no abnormalities; The proband of Family B showed proteinuria while her sister showed hematuresis; their father showed no abnormalities; none of two Families showed any abnormalities in audition and vision. 2. IF revealed a negative staining along EBM with anti-α5(IV) antibody in the proband of Family A, while his little sister and mother revealed segmental staining, his order sister and father revealed continuous linear

staining; IF revealed continuous linear staining along EBM with antI-α5(IV) antibody in Family B. 3. PCR-SSCP showed polymorphisms in the proband of family A at exon 41, it displayed in deletion cccaggccctcctggttctccgggtcc (104-104), while no variant was found in other members of Family A and in Family B.
Conclusions: AS has diversiform causative genetic mutation, we consider the introns mutation also has pathogenic significance.

P474
Familiar Membranous Nephropathy With Fanconi Syndrome. A Familiy Report.

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Introduction: Membranous Nephropathy (MN) is infrequent in children. Association with proximal tubulopathy is rare, and constitutes a probably X-linked specific form, usually mediated by anti-tubular basement antibodies (ATB-Ab).
Material and methods: Case report of three siblings affected with different clinical course.
Results: Patient 1: 5 year-old male who presents with growth retardation, refusal to walk and history of polyuria-polydipsia. First evaluation showed Fanconi syndrome with rickets. Secondary causes of Fanconi syndrome were discarded. Because of the finding of elevated serum creatinine and nephrothic-range proteinuria a kidney biopsy was performed. Histological diagnosis of stage-2 MN and severe tubulointerstitial nephritis was made. Immunofluorescence showed linear deposits of IgG along the tubular basement membranes, and serum ATB-Ab were positive. He developed end-stage kidney disease in few months, receiving a living-donor (mother) renal transplantation at age 7 years. He has normal renal function, no signs of tubulopathy and negative ATB-Ab 14 months after transplantation. Patient 2: younger brother, asymptomatic until casual diagnosis of proteinuria at 3 year-old. At that moment he presented elevated serum creatinine, acidosis, glucosuria and high-grade proteinuria. A kidney biopsy revealed stage-2 NM with severe chronic tubulo-interstitial nephritis and granular IgG deposits on tubular basement membranes. Serum ATB-Ab were also positive. Despite receiving prednisolone for 4 months he gradually developed full complex proximal tubulopathy and nowadays has stage 4 chronic kidney disease. Patient 3: 7 year-old male, older brother. At 8 month-old, he developed nephrotic syndrome without any sign of tubulopathy and histological diagnosis of membranoprolipherative glomerulonephritis. He received prednisolone with positive evolution. Treatment was discontinued at 3 year-old and he remained asymptomatic with normal renal function. Histological samples were reviewed and were considered compatible with incipient NM.
Conclusions: Familiar NM with proximal tubulopathy and ATB-Ab may have different clinical presentations, though prognosis is generally poor. Evolution may be influenced by early steroid therapy in patient 3.

P475
Paediatric Nephrolithiasis And Nephrocalcinosis: In A Reference Centre

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Introduction: Nephrolithiasis and nephrocalcinosis are diagnosed with increasing frequency in children. The aim of this study was to characterize predisposing factors like metabolic disorders, infections, drugs and urinary tract abnormalities and other conditions and correlate them with patient's age and sex.
Material and methods: Retrospective study in children, with nephrolithiasis and/or nephrocalcinosis, currently followed in our centre. Data collected included demographic, clinical history, treatment and laboratory results. Data were analysed with SPSS.
Results: Data of 60 children were collected, 47 with nephrolithiasis, 8 with nephrocalcinosis and 5 with both. 35 were female. Median age at diagnosis was 10 years (11 for nephrolithiasis, 3 for nephrocalcinosis and 1 for both). 76,4% were diagnosed in the last five years. Family history was positive in 53% of the children. In 46,7% children diagnosis was made following a renal colic and in 13,3 % macroscopic hematuria. 24,4% were asymptomatic. 1 risk factor was identified in 83,3%: metabolic factors (65%), urinary tract abnormalities (18,3%), ITU and other conditions in 16,7% and drugs (11,7%). Idiopathic hipercalyuria (28,3%) was the main metabolic factor, other included cystinuria and hypocitraturia. All children with nephrocalcinosis had a metabolic risk factor. Positive correlation between children older than 10 years and nephrolithiasis, and less than 10 years and nephrocalcinosis or both. No statically difference between sex or age group and risk factors. Recurrence occurred in 28,3% of children. Treatment was related to the underlying cause, and was started in 26,6% of children.
Conclusions: Nephrolithiasis and nephrocalcinosis were associated with predisposing factors in the majority of patients. Structural anomalies of urinary tract detectect in older male were the second risk factor for nephrolithiasis. Epidemiologic ad metabolic characteristics of these children allow us a better understanding of the causes and, ultimately, provide better strategies for stone prevention.

P476
Case Report: The Use Of Cinacalcet In Familial Hypercalcaemic Hypocalciuria With Renal Insufficiency

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Introduction: We describe the use of Cinacalcet in the management of an infant with Familial Hypercalcaemic Hypocalciuria (FHH) and chronic renal insufficiency secondary to renal dysplasia. Cinacalcet acts as calcimimetic agent by allosteric activation of the calcium sensing receptor and is used primarily in the treatment of secondary hyperparathyroidism, with no published reports of its use in this patient group and indeed a paucity of reports of its use in the infant population.
Material and methods: This infant presented with symptomatic hypoglycaemia as a neonate and was found to have hypercalcaemia, low urinary calcium and raised urea and creatinine, with a similar biochemical pattern observed on maternal testing. Genetic investigation revealed an A to G nucleotide substitution in exon 4 of CASR (Calcium sensing receptor) gene by fluorescent sequencing . FHH is normally benign and does not require treatment however our case was complicated by the associated bilateral renal dysplasia. Despite maximal dietary elimination of calcium, serum levels remained elevated with low urinary calcium and elevated PTH. Despite the use of Sevelamer a calcium free phosphate binder the biochemical markers of renal osteodystrophy continued to worsen.
Results: On commencing cinacalcet 0.5mg/kg once daily increasing in 0.5mg/kg increments fortnightly to 3.3mg/kg bd by 3 months of age there was a progressive reduction in calcium and PTH. At 2 years of age calcium and PTH remain controlled on 20mg BD (2mg/kg bd).
Conclusions: We report for the first time the use of Cinacalcet to control renal osteodytrophy in an infant with FHH and renal insufficiency.

P477
Ipex-like And Severe Nephrotic Syndrome

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Introduction: We report a single case of nephrotic syndrome diagnosed as IPEX-like syndrome.
Material and methods: RSM, male, 7 years old, diagnosed with type 1 diabetes mellitus with 21 months. With 36 months diagnosed with membranous glomerulonephritis and membranoproliferative glomerulonephritis with deposits of IgG, IgM, IgA, and C3. At same age diagnosed hypothyroidism. No control with prednisone/ sirolimus/azatioprine. At second year of life he had: laryngitis, urticarial, wheezing; dermatitis.
Results: Laboratory: C3 and C4 : normal. IgA and IgM: normal; IgG: oscillation, acording proteinuria intensity; IgE: high. Persistent leukocytosis with lymphocytosis. CD3+/TCR alfa beta+ /CD4-/CD8-cells: oscillated between 2,4 to 7,8% (<2,5%). Cytokines/mononuclear cells: high levels of TNF alfa spontaneous activity. CD25/FOXP3 cells corresponding of 11% of CD4. Autoantibodies: Antitireoglobulin was positive. Genetic investigation: No mutations in FOXP3 gene. Patient was classified as IPEX-like since some authors consider that a decrease in number of these T reg cells can explain this with new techniques: 1-Demethylation of the T reg cell-Specific-Demethylated-Region (TSDR) in the FOXP3 locus 2-Demethylation of the T cell-Specific-Demethylated-Region (TLSDR) in the CD3 locus, highly specific markers for stable Treg cells and overall T cells, respectively
Conclusions: IPEX-like syndrome-challenging situation. Nephrotic syndrome in this situation is rare. More reports - more comprehension about Treg cells and their defects.

P478

Failure To Thrive - Would You Think Of Diabetes Insipidus?

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Introduction: Diabetes Insipidus (DI) is an uncommon clinical syndrome secondary to disturbance in water balance, characterized by polyuria, polydipsia and failure to thrive. In children, Nephrogenic Diabetes Insipidus (NDI) is more common than Central Diabetes Insipidus.
Material and methods: Review of the patients clinical records.
Results: We present the case of a 15-month-old boy, who recurred to our outpatient clinic for failure to thrive and gastroesophageal reflux. He had been reducing growth velocity since the age of 4 months and his weight and stature were actually below the 5th percentile. Parents also refered intense thirst and polyuria. Celiac disease, cystic fibrosis and intestinal parasitosis were excluded. He had positive cow's milk protein-specific IgE and started eviction. There was no improvement in growth and at the age of 21 months further investigation was done. He presented low urinary osmolality, normal plasma osmolality and low urinary density. Glicosuria, calciuria and uremia were normal. The diagnosis of DI was evoked and the patient admitted to water deprivation test. Seric sodium and osmolality increased to the upper limit, associated to low urinary osmolality (97mOsm/Kg) and polyuria (13ml/Kg/h). After desmopressine challenge there was no change in urinary osmolality or polyuria. The diagnosis of NDI was established and genetic test demanded. A known mutation was found at AVPR2 gene (p.Tyr128Ser) which confirmed diabetes insipidus, nephrogenic, X-Linked (OMIM 304800). He started treatment with hidroclorothiazide/ amiloride and low solute diet. Genetic counseling identified the mother as a carrier. The test will be offered to the sister at the appropriate age.
Conclusions: Congenital NDI is a rare disease with a prevalence of 1-2:1.000.000. It is most commonly inherited in an X-linked manner, approximately 90% of individuals are males and have AVPR2 gene mutation. DI should be considered in the differential diagnosis of failure to thrive, as shown in this case.

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Prevelance Of Dyskalemia In Different Pediatric Patient Groups

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Introduction: Potassium is the second most abundant cation in the body. About 98% of potassium is intracellular and that is particularly in the skeletal muscle. The clinical importance of potasium is that hypokalemia or hyperkalemia may predispose the patient to cardiac arrhythmias. The aim of this study was to determine the prevalence and risk factors of dyskalemias in different pediatric patient groups.
Material and methods: All samples were analysed for serum potasium in 2012 were included into study. Hypokalemia was defined <3.5 mmol/L with subcategories of mild (3.0-3.4 mmol/L), moderate (2.5-2.9 mmol/L), severe (<2.5 mmol/L), most severe (<2.0 mmol/L). Hyperkalemia was defined as >5.5 mmol/L, with subcategories of mild (5.6-6.0 mmol/l), moderate (6.1-6.5 mmol/L), severe (6.6-7.0 mmol/L) and most severe (>7.0 mmol/L). We divided the patients into 3 groups according to origin of blood samples; outpatient clinics, inpatient clinics and intensive care units (ICU). Hyperkalemia for neonates was defined as K>6 mmol/L.
Results: A total of 35978 samples were analysed for serum potassium. Samples from outpatient clinics, inpatient clinics and pediatric-neonatal ICUs were 62.0%, 23.3% and 14.7% of all samples respectively. Of these measurements, 86.3% were within the normal range, 10.5% were hypokalemic, 3.2% were hyperkalemic. Dyskalemia prevelance in outpatient clinics, inpatient clinics and ICUs were 7.4%, 20.7% and 29.2% respectively. The prevelance of hypokalemia in outpatient clinics, inpatient clinics and ICUs were 4.7%, 17.2% and 24.1% respectively. The prevelance of hyperkalemia in outpatient clinics, inpatient clinics and ICUs were 2.66%, 3.51%, and 5.13% respectively. Although there were no difference according to age groups in terms of dyskalemia prevelance, the prevelance of hyperkalemia in neonatal ICU was %8.5.
Conclusions: Dyskalemias may cause serious symptoms in the patient. Therefore it is necessary to know the causes and treatment of dyskalemias. Regular monitoring of serum electrolytes, elimination of the causes and correction of dyskalemias may be lifesaving.

P480

Prevelance Of Dysnatremia In Different Pediatric Patient Groups

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Introduction: Disorders of sodium homeostasis are the most common elec¬trolyte disturbances in clinical medicine. Prevalence of dysnatremia varies according to the dysnatremia definition. In this study, We aimed to evaluate the prevalence and determine the type of dysnatremias in different pediatric patients groups.
Material and methods: All measured serum sodium concantrations in 2012 were included into study. The cutoffs used to divide dysnatraemia into categories were based on those previously used in the literature. We divided the patients into 3 groups according to origin of blood samples; outpatient clinics, inpatient clinics and intensive care units (ICU).
Results: A total of 47961 blood samples derived from 16660 patients. Samples from outpatient clinics, inpatient clinics and pediatric-neonatal ICUs were 57.5%, 24.4% and 18.1% of all samples respectively. Of these measurements, 69.8% were within the normal range, 27.6% were hyponatremic (Na<135 mEq/L), 2.6% were hypernatremic (>145 mEq/L. Dysnatremia prevelance in outpatient clinics, inpatient clinics and ICUs were 27.0%, 35.7%and 33.4% respectively. A total of 27.6% of all samples, 26.6% of samples from outpatient clinics, 34.2% of samples from inpatient clinis and 22.0% of samples from ICUs were hyponatremic. Mild, moderate and severe hyponatremia were 87.1%, 10.7%, 2.2% of all hyponatremic samples respectively. A total of 2.66 % of all samples were hypernatremic. In ICUs, Although there was no difference in terms of dysnatremia prevelance between neonatal, pediatric and surgical ICUs (31.35%, 33.55%, 34.1% respectively) we observed higher hypernatremia prevelance (%18.99 of samples) in pediatric ICU than neonatal and surgical ICUs (9.98%, 5.16% respectively). However, hyponatremia in surgical and neonatal ICUs was higher (28.94% and 21.37 respectively) than pediatric ICUs (14.56%).

Conclusions: Dysnatremia is associated with substantial morbidity and mortality even in mild cases. Therefore the identification of risk factors and type of dysnatremias in different pediatric patients groups are important for preventive strategies.

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Acute Abdominal Pain In A Child With Tuberous Sclerosis Complex And Renal Polycystosis

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Introduction: We report a case of ovarian torsion in a patient with TSC2/PKD1 contiguous gene deletion syndrome with a single polycystic kidney under everolimus treatment. The possible role of mTOR inhibition will be discussed.
Material and methods: Our patient had an unique cystic right kidney and declining kidney function. To control the growth of subendymal giant cell astrocytomas (SEGAs) everolimus started at the age of 13 years. Irregular menstrual bleeding was an adverse event. Since 14.5 years of age there was recurrent abdominal pain in the right flank. Magnetic resonance imaging showed hemorrhagic complications in the largest cyst(22 x22x11 cm) of the renal cysts.
Results: At 14.8 years a severe acute pain crisis occurred. Last menstruation dated 14 days ago. Abdominal palpation was painful. The polycystic kidney could be palpated as a large mass. Ultrasound examination revealed the polycystic kidney without any obvious signs of complications. An enlarged cystic right ovary (5 x7x7 cm) was visualized in the left fossa without any signs of torsion. Initially pain decreased with hydration and analgesics. Two days later, clinical signs of peritonitis developped. Imaging of the renal cysts was comparable. Laparoscopic evaluation revealed right ovarian torsion. Resection of the right ovary was inevitable. During the laparoscopic surgery, the largest renal cyst was marsupialized. Afterwards clinical evolution was favorable with less distention of the abdomen and a slight decrease in creatinine.
Conclusions: In patients with contiguous gene syndrome TSC/PKD1, cyst enlargement, infection and hemorrhage are frequent causes of abdominal pain. However, awareness of coexisting pathologies and effect of concomitant medication is important. The mTOR signaling pathway is known to regulate ovarian morphology and function. The use of mTOR inhibitors to control the growth of SEGAs, might increase the risk of development of menstrual cycle disturbances and ovarian cysts.

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Summary Of Cystinosis Data In Russian Federation.

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Introduction: Nephropathic cystinosis (NC) is an autosomal recessive disease caused by mutations in the ctns gene. NC is characterized by early-onset Fanconi syndrome leading to end-stage renal disease (ESRD) within the first decade of life.
Material and methods: Starting in 2007 a search program for NC was initiated in a tertiary hospital in Moscow. Publications, talks and informational letters were the tool to increase medical professional's awareness countrywide. Sixteen children were diagnosed since that time plus one adult female living with a kidney graft.
Results: The disease manifestation took place in these patients in 11,3 ±16,5 months. The diagnosis was established on the basis of the combination of Fanconi syndrome and specific keratopathy at the average age of 42,5±41,4 months. Molecular genetic study with the determination of the specific mutations of the ctns gene was carried out in 15 cases. Novel mutations of the ctns gene (c.785G>A, c.433C>T) were found. The 57kb deletion was detected in 5 cases including two homozygous. Seven children had other mutations in a homozygous state. Thanks to carrying out genetic testing in 3 children the diagnosis was established on the first year of life before adjournment of cystine crystals in the cornea. However, there were not significant differences in disease symptoms depending on mutation variants. Five children progressed to ESRD at the age 90±39,8 months. Only 4 children who started Cysteamine bitartrate treatment before the age of 2 are stable. Five kidney transplantations performed. Two sisters without the specific treatment died due to metabolic disorders and concomitant infection.
Conclusions: Despite the recent progress, cystinosis remains to be underdiagnosed in Russia. Joint efforts from the medical community must be aimed on early diagnosis based on clinical evaluation and molecular genetic studies and early Cysteamine treatment.

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Alport Syndrome: Importance Of Genetic Study

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Introduction: Alport syndrome is caused by glomerular basement membrane disorder. It´s characterized by hematuria, proteinuria, and usually renal insufficiency. It can be associated with neurosensorial hearing loss and ocular abnormalities.
Material and methods: We report a patient with hematuria and proteinuria with poor outcome.
Results: CASE REPORT: We report a 12-year-old boy with episodes of gross hematuria since he was two years old. He remains with microhematuria between episodes. His mother had episodes of gross hematuria when she was younger. When he was 9 years old, he developed proteinuria up to nephrotic range. He started treatment with enalapril and losartan. Renal biopsy showed mesangial proliferation and the following IF: IgA +/+++, Fibrinogen: negative. C1q: negative, C3: +/+++, IgM: +/+++, consistent with IgA nephropathy Class 1-proliferative focal. The patient was diagnosed with IgA nephropathy and he initiated treatment with prednisone because there was no control of proteinuria. During the clinical follow up he was diagnosed of bilateral neurosensorial hearing loss. At 12 years old, because of a progressive renal insufficiency a new renal biopsy was made, showing tubulointerstitial nephropathy with several foamy histiocytes, mild mesangial proliferation and focal glomerulosclerosis, findings compatible with Alport disease. IF was not representative by lack of glomeruli in the selected core. Electronic microscopy showed Glomerular basement membrane type Alport syndrome. Genetic testing was made: a mutation of Alport syndrome was found in intron 47 of the COL4A5 gene (X chromosome). This same mutation was found in his mother and sister (both with microhematuria). Currently, our patient has a chronic renal failure (FG 57 ml/min/1.73m2). He maintains non-nephrotic proteinuria and microhematuria. He receives treatment with enalapril and losartan
Conclusions: Alport Syndrome is generally suspected because of the family renal history, and its diagnosis is usually confirmed by renal biopsy. Availability of Molecular Genetic testing is useful for difficult cases and it allows the correct treatment as it occurred in the case presented initially diagnosed with IgA nephropathy and treated with steroids.

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Kidney Anion Exchanger 1 (kae1) Alteration In Some Iranian Children With Distal Renal Tubular Acidosis Referred

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Introduction: The aim of the present study is to report novel different deletion mutations of SLC4A1 (AE1) gene in 12 Iranian families whose children had distal renal tubular acidosis (dRTA). Mutations of SLC4A1 encoding the kidney anion (Cl-/HCO3-) exchanger 1 (kAE1 or band 3) can result in either autosomal dominant (AD) or autosomal recessive (AR) form of dRTA..

Material and methods: All exons were investigated through PCR results, DNA sequencing and bioinformatics analysis. Surprisingly, 10 out of 12 patients (>83%) showed an alteration in SLC4A1 gene with a real hot spot in its exons 15 and 11. Meanwhile, homozygote and heterozygote deletions in exon 15 have been confirmed in 5 (50%) and 3 (30%) of SLC4A1 alterations, respectively. Two remained patients (20%) showed homozygote deletions in exon 11 of SLC4A1 gene. Parents' consanguinity of these patients reveals that cousins are high risk for this disease.

Results: Multiple alignments show that Start point region of deletion in exon 15 is conserved in Iranian patients suggesting an alteration in structures leads to alteration in function and change in the current role of this protein. By in silico approach we predicted 3D structure of native and mutant proteins by multi template method using PHYRE and Hidden Markov Model algorithms. Because of frame shift mutations, structures of mutant models vs. native one are different in conformation and amino acid type.

Conclusions: These models suggest that alteration in structures leads to alteration in function and change in the current role of this protein.

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Nephrolithiasis And Nephrocalcinosis In Children Under 2 Years Of Age – 13 Years Retrospective Study

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Introduction: Pediatric nephrolithiasis and nephrocalcinosis are serious diseases that can cause permanent kidney damage. It has been described an increased prevalence over the past decades. Metabolic disorders, anatomical abnormalities, urinary tract infections (UTI) and dietary all contribute to the risk of developing kidney stones. Proper management allows to optimize treatment, reduce the recurrence risk and improve outcome. The purpose of this study is to evaluate nephrolithiasis and nephrocalcinosis diagnosed in children under 2 years of age.

Material and methods: Retrospective study of all cases of nephrolithiasis and nephrocalcinosis diagnosed in children under 2 years of age between 2000-2013. Analysis of demographic data, personal and family history, clinical presentation, investigation, treatment and outcome.

Results: We identified 25 children, 16 had nephrolithiasis, 8 had nephrocalcinosis and 1 had both conditions. Sixty-eight percent were boys. The mean age at presentation was 10 months (2-24 months). The diagnosis was made during investigation of UTI (n=9), hematuria (n=4), prenatal pielocaliceal dilatation (n=5), failure to thrive (n=5), neonatal sepsis (n=1) and spontaneous elimination of a kidney stone (n=1). Family history of nephrolithiasis was present in 10 children. There were anatomical abnormalities in 7 children. The main metabolic disorders were hypercalciuria (n=9), hyperoxaluria (n=3), tubular renal acidosis (n=2), hyperuricosuria (n=1). Three children were treated with hydrochlorothiazide, lithotripsy was made in 4 children and 2 underwent surgical treatment. In the last evaluation (mean follow-up of 45 months), 16 children still have nephrolithiasis/nephrocalcinosis, 6 children were free of kidney stones and all had normal function.

Conclusions: The results were similar to other studies with older children. There was a higher frequency of boys and a very high percentage of metabolic abnormalities with hypercalciuria being the most common risk factor. A combination of factors was very frequent, reinforcing the multifactorial etiology.

P486

Dent Disease In Children – Data From Polish Registry Of Inherited Tubulopathies

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Introduction: Dent disease (DD) is a rare, inherited, X-linked tubulopathy characterized by proximal tubular dysfunction leading to nephrcalcinosis/nephrolithiasis and progresive renal failure. The disease is associated with a mutation either in CLCN5 or OCRL gene. To date, there are no reports on the prevalence, genotype and phenotype of DD in Polish population. The aim of the study was to analyze clinical and genetic data of patients with DD in Poland

Material and methods: The cohort consisted of 10 boys (aged 5-16.5 years) from 6 pediatric nephrology centers, whose data were collected in the POLTube Registry.

Results: The mean age of clinical and molecular diagnosis was 5.8 ±3 and 9.9±4.3 years respectively. All patients but one carried diverse mutations in CLCN5. In one patient with clinical phenotype of DD, no mutation in CLCN5/OCRL was disclosed. The genetic analysis in related females from families of 5 subjects revealed carrier status for a pathogenic mutation in 5/8 (one de novo mutation). The renal phenotype was characterized by tubular proteinuria and hypercalciuria (7.95±2.72 mg/kg/24 h) in all subjects, and hyperphosphaturia in 6. Nephrocalcinosis/nephrolithiasis were prevalent (in 8 cases), while renal impairment was found in 5, growth deficiency in 3 and rickets in 2 patients. Thiazides were used in 5 children, and phos-phate supplements and enalapril in 3. Two patients required growth hormone therapy. Two patients were not included in any treatment.

Conclusions: We demonstrated the genetic background of Polish patients with DD. The most common manifestation in Polish cohort of DD is a combination of tubular proteinuria, hypercalciuria and nephrocalcinosis. The study revealed the variable treatment in this group.

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A Case Of Atypical Hemolytic Uremic Syndrome Due To Cobalamin C Disorder Caused By A New Mutation In Mmachc Gene

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Introduction: Atypical hemolytic uremic syndrome (aHUS) is one of the thrombotic microangiopathies with severe clinical manifestations and multiple organ damage. aHUS is more properly linked to complement abnormalities, but a rare form is caused by an inherited defect of cobalamin 1 metabolism. The most severe form of Cobalamin C deficiency with high mortality rate is mostly observed in neonates or in infants under six-month-old.

Material and methods: Case: A 5-month-old previously healthy female infant presented with the symptoms and signs of severe non-immune intravascular hemolysis (hemoglobin 6g/dL, presence of schistocytes, LDH 2528 U/L, direct Coomb's negative), thrombocytopenia (48x109/L) and acute kidney injury (serum creatinine 2.5mg/dL, hematuria, proteinuria, hypertension). The infant was diagnosed as aHUS and started on peritoneal dialysis. In a few days, she developed severe respiratory and cardiac failure, and required mechanical ventilatory support for 6 days. Metabolic assessments revealed elevated plasma homocysteine (50 umol/L) and decreased B12 (112 pg/mL) levels. Treatment with high dose B12 vitamin and coenzyme Q10 was started with a suspicion of cobalamin metabolism disorder. After the treatment, both clinical and laboratory findings gradually returned to normal including an improvement of anemia and thrombocytopenia, and a significant decrease in blood urea and creatinine levels. Peritoneal dialysis was discontinued after 36 days.She is now at 6-year old age, receiving cyanocobalamin, betain, L-carnitine, coenzyme Q10 and enalapril. Physical examination is normal with a normal blood pressure. Renal function tests are normal with no proteinuria.

Results: A gene analysis showed a homozygous mutation in exon 4 of the methylmalonic aciduria and homocysteinuria (MMACHC) gene, c.484G>T. To the best of our knowledge, this mutation has not been previously reported in the literature.

Conclusions: Cobalamin disorders should be kept in mind for the differential diagnosis of early-onset aHUS. Early diagnosis will improve the outcome. Definitive diagnosis should be based on mutation analysis of the MMACHC gene.

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Early Death Of Two Children With Generalized Pseudo Hypoaldosteronism Type 1

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Introduction: Generalized PHA1 is a rare severe form of primary mineralocorticoid resistance with systemic involvement and salt loss in multiple organs.

Material and methods: We report 2 patients with generalized pseudohypoaldosteronism type 1 (PHA1) who died at early age despite close medical supervision.

Results: The first boy, born from consanguineous parents, was hospitalised at 7 days for severe dehydration (19% weight loss). Laboratory results showed: hyponatremia (123 mmol/L), salt loss, hyperkalemia (7.7 mmol/L), metabolic acidosis, hyperaldosteronemia (>50 000 pmol/L). While he was stabilized under high salt supplementation (13 mEq/kg/d), with a subnormal kaliemia (5,6 mmol/L), he presented a septic shock secondary to Klebsiella Pneumoniae leading to a multisystemic organ failure, with several cardiac arrests. He died 5 days after his admission. Genetic screening confirmed PHA1 with a homozygous mutation in exon 9 of the SCNN1G gene, coding for the epithelial sodium channel subunit ENaCγ. The second boy, born from consanguineous parents, was diagnosed at 14 days for a generalized PHA1, with hyponatremia (125 mmol/L), salt loss, hyperkalemia (7.4 mmol/L), hyperaldosteronemia (41 610 pmol/mL). Genetic screening showed a homozygous mutation in exon 2 of the SCNN1G gene. He received salt supplementation, cation exchange resin through nasogastric tube. At 15 months of age he was hospitalized for treatment equilibration. Initially, he was normonatremic with kalemia at 5 mmol/L, but two vomiting were followed by a severe collapse with hyperkalemia (7,8 mmol/L), acidosis (bicarbonate 7.3 mmol/L) and hyponatremia (123 mmol/L). He died few hours later after two cardiac arrests.

Conclusions: PHA1 is frequently diagnosed before 1 week of age because of severe dehydratation, massive weight lost with hyponatremia and hyperkalemia. Although patients require life-long salt supplementation, the clinical course usually slightly improves with age. The death of our two patients underscores the importance of strict monitoring of these patients to avoid fatal episodes of salt loss and electrolyte imbalance

P489

Primary Hyperparathyroidism Due To Parathyroid Carcinoma

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Introduction: Primary hyperparathyroidism in childhood is a rare disease with severe hypercalcaemia. A parathyroid adenoma is the most often underlying cause.

Material and methods: Casereport: 14 years old boy pain in knees, heels and back, loss of weight, fatigue, polyuria and polydipsia 6 months prior first examination. He presented with reduced general condition, hypertension (140/70 mmHg), hyperreflexia, pain of both tuberositas tibiae, fingers and the upper lumbal spine. Family history revealed primary hyperparathyroidism with a documented genetic mutation (HP-JT/HRPT-2 mutation) on mother's pedigree (mother, uncle and grandaunt, grandaunt's daughter and grandson).

Results: Laboratory investigations: Total calcium 3.7 mmol/l (normal 2.1-2.7), Ca++ 2.1 mmol/l (normal 1.1-1.3), phosphate 0.8 mmol/l (normal 1.1-1.7) and magnesium 0.6 mmol/l (normal 0.7-1.0). Parathormone (PTH) 845 pg/ml (normal 10-55), creatinine 98 μmol/l (normal 54-121), estimated GFR (calculated by Schwartz formula) 70 ml/min/1.73m2, uric acid 417 μmol/l (normal 11-353). Hypercalciuria (calcium/creatinine ratio of 0.9 mol/mol, normal <0.7). X-ray showed bone lesions in the distal radius and ulna, and in the middle phalanx of several fingers. Ultrasound demonstrated hyperechogenic kidneys without nephrocalcinosis. MIBI-Single photon emission computed tomography and ultrasound revealed one hyperechogenic, highly vascularised lesion (3x2x2 cm) in the left lower pole of the thyreoidea suspecting a parathyroid adenoma. Treatment consisted surgical removal of the suspected parathyroid tumor. As there was no significant decrease of PTH, further exploration was leading to a second, larger, ectopically jugular located tumor, histologically identified as a parathyroid carcinoma. Thirty minutes after removal of the second tumor, PTH decreased from 1000 to 150 pg/ml. High substitution of calcium, magnesium, phosphate and vitamin D was applied postoperatively and tapered, but not stopped thereafter. First examination after the patient's discharge demonstrated rapid improvement of general condition, normal GFR, normal blood pressure and normal values of calcium, phosphate and PTH. Re-evaluation will be due if PTH and/or calcium will rise again.

Conclusions: Primary hyperparathyroidism is very rare in childhood. Appropriate treatment consists of removing suspected adenomas including a histological examination of the tissue in order to identify a possible carcinoma.

P490

Atypical Hemolytic Uremic Syndrome Caused By Double Heterozygous Mutation In Mcp (cd46): Clinical, Diagnosis And Treatment. A Case Report

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Introduction: Atypical Hemolytic Uremic Syndrome (aHUS) is a disease affecting kidney function caused mainly by disturbances in the regulation of the alternative complement pathway. The leading genes identified to date are CFH, CFI, MCP (CD46), CFB, C3, THBD, DGKE, CFHR1, CFHR2, CFHR3, CFHR4, CFHR5, CFP and ADAMTS13. Dysregulation of any of these components can trigger a permanently activated complement system that could damage vascular beds by thrombotic microangiopathy.
Material and methods: We report an eleven years old boy who suffered 12 episodes of HUS since 6 month of life. He recovered from each episode with normal renal function, without hypertension or proteinuria. He was treated with Fresh Frozen Plasma in the relapses, and since May 2013 has been receiving Eculizumab without relapses or adverse medication effects.
Results: The following measurements were done: Shiga toxin in feces and HIV, HBV, HCV Serology were negative; C3, C4, CH50, FH, ADAMS13, Cyanocobalamin and renal biopsy were normal. DNA sequencing of genes CFH, CFI, CFB and MCP showed three changes: One novel change in CFH in heterozygosis, c.1646G > C, p.Gly549Ala; and two changes in heterozygosis in MCP, a novel one c.963delC, p.Tyr321 *, and another previously described, c.535G > C, p.Glu179Gln.
Conclusions: The clinical presentation and the positive response to treatment with Eculizumab consistent with those described in the literature for MCP- aHUS cases. The undescribed change in the CFH gene is a heterozygotic conservative type, very likely not related to the disease. Regarding the mutations in the MCP gene, the described change causes a misfolded protein with diminished activity. The additional novel change causes a stop codon previous to the transmembrane domain, yielding a not anchored protein. These facts make the patient to be a good candidate to be treated with Eculizumab.

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Aregpkd – A European Arpkd Registry Study

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Introduction: Polycystic kidney disease is a major cause of end stage renal disease in Europe. Autosomal Recessive Polycystic Kidney Disease (ARPKD) is the rare and often severe pediatric form of cystic kidneys and occurs with an estimated incidence of 1:20.000. Still, ARPKD is often responsible for the most severely affected patients with cystic kidneys in pediatric centers. Kidneys are often grossly enlarged at birth and there is mandatory hepatic involvement. There is also major unexplained phenotypic variability in ARPKD, that is currently thought to be caused by mutations in a single gene, PKHD1. PKHD1 encodes a huge transmembrane protein called Fibrocystin, which localizes to primary cilia of cells, classifying ARPKD as a ciliopathy. The pathophysiology, clinical heterogeneity and long-term evolution of the disorder remain poorly understood, explaining why there is currently no causative treatment for ARPKD. Even in most-advanced medical centers morbidity and mortality remain relatively high. No clinical classifications, clinical risk factors or detailed treatment guidelines for the challenges have been established so far and experience remains sparse even in large pediatric centers.
Material and methods: ARegPKD is a multinational European ARPKD registry study. Within this project two renowned clinical research consortia in pediatric nephrology, i.e. the German Pediatric Nephrology Association (GPN) and the European Study Consortium for Chronic Kidney Disorders Affecting Pediatric Patients (ESCAPE Network), join forces with geneticists and pathologists to advance the pathophysiological understanding, and to provide an observational evidence base for clinical treatment concepts for this disorder. Using a web-based retro- and prospective registry study approach we aim to clinically characterize ARPKD patients in detail in a pseudonymized way. After a detailed basic data questionnaire, yearly follow-ups visits will are give insights into long-term clinical developments. Associated to this registry are an ARPKD-specific biobank and reference histology.
Results: Here we present the registry approach and the characteristics of the first included patients.
Conclusions: ARegPKD is a novel international web-based registry study that addresses major clinical issues associated with ARPKD and aims to contribute to the understanding of this severe renal disorder of early childhood.

P492

Uretero-pelvic Syndrome And Parathyroid Adenoma, What Is The Link?

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Introduction: We report a 15 year-old male followed for bilateral uretero-pelvic syndrome (UPS) with antenatal diagnosis.
Material and methods: The patient was followed abroad regularly since the age of three months, with kidney ultrasound showing stable pelvis measuring 15 mm and a Mag 3 scintigraphy showing equivalent kidney function and good contrast evacuation not requiring surgical intervention. The patient started to complain of lumbar pain, thus a CT scan was done to rule out vascular malformations that might explain the UPS, revealing bilateral kidney stones and an osteolytic right iliac bone lesion.
Results: Stone work up showed hypercalcemia (Calcium 3.2 mmol/L), normal phosphorus levels, serum creatinine of 66 μmol/L, with an elevated parathyroid hormone level (203 ng/), hypercalciuria with a calcium/creatinine ratio of 1.5 mmol/mmol. Parathyroid ultrasound showed an adenoma, requiring a thyroid scintigraphy which showed the absence of contrast uptake in favour of a benign tumor. The patient underwent removal of the adenoma with further normalisation of calcium and calciuria level.
Conclusions: According to our knowledge, this the first case describing a co-existence of UPS and a parathyroid adenoma complicated by kidney stones in a young adolescent. Stone disease has been be unmasked by UPS.

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Herlyn-werner-wunderlich Syndrome – A Rare Cause Of Renal Agenesis

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Introduction: Herlyn-Werner-Wunderlich (HWW) syndrome is a very rare congenital anomaly of the urogenital tract involving Müllerian ducts and Wolffian structures. It is characterized by the triad of uterus didelphys, obstructed hemivagina and ipsilateral renal agenesis. Patients with this syndrome generally present in postpubertal adolescent where hematometrocolpos produces a more pronounced mass effect and pain on the side of the obstructed hemivagina. Strong suspicion and knowledge of this syndrome are mandatory for an accurate diagnosis and a proper treatment before complications occur.
Material and methods:
Results: A 13-year-old girl presented to the emergency department with a 3-months history of hypogastric and right abdominopelvic pain. She reported that the pain had become more intense over the past 3-days. The patient denied any recent abdominal trauma, abnormal vaginal bleeding, diarrhoea or nausea/vomiting. Gynecologic history indicated menarche at 11 years of age. The main physical examination finding was tenderness on right lower quadrant and hypogastric palpation. The abdominal ultrasonography showed agenesis of the right kidney, double uterus and a right pelvic mass. The patient was referred to the nephrology department where she performed a renal scintigraphy with a normal function of the left kidney and agenesis of the right kidney, a normal screening test for renal function, and a pelvic magnetic resonance imaging which confirmed the absence of the right kidney, didelphys uterus, and blind hemivagina with hematocolpos. The patient underwent surgery with resection of the vaginal septum and drain of the hematocolpos. Her follow-up was symptom-free, with blood pressure consistently normal without medications and there was no proteinuria.
Conclusions: The HWW syndrome should be considered among the differential diagnosis in girls with renal agnesis presenting with abdominal pain. Prompt and accurate diagnosis and treatment of this syndrome can significantly improve the lives of the patients and prevent future complications.

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Mixed Proteinuria And Donnai-barrow Syndrome

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Introduction: Recent discoveries on the reabsorption machinery of the proximal tubule, the endocytic megalin/cubilin/amnionless receptor complex have given new insights on the pathophysiology of proteinuria. In humans, mutations in the LRP2 gene encoding megalin result in Donnay-Barrow syndrome (DBS), of which less than 30 cases are reported. We describe a clinical case of DBS and discuss hypothesis to explain the clinical findings.
Material and methods: A 3 year-old girl was assessed for growth restriction. A massive proteinuria (2g/g creatinin) was discovered, tubular (albumin, α1-microglobulin, IgG and retinol binding-protein ratios to creatinine in mg/g were 290, 520, 145, 215, respectively) with no other tubular abnormality. Clinical history consists of intrauterine growth restriction, severe myopia, delayed anterior fontanel closure (4 years old), slight delayed psychomotor development and progressive sensorineural hearing loss (6 years old). Physical appearance at 12 years old is normal except for a slight hypertelorism. Renal biopsy was normal. Brain MRI revealed an asymptomatic Arnold-Chiari malformation and notably a normal corpus callusum.
Results: Two mutations in the LRP2 gene coding for megalin were identified. Although vitamin D binding protein, retinol binding protein and albumin are lost in the urine of megalin knockout mice, the only identified anomaly in our patient is a low prealbumin level.
Conclusions: Until now, genotype-phenotype correlations in DBS could not be established. Megalin is expressed in many eptihelia. Failure to absorb ligands at specific time during development, resulting in local deficiencies, is the current hypothesis. Taking into account the 50 ligands of megalin in the tubular cell, the clinical presentation in our patient is quite mild. The re-uptake by cubilin in collaboration with amnionless is one of the hypothesis. Immunostaining of megalin and cubilin in our patient's kidney biopsy are ongoing. It illustrates as well that tubular protein reabsorption mechanisms are somehow different in mouse and man.

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Alport Syndrome - A Rare Presentation

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Introduction: Alport syndrome (AS) is a glomerular genetic disease associated with deafness, ocular changes and progressing to chronic renal failure. Transmission is X-linked in 80% of the cases, autosomal recessive in 15% and autosomal dominant in 5%. Usually the clinical presentation occurs in the first decade of life with microscopic hematuria and/or persistent proteinuria without hypertension or renal dysfunction.
Material and methods: Case report: Male patient, 4,5 years old, hospitalized for macroscopic hematuria and edema. Investigation showed acute renal failure, anemia, erythrocyturia and nephrotic proteinuria. Immunoglobulins and complement fractions were normal; ANCA, ANA and antibody anti-basal membrane were negative. He had a history of recurrent episodes of macroscopic hematuria since his eighteen months associated with respiratory infections. No family history of renal disease or deafness. Renal biopsy showed proliferative glomerulonephritis with extracapillary crescentic activity and immunofluorescence was negative.
Results: Six pulse methylprednisolone (30mg/kg/dose) were performed followed by oral prednisolone (2mg/kg/day) and cyclophosphamide (2mg/kg/day, twelve weeks). Normalization of renal function and resolution of proteinuria occurred, but microscopic hematuria persisted. A year later there was reappearance of proteinuria, worsening to nephrotic range, without macroscopic hematuria or renal dysfunction. At age 11, second renal biopsy revealed mesangial proliferative glomerulonephritis, small foci of glomerular sclerosis and few deposits of IgM on immunofluorescence. He started oral corticosteroids with partial response. Five months later bilateral sensorineural deafness was detected. Genetic mutation of X-linked AS was excluded. At 16 years old he maintains nephrotic proteinuria, microscopic hematuria with normal renal function and a mutation in homozigoty in COL4A3 gene, compatible with autosomal recessive AS, was identified.
Conclusions: This case draws attention to uncommon clinical and pathological findings of AS, with a good response to corticosteroids and cyclophosphamide. Attending that autosomal recessive AS has a worse prognosis, what was the role of immunossupression in the early treatment of this pathology?

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Rare Heterozygous None-synonymous Single Nucleotide Polymorphism In Slc34a3/npt2c Is Associated With Hypercalciuria And Renal Calcifications

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Introduction: Compound heterozygous and homozygous mutations in the sodium-phosphate co-transporter gene SLC34A3/NPT2c lead to hereditary

hypophsphatemic rickets with hypercalciuria (HHRH). Renal calcifications have previously not been thought to be part of the clinical presentation of HHRH. Recently an increased frequency of medullary nephrocalcinosis and nephrolithiasis in HHRH patients has been recognized. Furthermore the prevalence of renal calcifications is also increased threefold in heterozygous carriers of SLC34A3/NPT2c when compared to general population.
Material and methods: Case presentation: A 4 ¾ year old girl with microscopic hematuria, but without other specific clinical findings presented in our outpatient clinic for further evaluation. Kidney ultrasound was normal initially. However, we found significant hypercalciuria (9,4 mg/kg/d). In follow-up hematuria and hypercalciuria temporarily disappeared. At seven years of age nephrocalcinosis was detected for the first time attended by distinct hypercalciuria. Treatment with hydrochlorothiazide (HCT) was started and calcium excretion returned to normal (<4 mg/kg/d). Meanwhile at the age of 12 years renal ultrasound does not show progressive nephrocalcinosis. Investigation of her family revealed hypercalciuria also in her younger sister, her father and paternal grandfather. The younger sister also showed nephrocalcinosis and is as well treated with HCT. In all of the affected family members tubular phosphate reabsorption is decreased. Therefore genetic analysis of SLC34A3/NPT2c has been initiated.
Results: We found a heterozygous novel none-synonymous single nucleotide polymorphism (c.1009GA, p.G337S) in SLC34A3/NPT2c in all affected family members. The mother and paternal grandmother of the siblings, who do not show hypercalciuria nor nephrocalcinosis do not carry this polymorphism.
Conclusions: These findings provide evidence that not only compound heterozygous and homozygous mutations, but also none-synonymous single nucleotide polymorphism in SLC34A3/NPT2c may lead to the clinical signs of HHRH with nephrocalcinosis, hypercalciuria and decreased tubular reabsorption of phosphate, although we cannot exclude presence of additional genetic disorders.

P497
The Outcomes For Children With Cystine Stones: A Single-center Study From Turkey

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Introduction: Cystinuria is a rare genetic disorder that is characterized by increased urinary excretion of cystine. Many patients suffer from renal insufficiency as a result of significant stone recurrence rates and repeated interventions. The aim of our study was to examine the long-term outcomes of cystinuria.
Material and methods: Twenty-six patients with cystinuria who had been followed up for more than six months were included. The mean follow-up duration was 64.7 ±64.3 (range: 7-204) months. All patients were advised to increase fluid intake, to restrict sodium intake and to receive combined drug therapy (Shohl's solution and cystine-binding drugs). Additionally, patients with other metabolic risk factors were treated according to those risk factors.
Results: The urinary pH significantly increased with treatment (6.4±0.74 vs. 5.5±0.63) (p=0.0003). There was no significant difference between the first-visit estimated glomerular filtration rate (eGFR) and the last-visit eGFR (141.8±55.2 ml/ min/ 1.73 m2 vs. 149.3±48.4 ml/min /1.73 m2) (p>0.05). Stone events were defined by the appearance of a new stone or radiological indication of stone growth. In 10 patients (38%), no stone events were observed during the follow-up period, and the stone events per patient-year was 0.36 for all patients. The number of stone events in the patients with urinary pHs ≥6.5 was not significantly different (p>0.05). Additionally, nine patient required more than one surgical intervention, and the patients underwent a total of 46 procedures and averaged 1.8 procedures per patient over 51 stone events. There was a significant correlation between the last-visit serum creatinine and the number of surgical interventions (p=0.03) but no significant correlation between the last-visit eGFR and the number of surgical intervention (p=0.512).
Conclusions: Cystinuria has significant morbidity if not properly controlled. We conclude that diagnosis, treatment and regular follow-up are important. The treatment must be personalized for children based on other metabolic risk factors and body size.

P498
Patient With Chronic Pancreatitis And Polycystic Kidney Disease

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Introduction: Recurrent acute pancreatitis/chronic pancreatitis (RAP/CP) in adults arises most commonly as a consequence of excessive alcohol consumption. Among children anatomical anomalies of pancreas and biliary tract and genetic factors seem to be essencial. Autosomal dominant polycystic kidney disease (ADPKD) is a frequent hereditary renal disease, which leads to terminal renal failure of around the fifth decade. Clinical signs of ADPKD usually occur in adults, whereas it tends to be asymptomatic during childhood.
Material and methods: A 10-year-old girl with acute exacerbation of pancreatitis (2nd attack) was admitted to the hospital. Autoimmune, metabolic, infectious, drug and systemic ethiologic causes were excluded. Structural anomalies were ruled out by MRCP, but concurrently bilateral cystic kidneys were found. Family history was negative for CP, but positive for ADPKD. Hence unexplained CP in the girl, molecular-genetic analysis of 4 genes associated with CP (PRSS1, SPINK1, CFTR, CTRC) was performed. According to large pedigree with 3-generational occurrence of ADPKD in the family, we made the linkage analysis of the PKD1 and the PKD2 gene, followed by direct sequencing of causal gene.
Results: The homozygous c.180C>T mutation of CTRC gene was confirmed. The linkage analysis of ADPKD showed a pathologic haplotype linked to PKD1 gene. The direct sequencing of the coding sequence detected mutation c.9659C>A in exon 28.
Conclusions: We present a case with two genetically determined disorders. The mutation of CTRC gene increases the risk of CP about 10-fold and is associated with early-onset RAP/CP. Novel mutation in PKD1 gene confirmed ADPKD in the patient. To prevent or delay complications, early management of disease is needed. This work was supported by Ministry of Health of the Slovak Republic under the project registration number 2012/5-UKBA-5.

P499
Polycystic Kidney Disease - Slovak Patient´s Registry Data

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Introduction: Autosomal dominant polycystic kidney disease (ADPKD) is the most frequent hereditary kidney disease with terminal renal failure of about the 5th decade. Autosomal recessive polycystic kidney disease (ARPKD) is a rare genetic cause of kidney impairment with prenatal and early postnatal presentation. The aim was to create the Slovak national registry of patients with ADPKD and ARPKD and to introduce the molecular diagnostics of causal genes.
Material and methods: Collecting the data of both diseases proceeds via cooperation with professionals in nephrologic out-patient care and dialyses. Simultaneously clinical examination of patients and molecular

diagnostics started. We routinely use linkage analysis in ADPKD families with at least 3-generational pedigree and direct sequencing of the PKD2 gene. To detect mutations in the PKD1 gene we optimized long range PCR followed by direct sequencing of coding DNA to avoid pseudogenes. PKHD1 analysis was provided by a commercial laboratory.
Results: Registry includes 403 ADPKD and 13 ARPKD patients to date. According to linkage analysis 7 families are linked to PKD1 and 3 to PKD2 gene. Among patients with milder ADPKD phenotype 4 mutations were identified, two of them were novel (c.2235_2236insC, c.1958A>T). Among ARPKD patients 8 were compound heterozygotes for mutations in the PKHD1 gene. The PKD1 gene analysis is ongoing.
Conclusions: Slovak ADPKD and ARPKD patient's registry was established and the data are gradually being completed and updated for further epidemiological, clinical and genetic studies. This work was supported by Ministry of Health of the Slovak Republic under the project registration number 2012/5-UKBA-5.

P500
Diagnostic Approach To Urate Transport Defects

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Introduction: Hereditary renal hypouricemia is a new genetic disorder affecting renal uric acid (UA) reabsorption with clinical features such as nephrolithiasis and exercise-induced acute renal failure. The known causes are: defects in the SLC22A12 gene, encoding the human urate transporter 1 (hURAT1), and also impairment of by SLC2A9 gene, which encodes GLUT9 transporter. Diagnosis is based on hypouricemia (<119 μmol/l) and increased fractional excretion of UA (>10%). To date the cases with hereditary renal hypouricemia have been reported in East Asia mainly. More than one hundred Japanese patients with mutations in hURAT1 gene have been described. Hypouricemia is sometimes overlooked, therefore we have set up the flowchart for this disorder.
Material and methods: The patients were selected for molecular analysis from 655 Czech hypouricemic patients. These cases were found in 3 750 blood and urine samples. Serum and urinary UA and creatinine were quantified by enzymic method. The sequence analysis of SLC22A12 and SLC2A9 genes were performed.
Results: Other secondary causes of hyperuricosuric hypouricemia such as Fanconi syndrome, Wilson disease or drug-induced tubulopathy were excluded. The estimations of : 1) serum UA, 2) excretion fraction of UA, 3) and analysis of SLC22A12 and SLC2A9 genes follow. We have found 3 transition, 4 deletions in SLC22A12 gene and two nucleotide insertions in SLC2A9 gene in overall 9 Czech patients, which is the second group worldwide, in terms of number of patients. Three patients had acute renal failure and urate nephrolithiasis.
Conclusions: Patients with unexplained hypouricemia need detailed purine metabolic investigations. Hereditary renal hypouricemia is still unrecognized disorder and probably not wide spread in East Asia only. (Supported by Institutional support PRVOUK-P24/LF1/3 program of the Charles University in Prague)

P501
Acute Discontinued Eculizumab Treatment In Atypical Hemolytic-uremic Syndrome Due To Mcp Mutation. May Be A Therapeutic Option?

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Introduction: Atypical hemolytic-uremic syndrome (aHUS) is a life-threatening disease related in most children with mutations in genes encoding complement regulator proteins. Eculizumab, a monoclonal antibody targeting C5, is considered a first line therapy in pediatric aHUS. Duration of the treatment is not well defined and several authors suggest that therapy could be tailored based on underlying gene mutation and clinical history.
Material and methods: Case report
Results: 10 year-old girl with double MCP mutation and 5 previous flares, needing extrarrenal replacement in 3 of them. She had her 6th relapse, presenting with acute kidney injury and hypertension. We administered first eculizumab dose within 24 hours of thrombotic microangiopathy signals and she experienced significant clinical and biochemical improvement. We gave her the second dose one week later. Because of rapid recovery and based on her underlying gene mutation we decided not to initiate maintenance therapy and to perform close monitoring. After 6 months, the patient does not show aHUS relapse signs and has normal renal function without albuminuria and normal blood pressure.
Conclusions: It is important to report eculizumab regimen deviations and the results of these changes. Acute discontinued eculizumab treatment may be considered in those cases with isolated MCP mutations and fully clinical recovery. Controlled clinical trials to study optimal treatment duration should be encouraged considering genetic characterization.

P502
" Arpkd - An Atypical Evolution " - A Clinical Case

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Introduction: Autosomal Recessive Polycystic Kidney (ARPKD) is an inherited disorder with cystic dilatation of the collecting ducts, frequently associated with hepatic involvement (congenital hepatic fibrosis), hypertension, renal failure and portal hypertension. Congenital hepatic fibrosis is curable with liver transplantation. Combined "liver-kidney" transplantation is a potential curative therapy for hepatic and renal diseases.
Material and methods: The authors present the case of a seventeen-years old male, with a suspected diagnose of ARPKD at two-months of age after renal ultrasound. Non- related parents and a sibling with that diagnose. Two mutations in the PKHD1 gene confirmed by molecular study.
Results: Admitted with six months of age to the Pediatric Nephrology Department – Centro Hospitalar de Santa Maria, EPE with persistent irritability. Detected severe hypertension with poor response to anti-hypertensive drugs. GFR (estimated) - 47.9 ml/min/1.73 m2. Discharged with regular follow up and anti-hypertensive therapy. Hepatic fibrosis with arterial resistance was detected at the age of six in Doppler - abdominal scan. Portal hypertension and esophageal varices were observed two years later and hypersplenism with thrombocytopenia in later presentation. At present, chronic kidney disease – stage 4 (GFR (estimated) 29 ml/min/1.73 m2) kidneys with 15 cm (bipolar diameter). Hypertension controlled (ACE inhibitor and beta-blocker), without anemia, controlled metabolic bone disease and metabolic acidosis. Clinical hypersplenism with leucopenia and thrombocytopenia without hepatic insufficiency and preserved biliary ducts. Varices grade II in the upper gastrointestinal endoscopy. Adequate growth and neurodevelopment according to age.
Conclusions: This clinical case is paradigmatic of a therapeutic challenge due to atypical severe progression of portal hypertension/hepatic disease and a slower progression of chronic renal disease. Combined "kidney-liver" transplantation is indicated, timing for this intervention is debated due to well preserved residual renal function.

P503

Severe Hypercalcemic Crisis In An Infant With Idiopathic Infantile Hypercalcemia Caused By Mutation In Cyp24a1 Gene

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Introduction: CYP24A1 gene encodes 25-hydroxyvitamin D3 24-hydroxylase, which is the key enzyme responsible for 1,25-dihydroxyvitamin D3 degradation. The CYP24A1 gene mutation leads to the increased sensitivity of the patients to even prophylactic doses of vitamin D and to the development of severe symptomatic hypercalcemia in patients with idiopathic infantile hypercalcemia (IIH).

Material and methods: We report on a male infant presenting at 4 months of age with failure to thrive, dehydration, hypotonia, lethargy, and vomiting. Laboratory and imaging tests revealed severe hypercalcemia (5.8 mmol/l), suppressed parathyroid hormone (0.41 pmol/l), hypercalciuria (8.0 mmol/mmol creatinine), elevated 25-hydroxyvitamin D3 (over 600 nmol/l), and nephrocalcinosis. Conservative therapy (parenteral rehydration, diuretics, corticosteroids, bisphosphonates, and vitamin D prophylaxis withdrawal) was not able to improve the symptoms and laboratory values, and acute hemodiafiltration was necessary to normalize hypercalcemia. Clinical symptoms resolved rapidly after normalization of serum calcium levels.

Results: The molecular genetic examination of the CYP24A1 gene demonstrated a homozygous mutation, R396W, which is considered to be responsible for IIH.

Conclusions: Our patient is only the thirteenth patient with IIH caused by mutation in the CYP24A1 gene and the first one needing acute hemodiafiltration for severe symptomatic hypercalcemic crisis. In all patients with suspected IIH the DNA analysis for CYP24A1 gene mutations should be performed regardless of the type of vitamin D supplementation and serum levels of vitamin D.

P504

Cystinuria: Phenotype And Genotype In A Maltese Paediatric Cohort

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Introduction: Cystinuria is an inherited chronic disorder caused by the inability of the renal tubules to reabsorb filtered cystine and accounts for 10% of childhood stones. The mainstay of therapy remains prevention of stone formation using dietary measures and pharmacological treatment. A large spectrum of mutations has been reported in the literature. Here we report 2 novel mutations in the SLC3A1 gene.

Material and methods: Children under 16 years of age diagnosed with cystinuria by biochemical studies were included. The clinical picture and management were documented and molecular genetic analysis was performed.

Results: Three patients aged 4-14years were identified. One female presented aged 1 year with recurrent urinary tract infections (UTIs) and a staghorn calculus which disappeared after starting tiopronin. Another female presented aged 4 years with recurrent UTIs but no stone formation in spite of a high cystine:creatinine ratio. A male presented aged 7 years with recurrent UTIs and multiple stones requiring shockwave lithotripsy. Compliance with a high fluid intake was universally poor. All patients received potassium citrate and tiopronin. The male, who had a later presentation, required most aggressive therapy. Molecular studies revealed a novel mutation in exon 2 of the SLC3A1 gene in the homozygous state in the two female probands, and in the heterozygous state in their non-consanguineous parents. The male is a compound heterozygote for the same novel mutation in exon 2 and another novel mutation in exon 8 of the SLC3A1 gene. Each of these mutations were subsequenty identified in his parents in the heterozygote state.

Conclusions: We describe early age at presentation with a staghorn calculus. Moreover we report 2 novel mutations in the SLC3A1 gene. The compound heterozygous state was associated with increased stone formation but this may be due to the later presentation.

P505

A Study On The Effect Of Cimetidine And L-carnitine On Myoglobinuric Acute Kidney Injury In Male Rats

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Introduction: Rhabdomyolysis is a potentially life-threatening syndrome. It occurs in infants, toddlers and adolescents who have inherited enzyme deficiencies, inherited myopathies and malignant hyperthermia. Rhabdomyolysis-induced myoglobinuric acute renal failure accounts for about 10-40% of all cases of acute renal failure (ARF). Iron, free radicals, nitric oxide and Cytochrome P450 are involved in the pathogenesis of myoglobinuric ARF. The aim of this study was comparing the effect of cimetidine (cytochrome P450 inhibitor), L-carnitine (antioxidant) and both agents together on myoglobinuric ARF in rats.

Material and methods: Forty rats were divided into 5 groups; group 1: control rats. The remaining rats were injected with 50% glycerol (10 ml/kg, i.m.) and were divided into 4 groups: group 2: untreated myoglobinuric ARF, group3: received L-carnitine (200 mg/kg, i.p.), group 4: received cimetidine (150 mg/kg i.p) and group 5: received both agents together. 48 hours later, rat tail systolic blood pressure (SBP) was measured. 24 hours urine collection and blood samples were collected to evaluate GFR, BUN, creatinine, K, sodium, serum creatine kinase, plasma NO and glutathione levels. Kidney specimens were taken to investigate renal cytochrome P450 and for histopathological examination.

Results: Cimetidine treatment significantly decreased creatinine, BUN, K, Na, SBP and creatine kinase and increased GFR compared to group 2. L-carnitine exerted similar changes except for the effects on K and GFR. NO was significantly decreased while glutathione and renal cytochrome P450 were significantly increased in groups treated with L-carnitine or cimetidine as compared to group 2. Combined treatment further improved renal functions, creatine kinase, oxidative stress parameters and SBP as compared to each therapy alone. The histological changes confirmed biochemical findings.

Conclusions: Cimetidine and L-carnitine have protective effect - almost equally- against myoglobinuric renal failure, by decreasing catalytic iron and attenuating oxidative stress. Using both agents together further improve the renal function and made the renal injury minimal.

P506

Five Cases Of Severe Vesico-ureteric Reflux In A Family With An X-linked Compatible Trait

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Introduction: Vesico-ureteric reflux (VUR) is one the most common inherited disorder in humans. Even though this defect is common among

siblings and parents of index patients (27–40%), the mode of inheritance is not well defined.
Material and methods: Parents and siblings (three female and two male) of a 13-year-old girl with end-stage renal failure (ESRF) due to reflux nephropathy were screened for VUR although they had not presented episodes of urinary tract infection. VUR was identified in the father (44 years old) and in all the three sisters (aged 15 years, 16 years and 18 years) while the two brothers (aged 5 years and 8 years) had normal renal ultrasonograms and cystograms. A technetium-99m di-mercapto-succinic acid (99mTc-DMSA) scan demonstrated renal scars in the father and in two of the sisters with VUR. No episodes of urinary infection had been documented for any relatives.
Results: Haplotype analysis on the X-chromosome confirmed paternity.
Conclusions: This is the first description of VUR compatible with an X-dominant trait. This mode of inheritance must be added to what is already known on familial VUR, and future studies should also consider this possibility. Keywords Vesico-ureteric reflux (VUR) . Familial cases . X-linked Inheritance

P507
Indipendent Risk Factors For Permanent Renal Damage In Primary Vesicoureteric Reflux

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Introduction: Vesicoureteric reflux (VUR) is common in children. It can be associated with permanent parenchymal damage. Knowing the risk factors for these damages helps preventing future damages. Objective: To determine the incidence of permanent renal damage, the risk factors associated with each subtype of renal damage in patients with primary vesicoureteric reflux (VUR).
Material and methods: All our patients with primary VUR (new cases) between 2007-2010 were enrolled in the study. VUR was detected by conventional cystography. Renal scar was assessed by DMSA renal scintigraphy and classified into 3 subtypes: focal, multifocal, diffuse associated with contracted renal unit. The logistic multinominal regression was applied to identify independent risk factors for permanent renal damage and each subtype of renal damage.
Results: The incidence of permanent renal scarring of total renal units was 40,9%. Independent risk factors were: For focal scar: 95%CI, reflux gr. I-III OR 15,5; age 0-1 year OR 35; male sex as protective factor OR 0,07. For multifocal scar: reflux gr. IV-V OR 0,055; age 0-1 year as protective factor OR 0,03; male sex OR 10,33. For diffuse scar: reflux gr.IV-V OR 0,068; male sex OR 12,5. Independent risk factor for the presence of renal scar was the fever.
Conclusions: Febrile UTI, high grades of reflux and male sex are potential risk factors for permanent renal damage in children with primary VUR.

P508
Visceral Myopathy: Rare Cause Of Bilateral Hydronephrosis And Renal Impairment

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Introduction: Hollow visceral myopathy is a rare condition, which results in vacuolar degeneration and fibrosis of smooth muscle. Familial and sporadic forms of this condition have been reported. We describe the clinical course of a 13 year old Asian boy who presented in the neonatal period.
Material and methods: Bilateral hydronephrosis was noted antenatally, a postnatal MCUG revealed megacystis without urethral obstruction. Surgical interventions failed to improve the degree of hydronephrosis. Regular intermittent bladder catheterisation was required for complete bladder emptying. At the age of 5 years he suffered abdominal discomfort and distension associated with episodes of offensive eructation and flatulence. A contrast study revealed a hugely distended stomach that extended to the pelvic cavity. At the age of 11 years he required surgical correction of upper gastrointestinal malrotation and a gastrostomy was placed to allow overnight drainage of gastric contents. Biopsies taken along the small and large bowel showed significant fibrosis of the longitudinal layer of the muscularis propria. The appearances were in keeping with a primary visceral myopathy. Retrospective review of ureteric histology also highlighted chronic inflammation and fibrosis.
Results: His renal function has remained stable despite grossly abnormal renal ultrasound findings with no identifiable renal parenchyma. At birth his serum creatinine was measured at 81 μmol/l, thirteen years later it is 90 μmol/l. His estimated GFR is 45 mls/min/1.73m2. Remarkably he has not required renal replacement therapy. He has required supplemental enteral nutrition only.
Conclusions: There are few cases reported, the first case was described in 1977. Advances in genetics have highlighted that mutations in the gene encoding the smooth muscle gamma-2 actin (ACTG2) may result in the familial form of this condition. Clinical phenotypes reported are similar to our patient but there are reports of deaths in early infancy secondary to sepsis and total parental nutrition complications. This case highlights a rare cause of bilateral hydronephrosis and the challenges that might be anticipated in providing dialysis or transplantation.

P509
Biomarkers Of Nephrosclerosis At Children With Obstructive Uropathy

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Introduction: Identification of nephrosclerosis progression biomarkers in children is an actual problem of modern nephrology.
Material and methods: Morphological research and studying the activity of NO-synthase (NOS) in the structural elements of the kidney was carried out on samples of surgical material obtained from 18 patients with obstructive uropathy. Age groups: 1 gr. - children under 3 years (n = 6), 2 gr. - under 7 (n = 4), 3 gr. - under 12 (n = 5) and 4 gr. - under 15 years (n = 3). The control group consisted of 8 children of the same age who died in an accident. Morphological structure of the kidney studied by coloring material sections with hematoxylin and eosin according to standard procedures. Localization NO-synthase activity was determined by the NADPH-diaphorase histochemical method (Hope, Vincent, 1989).
Results: Dystrophic and fibroplastic changes in various structures of the kidneys in the form of atrophy, fibrosis and lymphoid-histiocytic infiltration identified in groups of children with 7 years duration disease (18%), while pronounced sclerosis and atrophy was detected in half of all children 3 and 4 groups. However, sclerotic lesion tubules and intrarenal vessels predominated over glomeruli injury in all age groups (1 gr. - 28%, 27%, 17% respectively). Changes of NO-producing kidneys function corresponded morphological. NADPH-diaphorase activity in different structures of the kidneys of 1st and 2nd children groups was on average 65,8+1,8 ODU (the Optical Density Units), at the same time in groups of 3th-4th, the level was an average of 18,35+1,2 ODU. The earliest and statistically significant inhibition of NOS activity detected in the epithelium of the collecting tubules of kidney medulla.
Conclusions: Revealed changes in various structural elements of the kidney can be as biomarkers of the degree of nephrosclerosis, and hence justify nephroprotective therapy in obstructive uropathy depending on the duration of the disease.

P510
Non Steroidal Anti-inflammatory Drug (nsaid) Induced Acute Kidney Injury (aki): 2 Case Reports

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Introduction: The risk of AKI is increased when a child is given NSAIDs in the face of dehydration, infection, diarrhoea and/or vomiting. NSAIDs are commonly used to treat fever and pain, are freely available and may be the commonest avoidable AKI risk in children. The mortality and morbidity associated with AKI secondary to NSAIDs is uncertain and not well defined in the paediatric population.
Material and methods: We describe two cases of NSAID induced AKI. Case 1, 15 year old male presented with abdominal pain and was given a single dose of NSAID for analgesia. A clinical assessment revealed signs and symptoms of dehydration requiring a fluid bolus of 20 mls/kg. The serum creatinine was subsequently measured to be 326 micromol/L (eGFR 14 ml/min/1.73m2) having previously been normal. Following appendectomy he remained in hospital for 2 weeks having been oligouric for 24 hours. His AKI recovered with supportive management and at discharge the eGFR was 29 mls/min/1.73m2. Case 2, 18 month old male infant was given a single dose of NSAID to alleviate fever during a 4 day diarrhoeal illness. At presentation he was noted to have been anuric for 3 days and on investigation the serum urea was 25.7 mmol/L and creatinine 442 μmol/L. He was anuric for a total of 13 days and required haemodialysis for 10 days. The serum creatinine was improving prior to discharge but had not normalised.
Results: Both children had a normal serum creatinine at 6 months following the episode of AKI. Case 1 seems to have made a complete renal recovery. Case 2 remains hypertensive with evidence of proteinuria.
Conclusions: Both cases highlight that a single therapeutic dose of NSAID is sufficient to induce AKI in the presence of dehydration and hypotension This resulted in a prolonged hospital admission for both these patients. The exact incidence of NSAID induced AKI is unclear but a reported incidence of 2.7% was found in a US patient cohort.

P511
Leptospirosis As Cause Of Acute Renal Insufficiency

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Introduction: Tubulointerstitial nephritis (TIN) is characterised by oedema and inflammation of the tubulointerstitial renal area. In most cases it has a sudden onset as Acute Renal Insufficiency (ARI) and on other occasions, milder, as tubular involvement or systemic symptoms. The most frequent cause of acute TIN is the ingestion of medicines. Within the latter, anecdotal etiologies have been described as Leptospirosis, zoonosis acquired by humans due to being in contact with rodent urine residue whose clinical signs are general systemic symptoms, with renal damage being exceptional.
Material and methods: The clinical case is described of a child of 13 years-old who goes to the Emergency Room with fever, myalgia, migrating macular exanthema with vomiting, diarrhoea, polydipsia and polyuria commencing later. In the physical examination the general affected condition, the described exanthema and mild dryness of mucosae stood out. In the blood analysis, renal dysfunction was shown with creatinine of 4.6 mg/dl and urea of 126 mg/dl. The urinary indices are suggestive of the renal origin of ARI (Fractional sodium excretion:1.8%, creatinine urine/plasma:12), and important isosthenuria and polyuria were recorded that pointed to interstitial involvement. The patient was admitted for treatment and complementary tests. As background, bathing in unhealthy water days earlier was reported.
Results: During his stay he evolved favourably with decrease of ARI parameters (creatinine:0.73mg/dl, urea:35mg/dl), and improvement in the polyuria (10litres/day to 4.5litres/day). The fourth day in hospital positive Leptospira serology was reported (IgG:1/400) for which treatment with Macrolides was prescribed. After release, he was monitored in Nephrology with progressive clinical-analytical normalisation.
Conclusions: Although the prerenal pathology is the most frequent etiology of ARI, other possible origins of renal failure should be suspected, as in the case of our patient. Ninety percent of the TINs have a known cause, early and careful diagnosis makes it potentially reversible over time with monitoring and adequate treatment.

P512
Peritoneal Dialysis In Children With Acute Kidney Injury Single Centre Experience.

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Introduction: While the use of continuous renal replacement therapy in the management of children with acute kidney injury (AKI) in the recent era has increased, peritoneal dialysis remains a viable option, particularly for patients who are hemodynamically compromised or have severe coagulation anomalies, or when other modalities are not available.
Material and methods: Retrospective review of medical histories from children with AKI managed with acute PD during the period from January 2004 to February 2014 in tertiary hospital.
Results: Nineteen children with a mean age 20.1 months (age range 1 – 91 months), were managed with PD during 1 – 23 days (mean duration 11.6 days). 11 of the patients were infants, and 11 of them were male. Causes of AKI were hemolytic - uremic syndrome 31.6%, acute tubular necrosis 26.3 %, congenital heart failure (after open heart surgery) 26.3%, septicemia 110.5% and other 5.3%. Access for PD in 12 cases consisted in surgically placed Tenckhoff catheters and in 7 cases the catheter was placed percutaneosly at the bedside. Automated pertitoneal dialysis was performed at 15 cases. Outcome at 10 of patients was good with complete resolution of renal function, 2 ended with chronic kidney disease, 6 died (half of them after open heart surgery) and 1 was lost from follow up.
Conclusions: Peritoneal dialysis remains safe and effective solution for management of acute kidney injury in children, especially in resource limited countries. From our experience complications and catheter leaking is very rare in surgically placed peritoneal catheter. Automated peritoneal dialysis is also very comfortable and gentle method during acute peritoneal dialysis.

P513
Blind-ending Ureteric Duplication – A Case-report

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Introduction: Blind-ending ureteric duplication is a rare developmental anomaly of the ureter. Embryologically, it is postulated that the affected ureteric bud is abortive and fails to make contact with the mesonephros. It is three times more prevalent in women and observed twice as often on the right side. It can be asymptomatic, however can be the cause of urinary tract infection, hematuria, flank and abdominal pain and stone. Vesico-ureteral reflux in blinded-ureter is also often present.
Material and methods: We present a 10-year-old girl with recurrent urinary tract infections and primary urinary incontinence.
Results: A 10-year-old girl was admitted to our institution because of recurrent urinary tract infections since infancy and primary urinary incontinence. The ultrasound showed normal left kidney without ureteral dilatation, smaller right kidney with dilatation of the pyelon and calices and two dilated ureters on the right side of the bladder. Voiding cystography excluded vesico-ureteral reflux (VUR) and urodynamics was normal. MR urography (MRU) clearly demonstrated that the girl had a bifid right ureter (Y ureter), with the blind-ending branch ending near the renal hilus. Blind-ending ureter was dilated (17 mm) and tortuous, surrounding functional ureter of the right kidney. Left ureter ended in the bladder neck and was responsible for incontinence.

Conclusions: Our case-report confirms that MRU has an important role in diagnosis and treatment planning in children with congenital urinary tract anomalies, especially when other diagnostic procedures cannot find the reason for the complaints. The main advantage of this method is that it shows precise anatomical details, especially in poorly functioning renal moieties, and does not use ionizing radiation.

P514
A Retrospective Analysis Of Multicystic Dysplastic Kidney In Turkish Children

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Introduction: Multicystic dysplastic kidney(MCDK) is a renal dysplasia characterized by the presence of multiple cysts.The study was aimed at identifying the pattern of MCKD in Turkish children and the required management thereof retrospectively.
Material and methods: We conducted a retrospective trial with the clinical, radiological and nuclear scan findings of 36 patients with unilateral MCDK diagnosed by from 1997-2010. The diagnosis was achieved by US and confirmed by DMSA scans. MSUG was performed for all patients after diagnosis. The involution duration of the cyctic kidney and compensatory hypertrophy of the contralateral kidney were investigated.
Results: A total of 36 patients (26 boys-10 girls) with unilateral MCDK were followed for a mean period of 43 months (10-170). The location of MCDK was 61% in left kidney. Antenatal diagnosis was achived in 30 (83%) patients. Associated urological anomalies were noted in 8 (22%) patients. This included contralateral primary VUR in 5 (13,8%), contralateral ectopic kidney in 3 (8,3%) and contralateral ureteropelvic junction obstruction in 1 (2,7%) and hypospadias in 2 (5,5%). Follow up US revealed complete involution of MCDK in 23 patients and partial in 2 patients. The size of MCDK was unchanged in 7 patients and a further 4 patients underwent nephrectomy. Compensatory hypertrophy was noted in 34 (94%) patients. Complete involution was reached at 22.97±32.63 months. There were no significant difference of involution duration with gender, antenatal diagnosis, additional urologic anomaly and the location of MCDK. No patients had abnormal renal functions. Hypertension was noted in 6 with 2 nephrectomy. Nephrectomy for the MCDK was performed in 4 (%11) patients, indications being parental anxiety in 2, hypertension in 2 patients.
Conclusions: Although MCDK carry good prognosis nephrectomy required in only a few patients, association with other urological anomalies may worse outcome in terms of ultimate renal function. Since patients with-or without additional urologic anomalies may develop hypertension and/or hyper infiltration injury all patients should be advised long term follow-up.

P515
Mannitol Induced Acute Kidney Injury During Treatment Of Cerebral Edema Due To Diabetic Ketoacidosis In An Adolescent

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Introduction: Mannitol is widely used to reduce intracranial pressure. Mannitol-induced acute renal injury is a rare clinic practice. We have described first adolescent case of mannitol-induced acute kidney injury during treatment of cerebral edema associated with diabetic ketoacidosis.
Material and methods: A 16-year-old girl who had been on long-term of insulin therapy for diabetes mellitus was admitted to the hospital with vomiting, abdominal pain, tachypnea and restlessness. It was learned that the patient did not administer the insulin doses for a week. Also she had been previously treated for diabetic ketoacidosis 6 times after diagnosis. Her blood pressure was 130/80 mmHg, serum sodium, potassium and creatinine were in normal range at the admission. The laboratory findings of hyperglisemia (592 mg/dl), metabolic acidosis (pH: 7.1, HCO3-: 8.8 mmol/L) and ketonemia (7.9 mmol/l) supported a diagnosis of diabetic ketoacidosis.
Results: First, 0.9% normal saline was given after then deficit and maintenance therapy was applied. During the second hour of the treatment, enuresis and loss of consciousness occurred. The Glaskow coma scores was 3 point. Cerebral edema was diagnosed clinically. Then the rate of fluid administration was reduced by one-third and mannitol was given at 1 g/kg dose. After two hours of mannitol administration, oliguric renal injury was developed. Serum creatinin were increased up to 3,3 mg/dl. Renal function improved over 6 days by hemodialysis. Her consciousness recovered 2 days after mannitol and hypertonic saline administration.
Conclusions: In this case in which the baseline renal function was normal, acute kidney injury developed after receiving mannitol. The pathogenesis of mannitol-induced renal injury is not yet established but may be associated with renal vasoconstriction produced by mannitol. Treatment with hemodialysis may reverse acute kidney injury in these instances. Although effective reversal of acute kidney injury with hemodialysis, the clinical awareness of the mannitol nephrotoxicity is emphasized.

P516
The State Of The Renin–aldosterone System Of Children With Congenital Anomalies Of The Urinary System On The Background Of Connective Tissue Dysplasia

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Introduction: We found that children with developmental anomalies of urinary system (US) have undifferentiated variation of connective tissue dysplasia syndrome (CTDS). The research objective was to study renin and aldosterone production features of children with congenital anomalies of the urinary system on the background of varying severity of CTDS.
Material and methods: 159 patients with different types of urinary system (US) congenital anomalies (CA) aged from 3 to 17 years surveyed. 25.2% of the children had mild CTDS, 74.8% moderate or severe CTDS. A complex clinical and laboratory examination including x-ray, ultrasound and radiological methods (with DMSA), and blood pressure monitoring was carried out. The concentrations of renin and aldosterone in plasma were determined by ELISA. Hormones of 79 patients with US CM studied against ACEI therapy (Enap) for 12 months.
Results: Nephrosclerosis and arterial hypertension (AH) development, a decrease in glomerular filtration rate and hyperproduction of rennin at the background of moderate and severe CTDS, regardless of the anomaly type, significantly more often than with mild or no CTDS. Often renin hyperproduction takes place in the absence of AH syndrome, however, the maximum values of renin and aldosterone revealed in patients with obstructive variation of anomaly, nephrosclerosis and AH. Hyperreninemia maintained for a long time despite ACEI therapy of patiens with moderate/severe degrees of CTDS severity
Conclusions: A distinct dependence of the level of renin and aldosterone on the severity of the RBE was revealed. Maintaining hyperreninemia and giperaldosteronism, even after early defect correction on the background of moderate/severe CTDS indicates, that the conditions for the kidney pathological processes continued progression remain, i.e. the presence of a CTDS is an unfavorable prognostic sign.

P517

The Universal Panacea: Ibuprofen-induced Acute Interstitial Nephritis In A Child

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Introduction: Tubulointerstitial nephritis (TIN) is rarely seen in children, and it is often drug induced. Despite his low incidence of toxic effects, ibuprofen toxicity remains a concern, because its very widely use in children all over the world. Our objective is to describe an illustrative case of NSAID-Induced TIN.
Material and methods: We report a 9-year-old boy developing TNI after receiving NSAID treatment during a short period of time. He was referred to our hospital to discard appendicitis but was finally charged with acute interstitial nephritis.
Results: Nine-year-old boy was admitted to Emergency Department with the complaints of severe abdominal pain, fever, vomiting and malaise of 24 hours evolution. His mother refers weight loss in the last month and actual treatment with ibuprofen for dental pain. He had sickly appearance on admission and vital findings were as follows: body temperature: 37.9 °C, blood pressure: 120/80 mmHg. Initial complete blood cell count and blood biochemistry analyses except renal function tests had normal results (creatinine = 1,72 mg/dl, being normal 1 month before). After this finding, he was depth asked for urinary symptoms, referring polydipsia and nocturia. 3 Kg weight loss was confirmed, occurring in the last month. NSAID intake, weight loss and clinical picture was not related with acute nephritis until receive blood analysis. Renal function: diuresis 3.65 litres/24h, estimated glomerular filtration rate (Schwartz) 41.57 ml/min/1.73m, Osmolarity 265 mOsm/kg, proteinuria 0.3g/24h, β2-microglobulinuria elevated and all plasma/blood ratios indicating an interstitial damage. Urine microscopy: negative. Despite NSAID retirement he did not restore renal function in the following days, finally needing steroid therapy.
Conclusions: Subsequent to the over-the-count sale of NSAID, TIN result an emerging but probably still underdiagnosed disease because his insidious and widely presentation but also being a disorder undersuspected. As yet described, proteinuria and eosinophiluria are not frequent in NSAID-induced NIT.

P518

Significance Of Examination Of Concentration Of Il-8 In 24 H Urine For Early Diagnostic Of Renal Scarring In Patients With Vesicoureteric Reflux

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Introduction: The aim of the study was to determine concentration of IL-8 in urine of patients with vesicoureteric reflux (VUR) and reflux nephropathy A (RN A) for early diagnostic of renal scarring .
Material and methods: We examined 60 children with RN A and VUR. All children were comparable on a gender and age. All patients underwent ultrasound, X-ray and DMSA scan. We examined concentration of IL-8 in 24 h urine of patients by ELISA. Children were divided into 2 groups: I – with unilateral RN A according to classification of Smellie J. et all, 1985 (n=30); II – with VUR without renal damage (n= 30)
Results: We established that data of concentration of IL-8 in 24 h urine of patients with VUR without renal damage was 14,38±0,49 pg/ml. Concentration of IL-8 in 24 h urine of patients with unilateral RN A was 16,55 ±0,78 pg/ml. The ranges of concentration of IL-6 in 24 h urine of patients with VUR without renal damage were significant different with concentration of IL-8 in 24 h urine of patients with RN A ($p<0,05$). So, we determined that concentration of IL-8 in 24 h urine increased in process of renal scarring.
Conclusions: That's why data of concentration of IL-8 in 24 h urine can be used for early diagnostic of renal scarring in children with VUR.

P519

Structural Features Of The Urinary Tract Defects In Children Born In Irkutsk

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Introduction: Kidney malformations occupy a leading place in the structure of deseases of the urinary system. Inspite the ongoing correction of identified malformations, continuous antibiotic therapy, the renal failure develops quickly in children
Material and methods: We have analyzed the structure of congenital malformations of urinary system during 2011-2013 years in Irkutsk children who were hospitalized in nephrology department of city childrens hospital
Results: We observe distinct increase in the number of children with congenital malformations in urinary system being treated from 9,1% in 2011 to 10,1% in 2013. Among all defects of OUS hydro - ureterohydronephrosis ranges from 38.5% to 42,3% , kidney hypoplasia was diagnosed at 13,1% in 2011 and 16,2% in 2013, VRR from 18,1% to 20,3% respectively. The number of children diagnosed multicystic kidney disease is stable at 8,3%, 70% diagnosed prenatally, 30% -in the first year. Chronic renal failure occurs in 0,2% of all chidren with urinary organs diseases.
Conclusions: Presence of incurable malformations of urinary organs, early formation of CRF require improved antenatal diagnosis of urinary malformations and active cooperation perinatal Consillium with geneticists.

P520

Urinary Neutrophil Gelatinase-associated Lipocalin (ngal) In Asphyxiated Premature Neonates

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Introduction: The objective was to examine urinary neutrophil gelatinase-associated lipocalin (uNGAL) as a marker of acute kidney injury (AKI) in asphyxiated preterm infants.
Material and methods: Perinatal asphyxia was defined as Apgar skor (AS) ≤ 7 in 5th minute of life or pH ≤ 7.20. AKI was defined as an increase in serum creatinine (sCr) ≥ 26.5μmol/L or ≥50% from baseline in the third day of life (DOL3) and was classified by Acute Kidney Injury Network (AKIN) classification.
Results: 108 neonates of gestational age 33.9±2.0 weeks were enrolled in this prospective study. AKI was diagnosed in 60.2% patients. Of these patients, 80.0% belonged to AKIN1 and 20.0% in AKIN2. uNGAL was significantly higher in AKI then in non-AKI group and in AKIN2 then in AKIN1group. AUC-ROC for uNGAL was very good (0.69; p=0.000) on DOL1 at 4th hour after admission.
Conclusions: uNGAL is an early marker of AKI in premature neonates.

P521

Prenatal Hyperechogenic Kidneys: Risk Factors And Long Term Outcome

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Introduction: Predicting post-natal renal function in fetuses with hyperechogenic kidney remains a challenge. Several ultrasound and

biological markers have been suggested to help evaluate the risk of neonatal End-Stage Renal Disease but few studies evaluated the predictive ability of the combination of those markers and their individual input in prenatal counseling. This retrospective cohort study aims to 1) evaluate the impact of those markers on the decision to perform a termination of pregnancy (TOP), 2) evaluate the predictive ability of the combination of those markers and their individual input in prenatal counseling.

Material and methods: All fetuses presenting bilateral isolated hyperechogenic kidneys at Robert Debre hospital between 01/01/1992 and 31/12/2012 were included. We used multivariable logistic regression to study factors associated with the risk of TOP and Cox model to determine factors associated with a poor outcome (intrauterine death, neonatal death or renal failure (GFR<60mL/min/1,73m2) with TOP considered a competitive risk.

Results: 82 fetuses were included. The main independent predictor of TOP was the presence of an oligoamnios (OR 5.3, [1.1-24.6]) or an anamnios (OR 17.9, [2.2-144.9]). Fetal B2-microglobuline serum level did not impact the decision of TOP. Factors associated with a poor outcome were B2-microglobuline serum level ($p<0.005$) and the lack of amniotic fluid ($p<0.0001$). We did not find any association between the outcome and maternal age, family story of nephropathy, previous TOP or intra-uterine death, or kidney size. However after adjustment, only oligoamnios (HR 5.7, $p=0.02$) and anamnios (HR 21.7, $p<0.001$) were associated with a poor outcome.

Conclusions: Predicting post-natal outcome of fetuses with hyperechogenic kidneys remains a challenge. Ultrasound exam and especially the quantity of amniotic fluid is the best indicator of postnatal renal function. B2-microglobuline, although higher in patients with a poor outcome, is of little help in improving our ability to detect patients with a poor outcome.

P522

Pyeloureteral Junction Syndrome With Late Surgical Correction: 3 Case Reports

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Introduction: Background: Pyeloureteral junction syndrome (PUJS) is a blockage of the flow of urine occurring where the ureter enters the kidney. It is the most common anatomical cause of antenatal hydronephrosis and the most frequently observed cause of obstructive nephropathy in children.

Material and methods: Methods: We report three cases of PUJS who underwent surgery at late age.

Results: Results: Three children had diagnosis of ureteropelvic dilatation on routine antenatal ultrasound and had postnatal evaluation with Pediatric follow-up. One of them was diagnosed with PUJS at 10 months and maintained stable renal size and function until 16 years old. At this time surgical correction was necessary due to clinical deterioration. The other two cases had stable postnatal ultrasound evaluation and were subsequently discharged from Pediatric follow-up. Nine years later they were referred again. One had been diagnosed with PUJS after recurrent urinary infections and the other one as an incidental finding on ultrasound after abdominal trauma. Surgical interventional was performed on these two cases between the ages of 11 and 13 years old.

Conclusions: Conclusions: There are no randomized trials that provide evidence for the optimal management of congenital PUJS obstruction. For asymptomatic patients with mild to moderate hydronephrosis, observation is appropriate with periodical ultrasound examination. Diuretic renography is performed when there is an increase in the degree of hydronephrosis. If the affected kidney has less than 40 percent of split renal function, or there is a serial loss greater than 10 percent from a previous study, surgical intervention is recommended. These cases illustrate the difficulty in defining the optimal duration of follow-up of children with antenatal hydronephrosis in order to avoid future complications.

P523

Neutrophil Gelatinase-associated Lipocalin As A Marker Of Open Heart Surgery Related Acute Kidney Injury In Children

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Introduction: Cardiac surgery with cardiopulmonary bypass (CPB) is commonly perceived as a risk factor for decline in renal function. Hypothermia, hypoxia, hypotension, non-pulsatile blood flow during CPB, use of ACE inhibitors, inotropic and (or) vasoactive support affects kidney and contributes to the acute kidney injury (AKI). The conventional biomarker creatinine is not sensitive enough to detect AKI until a significant decline in renal filtration has occurred. Urine neutrophil gelatinase-associated lipocalin (NGAL), is an early biomarker and a predictor of AKI in a variety of clinical settings. Earlier detection of AKI could facilitate evaluation of novel therapeutic strategies. Our objective was to compare different functional and biological markers of kidney in children undergoing surgical correction of congenital heart lesions.

Material and methods: During 2012-2013 years we conducted prospective uncontrolled cohort study, 32 children with various congenital heart lesions undergoing CPB were enrolled. Median age of patients was 8,5 months, median weight of 7,3 kg. Median duration of CPB was 148 min., median aortic cross-clamp time 88 min, lowest median temperature during cooling was 30°C. Urine output, doses of diuretics, vasopressors and inotropics were recorded. Serum creatinine (SCr) level was determined by Jaffés method (Cobas 6000 analyzer, Roche), serum Cistatin C (CysC) was determined by particle-enhanced nephelometric immunoassay, urine NGAL was determined by ARCHITECT system (Abbott Diagnostics, Illinois, USA).

Results: AKI developed in 8 patients (33,3%), with SCr rise by more than 50% from the baseline, but the diagnosis using serum creatinine was delayed by 48 hours after CPB. In contrast, maximum increase in urine NGAL levels was 716-fold within 12 hours after CPB in patients having AKI. Median level of urine NGAL in the first sample was 202,7 ng/ml. In the group of patients with normal renal function the corresponding level of NGAL was 15,7 ng/ml (P=0,016).Median CysC level in first sample in AKI group was 1,195 mg/l vs. 1,055 mg/lin non-AKI group, (P<0.1).

Conclusions: Accurate measurements of urine NGAL are obtained using the ARCHITECT system. Urine NGAL is an early and sensitive biomarker of CPB related AKI.

P524

Parenchymal Thickness As An Additional Ultrasound Parameter Of Solitary Functioning Kidney Obstruction

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Introduction: Children with a hydronephrotic solitary functioning kidney (SFK) are at risk of decreased renal function. Urodynamically severe impairment of SFK drainage requiring surgery must be recognized early. The main imaging method is ultrasound (US) used for monitoring the dynamics of collecting system dilatation and SFK length. The study aimed at determining whether SFK parenchymal thickness (PT) may serve as an additional marker of obstruction. Measuring PT is easier than measuring pelvic diameter and also less influenced by voiding and hydration as the pelvis is more distensible than the parenchyma is compressible.

Material and methods: Using case reports of children with SFK anomalies followed in University Hospital Olomouc, the following US parameters were retrospectively assessed: PT, collecting system dilatation and SFK length. PT and SFK length were plotted into growth charts using Dinkel's nomograms for bilateral kidney length and a PT chart (Flögelová et al., Pediatr Nephrol

2014). A transverse view of the anteroposterior intrarenal pelvic diameter and calyceal or ureteral dilatation were measured. All patients' descriptive characteristics (age, US findings, surgery, height, glomerular filtration rate, proteinuria, hypertension and urinary tract infection) were entered into tables.
Results: From a total of 8 studied children (6 boys) aged 2.5–8.6 years (median, 5.7 years) with SFK anomalies, case reports are presented of 3 children with hydronephrosis – obstruction or suspected pelviureteric junction obstruction. Pyeloplasty was performed in two of them; one child was conservatively followed. PT was significantly reduced prior to surgery and significantly improved postoperatively. Children with a conservatively treated SFK had no significant PT reduction.
Conclusions: Case reports of hydronephrotic SFK patients retrospectively confirmed that PT is a valuable US marker of obstruction. Comparing the dynamics of both collecting system dilatation and PT may contribute to indication for surgery and reduce the number of invasive investigations with radiation burden (diuretic renal scintigraphy).

P525
5-year Outcome Of Infants With Vesico-ureteric Reflux

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Introduction: To compare the 5-year outcome of 69 infants with vesicoureteric reflux (VUR)
Material and methods: Sixty - nine children with initial diagnosis and 5 years follow-up of VUR were enrolled in this study. An initial MCU was taken at a mean age of 0.6 years and the follow-up study at 1.7 and at 5 years. A review of notes and clinical review (if still under follow up) was undertaken. Vesicoureteric reflux on MCU was graded according to the International Classification. Renal scintigraphy was used to assess renal scarring in 47 of the 69 patients who had acute pyelonephritis. The outcome was defined as resolved reflux, those with corrective surgery or those still being medically followed.
Results: There were 69 infants (46 girls, 23 boys) who were identified with primary VUR, with 28/69 having bilateral reflux. Forty –five had a urinary tract infection before diagnosis of VUR. There was a broad distribution of grades of reflux detected (Grades I-4, Grades II-23, Grades III-28 , Grades IV - 20, Grades V-9). 99m-Tc-dimercaptosuccinic acid scans on 47/69 (with urinary tract infection) demonstrated renal damage in eight infants (17%). After follow-up, resolution of VUR was found in 89% (21/24) of grades I and II, 58% (28/48) of grade III and IV, 11% (1/9) of grade V VUR (P=.04, mild vs. moderate; P=.003, mild vs. severe). Only 10 children underwent surgical correction, 5 of them also had other anatomical anomalies. The rest 37 reflux ureters show a VUR degree reduction without urinary tract infections. We found no statistatically significant differences between surgically and medically treated patients in terms of scarring, kidney function or recurrence of urinary tract infections.
Conclusions: Conservative treatment was successful in 72% of children. Recurrent UTI and lack of improvement after conservative treatment were indications for surgical treatment in 14% of children.

P526
Acute Kidney Injury And Perinatal Asphyxia In The Setting Of Therapeutic Hypothermia

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Introduction: Acute kidney injury (AKI) is a common feature associated with increased risk of morbidity and mortality in critically ill neonates. Perinatal asphyxia is its most common cause and therapeutic hypothermia used for neuroprotection may also ameliorate AKI. We report the incidence, clinical features, treatment and outcome of AKI in asphyiated newborns treated with therapeutic hypothermia.
Material and methods: A total of 51 cooled infants, treated since 2010, were reviewed using a prospectivelly collected database. Modified AKIN criteria were used to classify neonates with AKI. We studied demographic, perinatal, ressuscitation data and clinical data during admission to the NICU and outcome data on renal function after discharge, mortality and predictable neurologic outcome.
Results: AKI occurred in 17 of 51 cooled infants (33%). Of those with AKI, 13, 1 and 3 fulfilled criteria for AKIN stages 1, 2 and 3, respectively. An intrapartum event was present in 47%. Median 5 min Apgar score was 4 (0-10), 41% had pH<7.0 and 64.7% had a base deficit >16. According Levene criteria, 47% had HIE grade III. Only three AKI newborns did not have oliguria during hypothermia. Other laboratory abnormalities were hyponatremia (129±4mEq/l), hyperkalemia (6.0±1mEq/L), hyperphosphatemia (7.6 ±3mg/dl) and hypocalcemia (7.5 ±1mg/dl). Vancomycin and gentamicin were used in 47% and 23,5%, respectively. Two AKIN stage 3 patients underwent renal replacement therapy during hypothermia. The median value of SCr at the time of discharge/transfer was 0.4mg/dl (0.15-0.9), three with SCr above 0,5mg/dl. The mortality rate was 24%. The predictable neurologic outcome is severe in 29%.
Conclusions: Newborns with asphyxia needing hypotermia should be treated in a NICU with nephrology support, since the incidence of AKI remains high, though lower than before the advent of therapeutic hypothermia, possibly reflecting a protective role of hypothermia on the kidney. The authors suggest long term follow up due to increased risk of kidney disease.

P527
Acute Kidney Injury In Preterm Infants Admitted In Neonatal Intensive Care Unit

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Introduction: Factors that contribute to development of acute kidney injury (AKI) and tretman outcome among prematurely born neonates are not clearly understood.
Material and methods: This retrospective study included 150 prematurely born neonates. AKI was defined as an increase of serum creatinine levels ≥0.3 mg/dl compared against basal values.
Results: Majority of neonates with AKI - 94.8% had body weight<1500g. Logistic regression analysis showed that Apgar score in 5th minute <5, serum lactate levels >5 on the first day of life, core body temperature <36ºC on the first day of life, occurrence of sepsis, intracranial haemorrhage, necrotizing enterocolitis, patent ductus arteriosus, as well as treatment with vancomycin or dopamine were independent risk factors for the development of AKI. After the groups of neonates with and without AKI have been adjusted calculated risk ratio for a negative outcome of treatment (death) was 2.215 (CI 1.27-3.86) for neonates with AKI. Neonates with AKI had higher serum sodium levels in the third and fourth day of life.
Conclusions: AKI is associated with high mortality in preterm neonates. It is very important to identifity, as soon as possible, all infants who are at high risk to develop AKI.

P528
Vesicoureteral Reflux: Diagnosis And Treatment – Ten Years Of Follow Up

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Introduction: Vesicoureteral reflux (VUR) is a common congenital urinary tract abnormality in children and a risk factor for pyelonephritis and reflux nephropathy. The aim of this study is to evaluate the characteristics and follow up of children with VUR.

Material and methods: Retrospective study of the medical records of all children followed in the pediatrics/nephrology medical consultation of Centro Hospitalar Póvoa de Varzim/Vila do Conde, with the diagnosis of VUR for the past 10 years (2004 – 2013).
Results: There were 130 children (59% females) included with the diagnosis of VUR (188 refluxing units - RU). In 92 RU (49%) the VUR were grade I-II, in 68 RU (36%) were grade III and 28 RU (15%) were grade IV-V. Thirty-one children (24%) were prenatally identified (23 males, 74%), 9 of these (29%) with RVU grade IV-V (10 RU). In 99 children (76%) the diagnosis was made after urinary tract infection (UTI) and 15 children (15%) had RVU grade IV-V (20 RU). In all children (130) a 99m-TC-dimercaptosuccinic acid (DMSA) scan was performed and 43 of these (33%) presented renal scarring (76% unilateral and 30% bilateral). From these, 17 children had prenatal diagnosis (17/31-55%) and 26 children were diagnosed after UTI (26/99-26%). Recurrent UTI occurred in 42 children (32%), despite prophylactic antibiotics. Surgical treatment was performed in 40 children (31 %), 13 of them with VUR grade IV-V (18 RU). Eighty-nine children (68%) had conservative treatment with spontaneous resolution in 55 children (62%).
Conclusions: About a third of the cases had recurrent UTI, reflux nephropathy or need for surgical treatment, which increases the value of VUR early diagnosis and treatment.

P529
Improved Growth Associated With Early Gastrostomy In A Child With Renal Failure Due To Multicystic Dysplastic Kidneys

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Introduction: The incidence of multicystic dysplastic kidneys (MCDK) is 0.3-1/1000 births. Most cases are unilateral and have a good prognosis. Bilateral MCDK has a worse prognosis and more than 50% reach end-stage renal failure. We describe the clinical course of a male infant with polyuric renal failure due to bilateral MCDK, showing that early gastrostomy improved growth by allowing high fluid intake.
Material and methods: The patient's renal disease was detected by prenatal ultrasound screening. The boy was born at term by normal vaginal delivery. Renal function showed a gradual decline at the age of nine months. At this point a peritoneal catheter and laparoscopic gastrostomy were inserted.
Results: The boy was polyuric but not dehydrated. Shortly after gastrostomy insertion fluid intake could be increased to almost 200 ml/kg, continuously adjusted to match diuretic losses. BUN levels decreased from 30 mmol/L to 18 mmol/L during the first month after gastrostomy insertion and remained low for the following year, in spite of a glomerular filtration rate of 13 ml/min/1.73m2. Overall growth improved one year after gastrostomy, for weight from -1.7 SD to +0.18 SD and for length from -0.8 SD to -0.04 SD. Peritoneal dialysis was not initiated.
Conclusions: Early gastrostomy in an infant with salt- and water-losing renal failure secondary to MCDK permitted an increase of fluid intake to 200 ml/kg thereby improving growth and possibly even delaying the start of renal replacement therapy.

P530
Renal Agenesis And Hypoplasia In Humans Are Not Associated Glial Cell Line-derived Neurotrophic Factor

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Introduction: Congenital abnormalities of the kidney and urinary tract (CAKUT) are frequently observed in children and represent a significant cause of morbidity and mortality. Renal agenesis/hypoplasia account for a significant portion of these anomalies, and a genetic contribution to its cause is being increasingly recognized. Such as, Glial cell-derived neurotrophic factor (GDNF) plays an important role in renal development, serving as a trophic factor for outgrowth of the ureteric bud and its continued arborisation.
Material and methods: Twenty-five unilateral renal agenesis and twenty- five renal hypoplasia (without renal scar) patients were analyzed by direct DNA sequencing of all exons and exon-intron boundaries of GDNF gene
Results: The study consists of 25 renal agenesis (17 male and 8 female) and 25 renal hypoplasia (14 male and 11 female) patients. The mean age of the renal agenesis patients were 9.1 years. The 9 patients of renal agenesis have right and 16 of them have left renal agenesis. And also the mean age of patients with renal hypoplasia were 8.8 years. 10 have right and 15 of them have left renal hypoplasia among renal hypoplasia patients. The GDNF mutations were not found any of patients
Conclusions: These results suggest that genomic alteration GDNF is not a major mechanism leading to renal agenesis and hypoplasia. Analysis of a larger series of patients will be necessary to validate the association of the GDNF mutation with renal development defects

P531
Paracetamol (acetaminophen) Intoxication Causing Renal Failure

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Introduction: Management of acetaminophen overdose focuses on the risk hepatic failure. However, acute renal failure, although less frequent, can lead to serious metabolic complications and require hemodialysis.
Material and methods: CASE REPORT : We report on a 14-year old girl who presented with an acute renal failure as a result of voluntary drug intoxication with acetaminophen. She had a history of Ewing's sarcoma treated with chemo- and radiotherapy one year before. Recent serum creatinin level was at 45 μmol/L. She ingested 15g of Paracetamol (214 mg/kg). At Day 1, she presented with acute liver failure and moderate renal impairment with serum creatinin level at 128 μmol/L. While liver function improved under N-acetylcysteine, serum creatinin kept increasing. At day 8, liver tests had normalized while serum creatinin had raised up to 1010 μmol/L. Urinalysis showed a mild proteinuria with leukocyturia and no hematuria. She presented oligo-anuria and required hemodialysis for 14 days. Renal function finally normalized within 2 months.
Results: DISCUSSION : Kidney injury after paracetamol overdose is reported in 1-2% of cases. This prevalence increases to 40 – 80% when liver dysfunction is associated, but it can also occur in the absence of any liver damage. The mechanisms of paracetamol-induced nephrotoxicity are poorly defined. Renal failure usually begins at Day 2-5 with a peak at Day 7. The relationship between dose and nephrotoxicity is not clearly delineated and treatment is exclusively symptomatic.
Conclusions: As a conclusion, we advice to closely monitor serum creatinin after paracetamol overdose, more precisely during the first week, and regardless of the degree of liver failure or quantity of acetaminophen ingested.

P532
Acute Kidney Injury In Children: 5 Year Experience

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Introduction: Acute kidney injury (AKI) is commonly encountered medical condition in tertiary medical centers. The incidence of AKI is

increasing worldwide. There is significant variation in the etiology between developing and developed countries.
Material and methods: The aim of the study was to retrospectively analyze the data (etiology, clinical characteristics and outcome) of patients admitted to our hospital with the diagnosis of AKI during the period of 2009-2013.
Results: A total of 71 patients were included with mean age of 5.7 years (0.2-17 years). Hemolytic Uremic Syndrome was the main cause of AKI, comprising 56%. Acute Glomerulonephritis, prerenal and postrenal causes of AKI were presented in minor percentage. The mean duration of stationary treatment was 21.9 days (range 5-57days). The dialysis was needed in 84 % of cases (hemodialysis in 94 %, peritoneal dialysis in 6%). The lethal issue was in 7% of cases. 15 patients out of 71 developed different stages of Chronic Kidney Disease.
Conclusions: Despite significant progress in medicine, AKI has been found to be independently associated with increased morbidity and mortality, and current management options are still limited in that they are mainly supportive.

P533
Ureteropelvic Junction Obstruction – Three Clinical Cases With First Symptoms In Adolescence

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Introduction: Three clinical cases are presented with first symptoms of disease in adolescence, admitted in Pediatric Department of Centro Hospitalar da Póvoa de Varzim/Vila do Conde (CHPVVC), an hospital in the north of Portugal.
Material and methods: First case: Young male, 14 years old, previously healthy, was admitted in the emergency department with an abdominal pain in the right flank and iliac fossa, interpreted as acute appendicitis. During surgery, a retroperitoneal mass was found in the right kidney. An abdominal computed tomography scan (CT) was performed, showing a probable junction syndrome. In the renal ultrasound, renal asymmetry was observed, with reduced right renal parenchyma and pyelocaliceal dilation with 40 mm (anteroposterior diameter). In renogram with mercaptoacetiltriglicina (MAG-3), the right kidney showed differential function (44%) and pyeloureteral obstruction. Was submitted to a pyeloplasty with good evolution. Second case: Young female, 15 years old, without pathological history, was sent to consultation due to pyelonephritis by Escherichia coli, with left lumbar pain. Renal ultrasound showed left pyelocaliceal dilation with 42 mm (anteroposterior diameter) and reduced renal parenchyma. In MAG-3 renogram, hypofunction (24.91%) of the left kidney and obstruction of pyeloureteral drainage were revealed. Underwent pyeloplasty with good evolution.
Results: Third case: Young female, 15 years old, with prenatal diagnosis of left ureteropelvic dilation, who abandoned medical follow up. Hospitalized with acute pyelonephritis by Escherichia coli, with intense left lumbar pain. Renal ultrasound revealed left pyelocalicial dilatation with 40 mm (anteroposterior diameter). Renogram with MAG-3 showed hypofunction (22.6%) of the left kidney without pyeloureteral obstruction. Oriented to Pediatric Urology.
Conclusions: Congenital anomalies of the urinary tract should be thought in older children with lumbar or abdominal pain in the flank and/or pyelonephritis. In these cases, an abdominal ultrasonography must be considered for initial evaluation.

P534
Acute Renal Injury In Critically Ill Children: Incidence, Etiology And Outcome

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Introduction: Acute Renal Injury (AKI) is an important cause of morbidity and mortality in critically ill children. The etiology has shift from primary renal disease to multifactorial causes. Objectives: Evaluate the incidence, etiology and outcome of AKI in a pediatric cohort.
Material and methods: Retrospective study of patients admitted to a pediatric intensive care unit (PICU) between February 2009 and January 2014. AKI was defined by pRIFLE criteria. Demographic data, comorbidities, etiology of AKI, pRIFLE classification, use of renal replacement therapy (RRT), other organ support therapies and outcome were registered.
Results: AKI was identified in 143 admissions (6,9% of the total; 125 patients), 83 males (58%), mean age 8,4 +-6,5 years. Median and mean length of PICU stay was 5 days (0-72) and 9,7+-12,1 days, respectively. Risk was present in 32,9%, injury in 33,6% and failure in 33,6%. Secondary AKI was found in 91,6% of the patients. Sepsis was the main cause (27,9%) followed by blood loss/trauma/surgery (24,5%), low cardiac output (12,6%), gastrointestinal loss (7,7%), rhabdomyolysis (4,9%), renal loss/diabetes, hemolytic-uremic syndrome and nephrotoxics (all with 4,2%). Multifactorial causes for AKI were present in 47,6% of the patients. Nineteen cases (13,3%) needed RRT (mean of 3,8 patients/year): venovenoushemodiafiltration (13), peritoneal dialysis (2) and both techniques (2). Mechanical ventilation was needed in 41%, vasoactive drugs in 26%. All patients in extracorporeal membrane oxygenation (16) had AKI. Regarding the outcome, Loss was present in 3 (2,1%) and End-stage renal disease in 4 (2,8%). The mortality rate was 15,4%.
Conclusions: In this series AKI was very common and mainly related with reduced renal perfusion caused by septic, hypovolemic or cardiogenic shock. pRIFLE allows early identification of patients at risk that need renal protection measures, highlighting that small variations in creatinine represent significant renal function reduction.

P535
Peritoneal Dialysis In Acute Renal Failure After Cardiac Surgery

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Introduction: Patients submitted to cardiac surgery have an increasing risk for developing acute renal failure. The aim of our study was to evaluate and correlate clinical data and outcome of children with congenital cardiac diseases submitted to cardiac surgery, presenting acute renal failure (ARF).
Material and methods: Two thousand and twenty eight patients with congenital heart diseases were submitted to cardiac surgeries in our center during 5 years,62 developed acute renal failure needing dialysis and we could analyze 48 complete files. Data of interest were : demographic data, clinical and surgical features and outcome.
Results: Most of the patients were male, with less than 28 days old and weighing less than 5kg.In the majority of cases (77%), ARF was diagnosed in the first 6 days after surgery, demonstrating influence of the procedure itself. All of them were treated by peritoneal dialysis (PD) for a mean time of 255 hours; 58.3% of them died. There was no statistical significant difference between age, time on extracorporeal circulation and duration of dialysis, comparing the patients who survived and the deceased ones.

Conclusions: Acute renal failure is a common complication in children with congenital heart disease and PD is a safe dialytic method. The mortality rate is high and influenced by aspects related to the child, underlying disease, type of surgery and many other associated aspects.

P536
Antenatal Hydronephrosis As A Predictor Of Postnatal Outcome

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Introduction: The postnatal approach of congenital urinary tract malformations remains controversial. In 2010, the portuguese pediatric nephrology society proposed clinical guidelines for the postnatal study, with stratification of the workup according to the prenatal anteroposterior pelvic diameter (APDB).
Material and methods: Retrospective study of children born between January 2000 and December 2003, with prenatal diagnosis of congenital urinary tract malformations referred for Pediatric Nephrology in Hospital St. Antonio, Porto. The antenatal APDB were grouped into three groups (<7mm; 7 to 14.9 mm; ≥ 15 mm). In order to evaluate the applicability of clinical guidelines suggested by PPNS, the cases were divided into 2 groups according the postnatal ultrasound (US): Group A - HDPN mild / moderate (APDB <15mm), Group B - HDPN severe (≥15 mm APDB).
Results: The sample consisted of 135 children; in prenatal US, 12,6% had APDB ≥ 15 mm with most cases of severe HD being bilateral (p= 0.485), and associated with other echographic changes (p <0.05). The diagnosis of pathological HD occurred in 88.2% of the cases with APDB ≥ 15 mm, 20.9% in cases with APDB 7 to 14.9 mm and 14.8% in cases with APDB <7 mm. APDB ≥ 15 mm has a high specificity and low sensitivity in identifying urological pathology. Most cases of VUR were diagnosed in children with APDB 7 to 14.9 mm, showing no correlation with the severity of HD (p = 0.923); most cases with obstruction in MAG3 were diagnosed in children with APDB ≥ 15 mm (p <0.05).
Conclusions: PPNS guidelines were effective in the diagnosis of most cases associated with obstructive pathology that are usually severe and needs surgery.

P537
Acute Kidney Injury In Pediatric Patients Hospitalized In Four Serbian Tertiary Care Centers During Three Years

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Introduction: Acute kidney injury (AKI) in the settings of the tertiary health care center, whether it was diagnosed at the admission or has developed during the hospitalization, represents significant independent risk factor of mortality. That is why identification of AKI and its prevention could lead to a better survival rate of pediatric patients.
Material and methods: Medical records of hospitalized patients were analyzed, in whom the diagnosis of AKI had been established in any time during the hospitalization at the pediatric and neonatal intensive care units, cardiac surgery wards and nephrology and hematology departments. We described their underlying disease, criteria for the diagnosis of AKI, stage of AKI according to pRIFLE classification, etiology of AKI, severity of the disease and therapy. Univariate logistic regression was a method for the independent risk factor analysis.
Results: From January the 1st 2011. to December the 31st 2013., there were 480 patients of both sexes equally represented, among whom one third were newborns. More than 50% were treated in the intensive care units. Rise of serum creatinine without oliguria was criterion for the diagnosis of ACI in 53%. Mean glomerular filtration rate in newborn was 13, 98 ml/min/1,73m2, infants 19, 45 ml/min/1,73m2 and 40, 07ml/min/1,73m2 in patients between 1 and 18 years. Equal percentage of patients (30%) were classified into R and I pRIFLE stage. Ischemia and hypoxemia were the main etiology factor of AKI in 47%, intrinsic kidney disease in 38%, and MODS or sepsis in 15%. Renal replacement therapy (RRT) was necessary in 18%. Seventy two percent of patients survived AKI. Younger age, need for RRT and volume overload were negative independent risk factors for the survival.
Conclusions: Although AKI is still underrecognized condition, better understanding of its prevalence and mortality risks would improve measures of prevention and treatment.

P538
Successful Treatment of Atypical HUS Due to Factor H Auto-Antibodies by Eculizumab

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Introduction
Complement factor H (CFH) plays an important role in the pathogenesis of atypical haemolytic uremic syndrome (a HUS). Beside genetic variations of CFH the presence of CFH auto-antibodies (CFH ab) may cause a HUS due to functional CFH deficiency.
Case report
We report on a 7-year old boy suffering from a HUS. The disease started with abdominal pain, long lasting vomiting, but without diarrhoea. The laboratory work-up revealed the typical signs of HUS (Hct. 0.19%; LDH 2800 IU/L; fragmentocytes positive; s-creatinine 300 µmol/L; s-urea 40 mmol/L; platelets 23 Gpt/L). Shigatoxin was detected in faeces by ELISA. However, the C3 level was lowered (0.67 mg/L) and CFH ab were extreme high (>2500 AU), whereas CFH concentration and CFH mobility were normal.
Under an initial symptomatic treatment including haemodialysis the clinical condition improved temporarily for 5 days. Then the haemolysis recurred and the renal function deteriorated again. At constant low level of C3 complement the boy was treated with a single plasma exchange on day 8 which resulted in a drop of the CFH ab by 50 percent and an increase of the C3 complement to normal range. Assuming the diagnosis of a HUS caused by CFH ab and triggered by Shigatoxin we started a treatment with Eculizumab on day 11 and continued until today (5 months) in recommended dosages and intervals. To control the production of CFH ab, the boy received monoclonal antibodies against CD 20 (Rituximab™; 375 mg/m^2) and Mycophenolat Mofetil (MMF) additionally. This therapeutic regime resulted in a complete remission of the renal function. The CFH ab remained at low levels and the C3 complement stayed in normal range.
Conclusion
In a patient suffering from a HUS due to FH auto-antibodies the combined treatment with Eculizumab, Rituximab and MMF resulted in clinical remission with complete recovery of the renal function and normalization of C3 complement.

P539
Polyoma-virus-induced nephropathy in kidney transplantation - only BK?

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Introduction
Opportunistic infections in patients with transplanted organs are a common problem. Polyoma virus are highly sero-prevalent in

immunesuppressed patients and can cause tubulo-interstitial nephritis. As JC-virus is uncommon to cause nephropathy, screening only for BK-virus is recommended for the first 12 - 24 months after kidney transplantation.

Clinical study

In a cohort of 11 pediatric patients (age at transplantation 8.1 (1.6-14.5) years; time after transplantation 5.85 (0.84-13.1) years) in 7 patients screening for polyoma virus were positive in urine or plasma. In three patients viral load were considered as significant.

In one of these 3 patients BK-virus in urine and blood was detected by PCR in significant numbers shortly after transplantation.

In the second patient JC-virus were detected three months after transplantation in urine as well as in blood. BK-virus were not present. During the next two years the number of copies varied considerably. At the end of year 2, the patient developed additional significant BK-viruria. After reduction of immunosuppression the viral load of BK- and JC-virus decreased significantly and the graft function remained excellent in this patient.

In the third patient, JC-virus replication was detected in the first year after transplantation only in urine and has persisted. After 4.5 years JC-virus were identified in blood for the first time. Surprisingly, despite reduction of immunosuppression JC-viremia increased and renal function declined. A biopsy revealed low grade interstitial nephritis, positive SV 40 antigen and negative C4d deposits. Exposition to immunosuppression was reduced further and in year 6.5 post transplantation JC-virus load declined as well in urine as in blood. The renal function remained stable.

Conclusion

These results indicate that not only BK-virus can cause a significant nephropathy, but also JC-virus should be considered.

P540

Mid-Aortic Syndrome In Two Children

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Mid-aortic Syndrome (MAS) is a rare condition presenting with severe hypertension (HTN) and characterized by narrowing of the abdominal aorta, the renal arteries and visceral Branches (Tummolo A, 2009).

Objectives: Report on two patients with Mid-aortic Syndrome.

Methods: Clinical, duplex ultrasound scan, MRI or CT, angiography.

Results: CASE REPORT 1: A boy had Neurofibromatosis type 1, from 6 years, had headaches, rises the blood pressure (BP) up to 170/100 mm Hg. In 7 years, angiography established narrowing of the abdominal aorta and both renal arteries stenosis, at the left 2 renal arteries. In 10 years, the boy held sympathectomy abdominal aorta and renal arteries, then stenting bottom of the left renal artery. At age 11, the boy done right renal artery stenting through the carotid access. There was a decrease of HTN within 2 years to 140/80 mm Hg. Due to the high arterial hypertension in patient age of 13 in angiography restenosis performed the bottom of the left renal artery. Within 2 years the patient has arterial hypertension to 173/100 mm Hg. At age 15, patient in abdominal aortography performed balloon angioplasty right and top left renal arteries. Balloon angioplasty of renal artery stenosis in a patient led to the normalization of blood pressure.

CASE REPORT 2**:** A girl 5 years old examined about high blood pressure to 150/110 mm Hg.

CT angiography of the kidneys: determined stenosis of the right and left renal artery stenosis, and the superior mesenteric artery stenosis. Angiography established stenosis of the right and left renal arteries, superior mesenteric artery stenosis, narrowing of the abdominal aorta-Mid-aortic syndrome. Angiography performed at balloon dilatation.

Conclusions: Angiography is the gold standard diagnosis and treatment MAS syndrome in children.

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