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Welcome Address

Dear Friends and Colleagues,

The Acute Cardiovascular Care Association (ACCA) is very pleased to welcome you to the Acute Cardiac Care Congress 2012 in the beautiful city of Istanbul.
The main theme of this edition is "**Integrative approach and management of Acute Cardiovascular Diseases**". Encompassing comprehensive updates on different fields related to this theme focusing on diagnosis, therapies, systems and organisation for the best care, it addresses a wide-range of topics of acute coronary syndromes, heart failure, life-threatening arrhythmias, as well as acute valvular diseases which will be presented and discussed by a distinguished international faculty.

An important part of the programme is composed of the original scientific contributions we received during the call for abstracts. Selected abstracts will be presented in different formats allowing for peer review, discussions and knowledge exchange between scientists and practitioners from our community.

The Acute Cardiac Care congress is a unique forum where physicians meet to discuss the latest therapies and innovations, share experiences and exchange ideas on their daily practice.
Our aim is to provide a programme of great scientific value with more than 40 sessions - main symposia, how to sessions, abstract sessions and a new feature for 2012: practical cases presented within an interactive session format, where real life challenging cases will be demonstrated by experts, discussed with the audience and concluded by recommendations and take-home messages which delegates can implement in their daily practice.

The congress will offer delegates a variety of high quality scientific sessions and industry supported educational sessions. Attendees will also have the opportunity to visit the exhibition area and meet with industry to discover the most recent state of the art technology and devices.

Thank you for being with us in the fascinating and exotic city of Istanbul, famous for its historical monuments and magnificent scenic beauties; a city to make our event memorable.

Sincerely,

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Reviewers of the submitted abstracts are acknowledged for their contribution to the reviewing and selection of data to be included in the Scientific Programme.

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Acute Cardiac Care 2012 - Abstract Submission Statistics

Abstracts by Topic

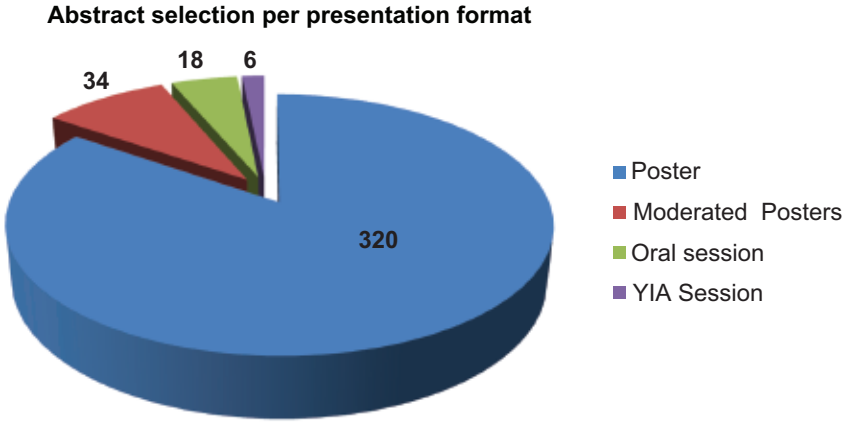
Topic	
01.00 - ACS	170
02.00 - Acute heart failure	50
03.00 - Arrhythmias	16
04.00 - Basic science	11
05.00 - Biomarkers	39
06.00 - Cardiovascular disease prevention - Risk assessment & management	27
07.00 - Chronic Ischaemic heart disease	
08.00 - Clinical pharmacology and pharmacotherapy	15
09.00 - Coronary reperfusion	10
10.00 - Diabetic heart disease	15
11.00 - General intensive care	11
12.00 - Genetics	
13.00 - Haemodynamics	4
14.00 - Hypertension	6
15.00 - Invasive imaging - Cardiac catheterisation and angiography	11
16.00 - Miscellaneous	35
17.00 - Non invasive imaging - Echocardiography, CMR, CT & nuclear techniques	24
18.00 - Nursing	12
19.00 - Pre-Hospital care	5
20.00 - Pulmonary hypertension	6
21.00 - Risk stratification	19
22.00 - Sudden death / Resuscitation	26
23.00 - Syncope	4
24.00 - Telemedecine	6
25.00 - Thromboembolic venous disease	16
26.00 - Valvular heart disease	22
27.00 - Databases, registries and surveys	13
28.00 - Cardiac surgery in ICCU’s patients	8
30.00 - Myocardial and pericardial diseases	7
31.00 - Acute aortic syndrome	4
Grand Total	**592**

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Abstracts by Country

Country	Total 2012	Country	Total 2012
Albania	**3**	Korea, Republic of	**7**
Algeria	**1**	Lithuania	**3**
Argentina	**1**	Macedonia	**2**
Armenia	**3**	Mexico	**1**
Australia	**1**	Moldova, Rep. of	**2**
Austria	**5**	Montenegro	**2**
Belarus	**6**	Morocco	**3**
Belgium	**5**	Netherlands	**9**
Brazil	**15**	Norway	**1**
Bulgaria	**6**	Poland	**16**
China, PROC	**1**	**Portugal**	**60**
Croatia	**4**	Qatar	**4**
Cyprus	**1**	Romania	**42**
Czech Republic	**12**	Russian Federation	**28**
Denmark	**7**	Saudi Arabia	**3**
Egypt	**13**	**Serbia**	**40**
Estonia	**3**	Slovenia	**3**
France	**9**	Spain	**49**
Georgia, Republic of	**5**	Sweden	**2**
Germany	**4**	Switzerland	**12**
Greece	**7**	Thailand	**1**
Hungary	**4**	Tunisia	**21**
India	**5**	Turkey	**17**
Indonesia	**6**	Ukraine	**15**
Iran (Islamic Rep. of)	**8**	United Kingdom	**28**
Israel	**9**	USA	**3**
Italy	**58**	Uruguay	**1**
Japan	**10**	Uzbekistan	**2**
Kazakhstan	**3**		

Selection



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Oral Abstract Session 1
Saturday, 20 October 2012 - 16:15 - 17:45

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The prognostic value of a new tissue Doppler parameter in patients hospitalized with acute decompensated heart failure

C Mornos[1], R Dan[1], A Mornos[1], A Ionac[1], D Cozma[1], S Pescariu[1] and L Petrescu[1]

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Background: It has been shown that a new Tissue Doppler index, E/ (E'×S'), is able to predict a high level of left ventricular (LV) end-diastolic pressure (E = early diastolic transmitral velocity, E' = early diastolic mitral annular velocity and S' = systolic mitral annular velocity). The purpose of our study was to investigate whether E/ (E'×S') could be a predictor of cardiac death in patients hospitalized with acute decompensated heart failure (ADHF).

Methods: We determined E/ (E'×S') in 131 consecutive patients hospitalized with ADHF, in sinus rhythm, after appropriate medical treatment. The average of the velocities from the septal and lateral mitral annular sites was used. Patients with inadequate echocardiographic images, congenital heart disease, paced rhythm, significant primary valvular heart disease, acute coronary syndrome, coronary revascularization during follow-up, severe pulmonary disease, malignant neoplasia, renal failure, were excluded. Only 105 patients formed our study group. The primary study end-point was definite as cardiac death.

Results: In our study group, the mean LV ejection fraction was 38 ± 14%. During the follow-up period (36.5 ± 12.7 months) cardiac death occurred in 17 patients (16.1%). Mean E/ (E'×S') was 3.81 ± 0.79 in these patients, while it was 1.58 ± 0.86 in the rest ($p < 0.001$). The optimal E/ (E'×S') cut-off to predict future cardiac death was 2.9 (81% sensitivity, 87% specificity). Cardiac death was significantly higher in the group of patients with E/ (E'×S') > 2.9 than in the rest with E/ (E'×S') ≤2.9 [13 (50%) vs. 4 (5.1%), $p < 0.001$]. On multivariate Cox analysis including the variables that predicted cardiac death on univariate analysis [N-terminal pro-brain natriuretic peptide levels, severe mitral regurgitation, LV ejection fraction, left atrial volume index, E/A (A = peak late diastolic transmitral flow), S', E', E/E' ratio, E/ (E'×S') >2.9, LV ejection fraction ≤40% combined with E/E' >15, and restrictive pattern], the E/ (E'×S') index >2.9 was the only independent predictor of cardiac death (HR = 7.3; 95%CI = 1.4-26.3; $p = 0.002$).

Conclusions: In patients with ADHF, E/ (E'×S') >2.9 is an important independent long-term prognostic index of cardiac death.

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Severe left ventricular systolic dysfunction is an independent predictor of poor response to clopidogrel

Z Motovska[1], M Ondrakova[1], M Fischerova[1], M Hladikova[2] and P Widimsky[1]

[1]Third Medical Faculty of Charles Univ. and Royal Vineyards Univ. Hospital, Prague, Czech Republic [2]Department for Medical Informatics, Second Medical Faculty of Charles Univ., Prague, Czech Republic

Background: Patients with coronary artery disease and left ventricular systolic dysfunction have a high risk of adverse cardiac outcome. Non-response to a P2Y12 receptor antagonist was identified as an independent predictor of ischemic events after percutaneous coronary intervention (PCI). Therefore, optimization of antiplatelet therapy after PCI in patients with left ventricular systolic dysfunction would have a great prognostic impact in this high-risk patient population.

Aim: The purpose of presented study was to investigate the association between left ventricular systolic function and response to clopidogrel in a large population of patients having PCI.

Methods: Study group consisted of 519 consecutive patients undergoing PCI; mean (SD) age - 67.7 (11.9) years, 62.8% men. Laboratory efficacy of clopidogrel was measured by using the vasodilator-stimulated phosphoprotein (VASP) index 20 ± 4 hours after a loading dose of

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clopidogrel (600mg). Non-response was defined as a VASP index ≥ 50%. The 30-day combined incidence of death, non-fatal acute coronary syndrome, re-PCI, stent thrombosis and stroke has been compared between patients with left ventricular ejection fraction (LVEF) < 35% and with LVEF ≥ 35%.

Results: In the whole study population, a significant negative correlation was found between LVEF and VASP Index (Pearson's coefficient r = – 0.096, p < 0.028); VASP index tended to increase with a decrease of LVEF. Values (Mean and 95% Confidence Interval) of VASP index were: 40.4 (37.8; 43.0) % in patients with LVEF > 50%, 42.4 (39.3; 45.6) % in patients with LVEF 35 - 50%, and 46.7 (40.6; 52.9) % in patients with LVEF < 35% (p = 0.13 for intergroup analysis of variance). Proportion of non-responders to clopidogrel was 35.9% in patients with LVEF ≥ 35% and 51.9% in patients with LVEF < 35% (p = 0.022). After an adjustment for variables that significantly influenced clopidogrel efficacy, LVEF < 35% was recognized as an independent predictor of non-response to clopidogrel. The 30-day combined clinical end-point occurred in 18% of patients with LVEF < 35% and in 7.3% of patients with LVEF ≥ 35% (p = 0.026). The 30-day incidence of all-cause mortality was 14% in patients with LVEF < 35% and 0.9% in patients with LVEF ≥ 35% (p < 0.001).

Conclusion: Each second patient with severe systolic dysfunction of LV has high on-treatment platelet reactivity after PCI with stent implantation. LVEF < 35% was recognized as an independent predictor of non-response to clopidogrel. Clopidogrel, which needs to be metabolized into an active form of drug, is not an optimal drug for patients with severe LV systolic dysfunction.

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Incidence of cognitive function alteration associated with trans-arterial interventional aortic valve implantation in Intensive Care Unit (ICU).

R Piccari[1], S Bartolini[1] and M Franchini[1]

[1]*San Camillo Forlanini Hospital, Department of Cardiology, Rome, Italy*

Background: Trans-catheter aortic valve implantation (TAVI) is an alternative treatment for high-risk patients with aortic valve disease in need of surgery. The nurse's role is essential for early detection of symptoms in a multidimensional assessment carried out in the pre and post TAVI visits.

Methods: From November 2009 to March 2012, 50 consecutive patients (pts) admitted in ICU after TAVI implantation were evaluated. The patients were aged 83.1 ± 4.3 with a range of 74 to 91 years, 26 females and 24 males. The Short Portable Mental Status Questionnaire (SPSMQ) was used to assess cognitive status in the pre-hospital visit (pre-TAVI) and at admission in ICU (post-TAVI). Episodes of psychomotor agitation (PA) were detected during ICU stay.

Results: 9 pts showed PA post-TAVI and 41 did not. The group with PA showed a worse pre-TAVI mean cognitive status (p = 0.0015), a higher pre-TAVI dependence in IADL (p = 0.024), and a longer ICU average length of stay (5.4 ± 5.8 vs 2.5 ± 1.8, p = 0.0074). There was no significant difference in sex and mean age between the two groups. The logistic regression analysis suggested the pre-TAVI normal cognitive status being protective for PA (OR = 0.42, 95%CI = 0.22-0.77).

Conclusion: Cognitive function alteration needs a multidisciplinary approach with prevalence of non-pharmacological interventions, although this is usually not included in nursing care plans. Elderly pts are frail and complex: the correct multidimensional evaluation could be particularly useful in preventing psychomotor agitation episodes in order to shorten ICU average length of stay.

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Secular trends in atrial fibrillation etiologies and related mortality: a 20-year experience from a Middle-Eastern country (1991-2010)

A M F Salam[1], HA Albinali[1], AW Al-Mulla[1], N Asaad[1], R Singh[1], A Al-Qahtani[1] and J Al Suwaidi[1]

[1]*Hamad Medical Corporation, Doha, Qatar*

Objectives: little is known about trends of the etiologies of atrial fibrillation (AF) in the developing countries and related mortality. This was examined in this study in patients hospitalized with AF in a real-world population in a Middle-Eastern Country.

Methods: Retrospective analysis of prospective registry of all patients hospitalized with AF in Qatar from 1991 through 2010 was made. Rates and trends of clinical characteristics, cardiac co-morbidities and in-hospital mortality were examined.

Results: During the 20-years period 3849 patients were hospitalized for AF. In the latter years of the study there was increase in the prevalence of diabetes mellitus and hypertension when compared to patients hospitalized in the earlier years. Associated ischemic heart disease was also trending higher while valvular heart disease, rheumatic heart disease and heart failure prevalence was trending lower. The study demonstrated steady rate of in-hospital mortality over the 20-year period.

Conclusions: recent improvements in the recognition and management of the co-morbid conditions associated with AF, especially heart failure and valvular heart disease was, at least in part, offset by the increase in prevalence

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of diabetes mellitus and hypertension along with ischemic heart disease in our region. Tailored strategies for the prevention and treatment of these conditions are warranted to reduce the burden of cardiovascular disease in our region.

Table 1. Secular trends in AF & mortality

Outcomes	1991-94	1995-98	1999-02	2003-06	2007-10	P value
Number of patients	648	900	474	891	935	
Age (mean ± SD), yrs	55 ± 16	56 ± 15	56 ± 15.6	56 ± 16	57.5 ± 16	0.02
Diabetes Mellitus	166 (25.6)	247 (27.4)	146 (30.8)	294 (32.9)	304 (32.5)	0.004
HTN	196 (28.7)	276 (30.7)	191 (40.3)	403 (45.1)	427 (45.7)	0.001
ACS	25 (3.9)	35 (3.9)	39 (8.2)	67 (7.5)	123 (13.2)	0.001
Valvular HD	17 (2.7)	64 (7.1)	21 (4.4)	27 (3.0)	37 (4)	0.001
Heart Failure	152 (23.5)	148 (16.4)	91 (19.2)	142 (15.9)	162 (17.3)	0.001
RHD	31 (3.4)	27 (3)	2 (0.4)	10 (1.1)	27 (2.9)	0.001
Mortality rates	29 (4.5)	33 (3.7)	24 (5.1)	40 (4.5)	34 (3.6)	0.63

Data are expressed in numbers (%) of patients. HTN = hypertension, ACS = acute coronary syndromes, Valvular HD = valvular heart disease, RHD = rheumatic heart disease

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Cultural factors increase pre-hospital delay in myocardial infarction for Saudi women

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Many factors have been implicated in patients' decisions to seek care in MI, but most research has a Western origin and it is possible that reasons for delay differ in Arab cultures. Our study aimed to explore the factors that contribute to pre-hospital delay among MI patients in Saudi Arabia. This cross sectional study comprised a convenience sample of research participants (n = 311), who presented with a diagnosis of MI to three hospitals in Riyadh from March 2011 to June 2011.Of these, 189 patients met the eligibility criteria. There was a statistically significant difference between pre-hospital delay time (onset of symptoms to hospital arrival) and participants' gender. For males the median delay was 5 hours (M = 5.78, SD = 1.736) and for females it was 12.9 hours [M = 6.79, SD = 1.851; t (187) = –3.097, p = .002]. This was despite similar intervals between the genders for symptom onset to decision to seek care (male = 2.5 hours, female = 3 hours). In addition, only 12% of females versus 88% of male participants arrived at hospital in the first hour of symptom onset. The median transfer time for all participants was 45 minutes, (0.5hrs for men and 2.5 hours for women).

The gender differences in pre-hospital delay in Saudi are likely to be influenced by cultural factors, since the majority of females (97%), in this study cannot drive and it is culturally prohibited for them to go to hospital without a male relative escorting them. Only, 11% of patients from both genders travelled to the hospital by ambulance. Moreover, symptom onset most commonly occurred at home for both males (65%) and females (78%) and the most popular response (41%) was to try a self-help remedy. Two factor ANOVA demonstrated that females delay significantly more than males when they are non-Saudi, have no dyspnea and when they are outside their home at symptom onset ($p < 0.05$), perhaps due to language and cultural barriers. This the first study conducted with MI patients in Saudi within the restrictions of an Arab culture. Overall the total pre-hospital delay time reported here is longer than in studies in other settings and there are significant gender differences. We postulate that cultural factors are implicated. Health promotion strategies for potential MI patients should consider offering culturally- specific, gender related messages.

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Oral Abstract Session 2
Sunday, 21 October 2012 - 14:15 - 15:45

75

Impact of acute kidney injury in patients with acute decompensated heart failure on cardiovascular death and recurrent heart failure

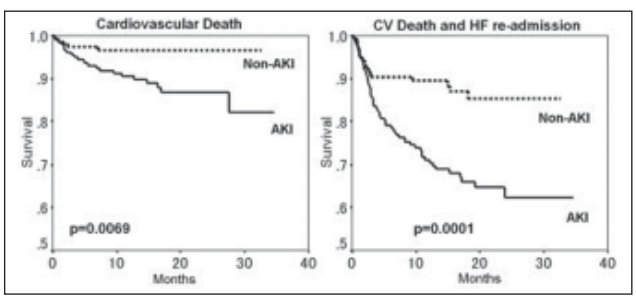
S Okino[1], S Fukuzawa[1], M Inagaki[1], J Sugioka[1], A Ikeda[1], J Maekawa[1], S Ichikawa[1], N Kuroiwa[1], S Okamoto[1] and S Maekawa[1]

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Background: Acute kidney injury (AKI) was sometimes seen in patients under treatment for acute decompensated heart failure (ADHF) with relation to diuretics usage or other reasons. However, it is unknown whether AKI during treatment for ADHF associate with prognosis.

Methods and Results: We studied consecutive 362 patients with ADHF requiring emergent hospitalization (mean age 73.1 years, 240 males and 124 coronary heart disease). AKI was defined as serum creatinine elevation of > = 0.3 mg/dl or > = 50% above baseline within 48 hours. Clinical end point was cardiovascular death (CVD) and a composite of cardiovascular death and heart failure requiring re-admission (CVD_HF). Mean follow-up period was 15.0 +/- 8.4 months. There were 205 AKI patients who had higher age (74.8 +/- 9.2 vs. 70.9 +/- 14.0, p = 0.003), serum creatinine at admission (1.37 +/- 0.80 vs. 1.00 +/- 0.57, p < 0.001) and N-terminal pro-brain natriuretic peptide at admission (8752 +/- 10819 vs. 6006 +/- 7445, p = 0.005) than those without AKI. Twenty-eight had CVD (23 with AKI, p = 0.005) and 82 had CVD_HF (63 with AKI, p < 0.001). Kaplan-Meier analysis showed AKI-patients had lower event free survival (Figure). Multivariate analysis revealed AKI was an independent predictor of CVD (p = 0.029) and CVD_HF (p < 0.001).

Conclusion: AKI during treatment for ADHF was a predictor of CVD and CVD_HF in patients with ADHF.



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Levosimendan improves right ventricular function and energy metabolism in a sheep model of submasive pulmonary embolism

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Purpose: A proinflammatory phenotype with an increased oxidative stress (OS) would play a role in right ventricular (RV) dysfunction during pulmonary embolism (PE). Levosimendan (L) is a calcium-sensitizer drug with cardioprotective properties. We hypothesized that L may preserve RV function by attenuating myocardial OS and improving energetics during submassive PE.

Methods: pulmonary (PF) and right coronary (RCF) flows (Transonic), RV, pulmonary arterial (PAP) and aortic (AoP) pressures (Millar) and right (RSFW) and left (LSFW) septum-free wall diameters (sonomicrometry) were measured in twelve anesthetized sheep. Venous embolization with fresh autologous blood-clot was carried out progressively over 30 minutes until RSFW/LSFW ratio reached between 0.8-0.9 (T30). Sheep were randomized to receive L or saline solution (S) (T90). RV systolic and diastolic functions were assessed by the preload recruitable systolic work (PRSW) and end-diastolic volume (EDV), time constant (tau) and stiffness constant (beta), respectively (pressure-volume loop, Leycom 5DF). We estimated the energetic charge (EC) of RV and left ventricle by HPLC quantification of adenine nucleotides in myocardial tissue (½ ([ADP]+2[ATP]/[AMP]+[ADP]+[ATP]). We assessed myocardial protein carbonyls formation (spectrophotometry) as an OS biomarker. Two way ANOVA was used (p < 0.05).

Results: RV function data are shown in the table. Mean PAP increased (15 ± 2 to 36 ± 2.4 mmHg, p < 0.05) and PF and AoP did not change during PE. RV EC and protein carbonylation concomitantly increased. RV EC was lower than LV in both groups. L increased RV and LV EC with respect to S and decreased PAP and RV myocardial protein carbonylation (p < 0.05).

Conclusion: L preserved RV EC during submassive PE, decreasing the myocardial protein carbonylation. This was associated with RV diastolic function improvement. The attenuation of myocardial OS by L would be involved in the cardioprotector mechanism.

Table 1. RV function data

	S (T0)	L (T0)	S (T30)	L (T30)	S (T90)	L (T90)
PRSW, mmHg	11 ± 2	13±5	15±3*	18±4*	14±4	20±6*
EDV, ml	36 ± 4	36±4	55±6*	54±7*	60±4*	45±9
Tau, msec	39 ± 5	37±5	53±2*	51±7*	51±7*	37±8@#
Beta, 10-2, ml-1	6 ± 2	5±1	9.5±3.4*	8.5±2.7*	7.5±2.3	5.0±1.6#
RCF,ml/min	8.8±1.4	8.5±1.0	14±3*	13±2*	17±3*	17±2*

Mean ± SD. *p < 0.05 vs T0; #p < 0.05 vs T30; @p < 0.05 vs S

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Predictive factors of in-hospital mortality in the patients with pulmonary edema-Data from Romanian acute heart failure syndromes (RO AHFS) registry

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Purpose: Pulmonary edema (PE) is a common manifestation of acute heart failure syndromes (AHFS) characterized by high-acuity presentation and associated with poor in-hospital outcomes.

Objective: To identify clinical predictors of in-hospital mortality in patients hospitalized for PE.

Methods: The Romanian AHFS (RO-AHFS) registry enrolled 3224 consecutive patients admitted for AHFS over a 12-month period. Patients were classified into five clinical profiles at admission: acute decompensated heart failure (ADHF), cardiogenic shock (CS), pulmonary edema (PE), right heart failure (RHF), and hypertensive heart failure (HT HF). Independent clinical predictors of in-hospital mortality in patients hospitalized for PE were identified using a multivariate logistic regression model.

Results: At admission, 28.7% (n = 924) of AHFS patients were classified as PE. In-hospital mortality in patients with PE was 7.4% and 57% of deaths occurred within the first 24 hours of admission. Differences in baseline characteristics based on survival status are shown in Table 1.Independent clinical predictors of in-hospital mortality among patients admitted for PE included age (HR = 1.032, 95% CI 1.004-1.053), BUN (HR = 1.021, 95% CI 1.009-1.034), confirmed ACS (HR = 1.902, 95% CI 1.027-4.110), SBP < 110mmHg (HR = 4.388, 95% CI 1.258-7.232), mechanical ventilation (HR = 2.531, 95% CI 1.520-4.821)

Conclusions: In patients hospitalized for PE, the majority of deaths occurred within the first 24 hours of admission, before the initiation of life-saving therapies. Rapid and accurate clinical assessment on admission may facilitate patient triage and early clinical management.

Table 1. Baseline variables by survival status

	Survivors (n = 856)	Died (n = 68)	p value
Age (years)	70.1 ± 10	71.5 ± 10	0.01
Male (%)	49.4	50	0.6
Ischemic etiology (%)	70.1	71	0.4
ACS (%)	16.2	31	0.03
SBP mean (mmHg)	107 ± 21	168 ± 37	< 0.001
Na (mmol/l)	138.9 ± 4	139.4 ± 6	0.06
Creatinine (mg/dl)	1.33 ± 0.6	1.69 ± 0.8	0.001
BUN (mg/dl)	54.3 ± 24	72 ± 28	0.002
LVEF mean (%)	39.2 ± 8	38.3 ± 7	0.04

ACS-Acute Coronary SyndromesSBP-Systolic Blood Pressure

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Pro B-type natriuretic peptide plasma value: a new criterion for the prediction of short- and long-term outcome after transcatheter aortic valve implantation

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Purpose: To determine the prognostic value of pro B-type natriuretic peptide (pro-BNP) to predict mortality after transcatheter aortic valve implantation (TAVI). Logistic EuroSCORE (LES) overestimates observed mortality after TAVI. A new risk score specific to TAVI is needed to accurately assess mortality and outcome.

Methods: Eighty-five patients were included. Indications for TAVI were nonoperable or surgical high-risk patients (LES > 20%). Pro-BNP was measured 24 hours before the procedure. Cox proportional hazards model were used to evaluate clinical factors. The predictive accuracy of these Cox models were determined by using, time-dependent receiver operating characteristic (ROC) curves.

Results: pro-BNP levels (log-transformed) were significantly higher in non-survivors than in survivors at 30 days (3.36 ± 0.43 vs. 3.81 ± 0.43, p < 0.004) and at the end of follow-up (3.34 ± 0.42 vs. 3.63 ± 0.48, p < 0.011). Multi-

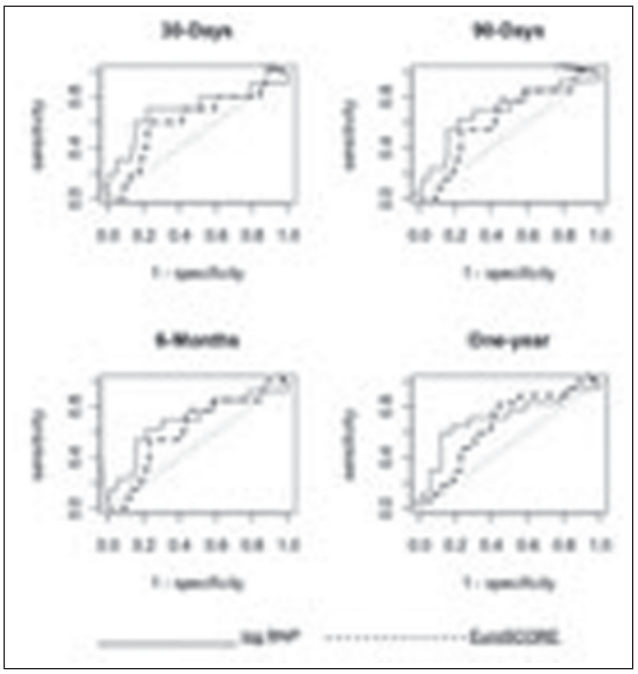


Figure. ROC analysis of log pro-BNP and LES.

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variate analysis revealed that only increased log pro-BNP levels were associated with higher mortality rate at short [Hazard Ratio (HR) (95% confidence intervals (CI) = 5.35 (1.74-16.5), p = 0.003] and long-term follow-up [HR = 11 (CI: 1.51-81.3), p = 0.018]. LES was not associated with increased mortality at either time point [HR = 1.03 (CI: 0.95-1.10), p = 0.483 and HR = 1.03 (CI: 0.98-1.07), p = 0.230, respectively]. At 30, 90, 180, and 365 days (Figure 1), the c-index was 0.72 for log pro-BNP and 0.63 for LES (p = 0.044).

Conclusion: Pre-procedure plasma pro-BNP levels are an independent and strong predictor of short- and long-term outcome after TAVI and are more discriminatory than LES.

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In-hospital mortality and length-of-stay for isolated valve surgery in the 21st century

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Purpose: Valve surgery is the gold standard for management of patients with severe symptomatic valvular heart disease. Valve surgery is associated with substantial morbidity and mortality with a wide range of in-hospital mortality reported in the literature. The purpose of this study is to define overall in-hospital mortality and length-of-stay (LOS) for isolated aortic or mitral valve surgery in the 21st century for a large tertiary-care hospital in the United States that serves a large referral base.

Methods: Patients with isolated aortic or mitral valve surgery performed at The Ohio State University Medical Center (Columbus, Ohio) from January 2002 to June 2008 were retrospectively analyzed. Patients with aortic stenosis, aortic insufficiency, mitral stenosis and mitral regurgitation were included.

Results: From the 915 patients undergoing at least aortic and/or mitral valve surgery, only 340 of these patients had isolated aortic (n = 204) or mitral (n = 136) valve surgery. In-hospital mortality for isolated valve surgery for mitral regurgitation (n = 119), aortic stenosis (n = 151), aortic insufficiency (n = 53) and mitral stenosis (n = 17) was 2.5% (3.4% for replacement; 1.6% for repair), 3.9%, 5.6% and 5.8%, respectively. There was no statistical significance difference in mortality among groups. The median LOS for aortic insufficiency, aortic stenosis, mitral regurgitation, and mitral stenosis was 7, 8, 9 (11.5 for replacement; 7 for repair) and 11 days, respectively (p < 0.05 for group trend).

Conclusion: Surgery for isolated aortic or mitral valve disease has a low in-hospital mortality with modest LOS. Individual hospital analysis is strongly encouraged to monitor quality and stimulate learning, progress and improvement among Medical Institutions.

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Impact of vascular complications and blood transfusions on early and late mortality after TAVI.

K Czerwinska[1], A Witkowski[1], M Dabrowski[1], M Banaszewski[1], E Ksiezycka-Majczynska[1], Z Chmielak[1], K Kusmierski[1], T Hryniewiecki[1], M Demkow[1] and J Stepinska[1]

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Bleeding complications and blood transfusions (BT) worsen the early and long-term prognosis after interventions. Serious bleedings (SB) due to vascular complications (VC) are one of the most frequent in-hospital complications after TAVI. The aim of the study was to asses the impact of VC after TAVI and in-hospital BT on early and long-term prognosis.

Methods and results: a single-center analysis of early and long-term mortality after TAVI according to VC, BT, age and number of transfused red blood cells units (RBCu.). The univariate analysis consisted of: chi2, t-student or Fisher exact test. We enrolled 83 consecutive pts 62–91 yrs (81, 10 ± 7, 20) who underwent TAVI in 2009–2011; follow–up 3-23mths (13 ± 14, 14). 51 pts (61, 44%) had SB, 44 pts (86, 27%) of them had post-procedural VC. 45 pts (88, 23%) had BT with transfused 1-17 RBCu. (1, 85 ± 2, 82). Of 7 in-hospital deaths (3. early bleeding related, 4. early cardiac): 6 pts (85, 71%) had BT with 1-8 RBCu. (3, 66 ± 2, 8) due to VC. In univariate analysis VC after TAVI, in-hospital BT, number of RBCu. had no impact on early deaths (NS). Of 7 late deaths (sudden cardiac) all pts had in-hospital BT with 1-16 RBCu. (4, 66 ± 5, 64), 6 pts (85, 71%) of them due to in-hospital VC. In univariate analysis post-procedural VC and in-hospital BT increased the risk of late mortality (p = 0, 03; p = 0, 03). The mean age of RBCu. between deaths vs. survivors was: in-hospital (24, 55 ± 1, 45 d vs. 21, 9 ± 1, 68 d); in follow-up (24, 7 ± 3, 41d vs. 19, 1 ± 5, 8 d). Number and age of RBCu. had no impact on late mortality (NS).

Conclusions:

1. In-hospital VC and BT had not impact on early death after TAVI.
2. In-hospital BT increased the risk of late mortality independently of number of units and blood's age.
3. VC related with TAVI procedure worsen the long-term prognosis.

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Moderated Poster Session I
Sunday, 21 October 2012 - 08:30 - 12:30

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Coronary angiography in acute myocardial infarction with "normal" coronary arteries: what prognostic value?

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[1]Hospital Lisbon North, Hospital Santa Maria, Lisbon, Portugal

Introduction: Acute myocardial infarction (AMI) occurs typically in the presence of obstructivecoronary disease. However, a group of patients (pts) with AMI have coronary arteries (CA) without angiographically significantlesions. Clinical features and prognosis in this groupremain largely unknown.

Wepropose to evaluate long-term prognosis and its determinants in AMI and normalor non-significant CA lesions pts.

Methods: A cohort study that included consecutive pts whomet the diagnostic criteria for AMI, with normal or without angiographicallysignificant CA lesions. Non-significant lesions were considered as CA luminal stenosis between 1-50% and normal CAif there was nocoronary stenosis at coronary angiography. Left ventricular ejection fraction was evaluated bytransthoracic echocardiography during hospitalization. Long-term prognosis wasdefined as recurrence of angina, re-infarction or death.

Results: During 24 months, 1336 pts with AMI underwent coronary angiography and 100 (6.9%) pts (51% males, 65 ± 19years) had normal CA or withoutangiographically significant lesions. No coronary stenosis was recognizedin 65% and the remaining pts had non-significant coronaryatherosclerotic lesions, of these: 59% had one and 41% multiple vessels disease. Left ventricularfunction was preserved in 69%, being mildly, moderately and severely depressedin 20%, 7% and 4%, respectively. Death occured in 2% (n = 2) duringhospitalization.

Follow-upwas over 454 ± 156 days. Recurrence of angina occured in 5% (n = 5), AMI in 8% (n = 8) and death 5% (n = 5). Pts who died had higher prevalence of non-significantcoronary lesions (71% vs 29%, p = 0.020), involving more than one epicardialvessel (60 % vs 11%, p = 0.002) and the left main CA (29% vs 0%, p < 0.001). Thosepts had worse ejection fraction (67% vs 27%, p = 0.045) and more regional wallmotion abnormalities (29% vs 2%, p = 0.001). There was no difference in maximumtroponin I value.

In multivariate Cox regression, age, heart rate and the presence ofnon-significant coronary atherosclerotic lesions, involving particularly theleft main CA (Chi-square 30.9, p < 0.001), were independent predictors ofmortality in pts with CA withoutangiographically significant lesions.

Conclusion: The presence of coronary atherosclerotic lesions althought non-significant, particularly left main CA, were found to have long-term prognostic relevance.

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Comparison of impella and intra-aortic balloon pump in high-risk percutaneous coronary intervention: vascular complications and incidence of bleeding

KD Boudoulas[1], A Pederzolli[1], U Saine[1], RJ Gumina[1], EL Mazzaferri[1], M Davis[1], CA Bush[1], Q Capers Iv[1], R Magorien[1] and VJ Pompili[1]

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Purpose: Impella 2.5 and intra-aortic balloon pump (IABP) provide hemodynamic support in high-risk percutaneous coronary interventions (PCI). Large arterial sheath size for device insertion is associated with vascular and/or bleeding complications; gastrointestinal bleeding may also occur exacerbated by anticoagulation that is used when running these devices. The purpose of this study is to compare vascular complications and incidence of bleeding between these devices in high-risk PCI.

Methods: Retrospective study was conducted from October 2008 to November 2010 at The Ohio State University (USA) on patients with an acute coronary syndrome receiving an Impella 2.5 or IABP during high-risk PCI (multivessel or left main disease, left ventricular ejection fraction ≤ 35%, cardiogenic shock). Seventy-five patients were identified (13 Impella; 62 IABP). Vascular complications and incidence of bleeding were compared.

Results: Post-procedure hematocrit was similar between groups. Blood transfusion was required in 38.5% and 35.5% of patients in the Impella and IABP groups, respectively (p = NS); 62.9%, 33.3% and 3.7% of blood transfusions were due to vascular access site/procedure related, gastrointestinal and genitourinary bleeding, respectively. There was no statistical significant difference in vascular complications between the Impella and IABP groups (15.3% and 6.4% of patients, respectively); however, mesenteric ischemia (n = 1) and aortic rupture (n = 1) were only in the IABP group. The IABP group had 13 in-hospital deaths with no deaths in the Impella group (p = NS).

Conclusion: Impella can be used as safely as IABP during high-risk PCI with similar vascular and bleeding complications. Importantly, approximately one third of bleeding was from the gastrointestinal system warranting careful prophylactic measures and monitoring when using these devices.

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Trauma resuscitation using echocardiography in a deployed military intensive care unit

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Introduction: Casualties presenting to a military intensive care unit (ICU) following severe traumatic injury suffer haemodynamic instability. Volume status in critically ill patients is difficult to determine. There is interest in the use of transthoracic echocardiography (TTE) to assess haemodynamic status in critical care resuscitation. We describe a study carried out in a military hospital in Afghanistan, examining the use of echocardiography in trauma resuscitation.

Objectives: To assess the feasibility of focused TTE (fTTE) following severe trauma in guiding volume resuscitation.

Methods: fTTE was performed by a senior intensivist on patients admitted to ICU following severe traumatic injury. A baseline study was performed on admission, and repeated after subsequent therapeutic inputs. fTTE data was captured electronically and independently verified by a cardiologist blinded to clinical data. Data were collected on mechanism of injury, TTE view availability, overall LV function, perceived clinical volume status, inferior vena cava (IVC) dimensions and fTTE-assessed volume status. Additionally, doppler of the LV outflow tract was performed to provide a velocity time integer (LVOT VTi), and VTi variability was used as an indicator of preload.

Results: 23 patients were recruited, and 48 individual studies performed. All patients were intubated and ventilated. 17 patients were victims of blast injury.

TTE windows available were as follows: parasternal long axis 68%, parasternal short axis 66%, apical 4 chamber 64%, subcostal 66%. IVC imaging was possible in 85%, and doppler interrogation of the LVOT VTi was achieved in 37%.

No overt evidence of myocardial contusion was seen. In 12% of cases, hypovolaemia was so profound that systolic LV cavity obliteration was noted.

The mean maximal IVC diameter in volume-optimised patients at first fTTE (Group 1, n = 18) was 2.0cm (1.55-2.67), compared with 1.56 (0.8-2.0) in the hypovolaemic cohort (Group 2, n = 25). The mean minimum IVC diameter in Group 1 was 2.0 (1.48-2.37) vs 1.19 (0-1.74) in the Group 2. IVC collapsibility was entirely absent in Group 1 vs 26.5% collapsibility in Group 2.

Data derived from fTTE suggested hypovolaemia in 69% of cases. Of patients arriving on the ICU, only 31% were volume optimised using fTTE criteria. Overall, fTTE data led to a change in volume management strategy in 47% of cases.

Conclusions: This study demostrates, for the first time in a deployed military setting, that echocardiography performed by intensivists is feasible and contributes positively to early resuscitation.

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The role of cardiovascular magnetic resonance imaging in troponin positive acute coronary syndromes with unobstructed coronary arteries

E Mc Alindon[1], AG Porto[1], A Khavandhi[1], C Lawton[1], T Johnson[1], J Strange[1], A Baumbach[1], N Manghat[1], M Hamilton[1] and C Bucciarelli-Ducci[1]

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Background: Patients with acute coronary syndrome and unobstructed coronary arteries represent a clinical dilemma in whom clinical management is uncertain. Cardiovascular magnetic resonance (CMR) has the potential to non-invasively identify the presence of myocardial infarction or acute myocarditis, thus establishing a final diagnosis with management implications.

Aim: To assess the diagnostic value of CMR in patients presenting with ACS and unobstructed coronary arteries.

Methods: From October 2010 to January 2012, 50 patients who presented with troponin positive ACS and unobstructed coronary arteries were consecutively recruited. A comprehensive CMR protocol, including T2 weighted STIR imaging for oedema and late gadolinium enhancement imaging for myocardial scarring, was performed within 4 weeks of the index event.

Results: In 76% of cases, a cause for the troponin rise was found. Based on the oedema and scarring patterns observed, the most common diagnoses were acute myocarditis in 36% of cases (Figure 1 A+B) and acute myocardial infarction with spontaneous coronary recanalisation/embolus in 26% of the cases (Figure 1 C+D). In 6 patients (12%) a diagnosis of cardiomyopathy was established: dilated cardiomyopathy (n = 2) and Tako-Tsubo cardiomyopathy (n = 4). Acute pericarditis was present in 1 patient (2%). The remaining 24% of patients had a normal CMR scan.

Conclusion: In the setting of acute coronary syndromes with unobstructed coronary arteries CMR was able to establish a final diagnosis in 76% of patients, identifying acute myocarditis, myocardial infarction with spontaneous recanalisation/embolus, and cardiomyopathies. Establishing a final diagnosis has an important impact in patient management and secondary prevention.

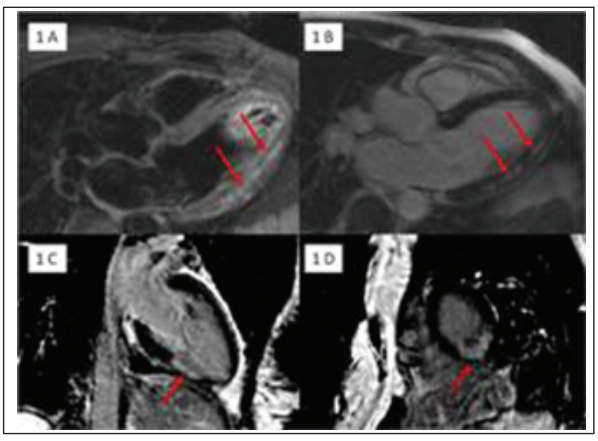


Figure 1.

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Smartphone-size hand held ultrasound machine in rapid assessment of heart and lung function in critical cardiological patients

P Trambaiolo[1], M Poli[1], V Basso[1], M Simonetti[1], M Mustilli[1], V Lukic[1], M De Luca[1] and G Ferraiuolo[1]

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Transthoracic high-end standard echocardiography (SE) is an integral part of cardiologic critical patient (pts) assessment. The newest generation of smartphone-size hand held ultrasound devices (echoPod) enables bedside TTE with 2D imaging and colour-Doppler. The aim of the present preliminary study was to evaluate the diagnostic value of echoPod in critical cardiologic pts.

Methods: 132 consec. pts (64 STEMI, 44 NSTEMI, 4 pericardial effusion, 6 pulmonary embolism, 10 arrhythmias, 4 Intraaortic Ballon Pump Counterpulsated shocks) immediately after admitted in ICCU underwent examinations with a echoPod (VSCAN®). Within 2 hours 20 pts underwent SE to compare the diagnostic ability of echoPod in critically ill patients. Target parameters were global systolic left-ventricular function (LVF, normal > 55% or severely-impaired < 30%), identification of marked right and/or left ventricular enlargment (RVE, LVE, yes/no), identification of left wall motion abnormalities LWMA), presence of severe valvular regurgitation (sev REG, yes/no), evidence of pericardial effusion (PE yes/no), of pleural effusion (PluE Yes/no) and identification of comets lung (CL, Yes/no).

Results: 100% concordance was found in semi-quantitative assessment of LVF, RVE, LVE, PE, PluE, CL. Good concordance (>95%) was found for identification of sevREG. LWMA were correctly identified by echoPod with a sensitivity of 78% (95%CI 0, 4-0, 98) and a specificity of 100% (95% CI 0, 89-1).

Conclusion: A smartphone-size hand held ultrasound device permits reliable and quick assessment of RV and LV dimension and function. Largest differences were found for identification of LWMA. Severe Regurgitations and pericardial efflusion can be well identified by echoPod too. Besides the echoPod can be also used in lung analysis particularly in pleural effusion and "comets" detection.

A echoPod exam does not replace the standard echocardiographic exam, but can provide a rapid bedside pre-assessment which may help to improve patient management and to optimize the individual diagnostic work-flow in several clinical scenario like emergency room or ambulance for example.

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Is there need for preprocedural echocardiography in prediction of in-hospital heart failure in patients successfully treated with primary percutaneous coronary intervention?

I Nedeljkovic[1], M Ostojic[1], V Giga[1], J Stepanovic[1], A Djordjevic-Dikic[1], M Petrovic[1], B Beleslin[1], M Nedeljkovic[1], B Parapid[1] and D Trifunovic[1]

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Background: echocardiography has shown to be very usefull prognostic tool in assessment of left ventricular function (LVF) recovery after primary percutaneous coronary intervention (PCI) for acute myocardial infarction, but the role of preprocedural echocardiographic examination still remained inclear.

Objective: to assess the role of echocardiography performed before primary PCI for ST-segemnt elevation AMI in prediction of heart failure during in-hospital follow up period.

Methods: we evaluated 143 (108 male, 35 female, mean age 57 ± 11 years) consecutive patients presented with ST- elevation AMI who all underwent echocardiographic examination before successful primary PCI. Clinical and echocardiographic variables before primary PCI were correlated with the presence of congestive heart failure (CHF) during in-hospital period.

Results: among clinical and echocardiographic variables Killip class ($p < 0.0001$), maximal serum creatine kinase value ($p < 0.0001$), anterior AMI ($p < 0.0001$), LV end-diastolic and end-systolic dimensions ($p = 0.044$, $p = 0.006$) and LV end-diastolic and end-systolic volumes ($p = 0.003$, $p < 0.0001$), LV ejection fraction (LVEF; $p < 0.0001$), WMSI ($p < 0.0001$), mitral regurgitation severity ($p = 0.023$) and myocardial performance index (MPI; $p < 0.0001$) were significant univariate predictors of CHF during in-hospital recovery period. However, the only independent predictors of in-hospital CHF were MPI ($p < 0.0001$) and Killip class ($p = 0.001$) assessed by multivariate logistic regression analysis.

Conclusion: MPI and Killip class obtained before the primary PCI are strong predictors of the presence of congestive heart failure during short-term in-hospital follow up period. Thus preprocedural echocardiography gives very important prognostic information about recovery of LVF in patients treated with successful primary PCI for AMI.

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Prognosis of acute myocarditis from late gadolinium enhancement cardiovascular magnetic resonance using a quick and easy score

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Background: Cardiac MRI plays an increasingly important role in the diagnosis of acute myocarditis. However, its prognostic value is less well established and requires specific post-processing of images.

Methods: In a prospective pilot MRI study, we assessed the prognostic value of the evolution in a simplified visual quantitative score (SQS) of delayed contrast enhancement 10 minutes after gadolinium injection, from all 17 myocardial segments. Patients hospitalized between June 2008 and January 2011 with a diagnosis of acute myocarditis underwent MRI at initial hospitalization and again at 3-months. The prognostic value of the change in SQS was assessed at one year using a combination of death, heart transplant, and confirmed recurrence as main outcome. The secondary outcome was a composite of onset of chest pain, dyspnea and/or palpitations.

Results: Twenty-eight patients were included in this study of which 19 were men (68%). The mean patient age was 33 ± 11 years [16 - 57 years]. Patients with stable or an increase in SQS (Δ SQS = 3.53% ± 5.31%) suffered more main clinical outcome events than patients with a decrease in SQS (Δ SQS = – 3.47% ± 5.50%), with a statistically significant difference (p = 0.02). They also had more minor events (p = 0.009). However, at initial admission, we found no significant difference between patients with stable or an increase in SQS and those with decreased SQS regarding other frequently used prognostic variables such as minimum ejection fraction during hospitalization (50 ± 4 vs. 45 ± 9%, p = NS) or peak CPK (877 ± 296 vs. 413 ± 140 U/L p = NS). A post-hoc exploratory ROC analysis showed SQS ≥ 7.35 at initial MRI could identify patients with poor prognosis (Se = 100%, Sp = 60%, p = 0.03).

Conclusions: Monitoring of the evolution of delayed contrast enhancement in MRI using a simple quantitative score is of interest for the prognosis of acute myocarditis, to identify patients at risk of death, transplant or recurrence, and to guide patient management.

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Gender-related differences in temporal mortality reductions following myocardial infarction from 1985 to 2008: equal benefit for women and men?

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Purpose: We aimed to study gender-related differences in temporal trends in short- and long-term mortality from 1985 to 2008 in patients hospitalized for acute myocardial infarction (MI).

Methods: We included a total of 14, 434 consecutive patients admitted to our Intensive Coronary Care Unit between 1985 and 2008 for MI. The study patients were compared according to gender.

Results: A total of 4, 028 (28%) of the patients were women. Women were more likely to present with a higher risk profile and equally likely to receive pharmacological and invasive reperfusion therapy compared to men. Women had a higher unadjusted mortality rate at 30-days (OR 1.3, 95%CI: 1.1-1.5) and at 20-years (HR 1.1, 95%CI: 1.0-1.2) follow-up. After adjustment for baseline characteristics, 30-day mortality was equal (adjusted OR 1.0, 95%CI: 0.87-1.2) but 20-year mortality was lower (adjusted HR 0.81, 95%CI: 0.76-0.86) in women compared to men. In subgroup analyses, female gender was associated with higher 30-day mortality in patients with diabetes only (adjusted OR 1.6, 95%CI: 1.1-2.2). Temporal mortality reductions between 1985 and 2008 were at least as high in women compared to men with MI, both for short- and long-term mortality

Conclusions: Women with MI have benefitted equally compared to men from temporal mortality reductions from 1985 to 2008. Women, including younger women, did not have a higher short- or long-term mortality compared to men. Optimal medical care for MI patients regardless of gender remains warranted.

Table 1. Odds ratios (women vs. men)

30-day mortality (women vs. men)	Unadjusted	Adjusted*	Adjusted*	Adjusted*	Adjusted*
	1985-2008	1985-2005	1985-'90	1990-'00	2000-'08
All patients	1.3 (1.1-1.5)	1.0 (0.9-1.2)	0.9 (0.7-1.3)	1.1 (0.8-1.4)	1.1 (0.8-1.4)
<65	1.1 (0.9-1.5)	1.1 (0.9-1.5)	0.9 (0.5-1.5)	1.7 (1.1-2.6)	1.0 (0.6-1.6)
>65	1.1 (0.9-1.3)	1.0 (0.8-1.2)	0.9 (0.6-1.4)	0.9 (0.6-1.2)	1.1 (0.8-1.4)
No Diabetes Mellitus	1.2 (1.0-1.4)	0.9 (0.8-1.1)	0.8 (0.6-1.2)	0.9 (0.7-1.3)	1.0 (0.8-1.4)
Diabetes Mellitus	2.0 (1.4-2.8)	1.6 (1.1-2.3)	1.7 (0.7-4.2)	2.3 (1.2-4.6)	1.3 (0.7-2.2)

*Adjusted for age, previous MI, previous CABG, hypertension, diabetes, hyperlipidemia, family history, smoking status, renal dysfunction, anemia and discharge diagnosis.

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Predictors of recurrence in a cohort of adults patients with the diagnosis of myopericarditis

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Purpose: Natural history data in myopericarditis come from old series from referral centre populations, little is known about patterns of recurrence in this disease and the factors related with this recurrence. One of our study objectives was to assess the incidence of new episodes of pericarditis or myopericarditis in the follow-up after the myopericarditis index event for this cohort and the factors related with this recurrence.

Methods: We studied and followed 145 consecutive patients, older than 14 years old, admitted to our Coronary Care Unit between 2000 and 2008.The diagnosis of myocarditis established by clinical criteria and evidence of cardiac necrosis markers elevations (Troponin I and CK MB mass).

Results: Mean age was 28.8 ± 8.5 (16-59) years. There were 93.8% males. 46.2% of patients were smokers and 10 had recent used cocaine, previous history of pericardi tis or myopericarditis was found in 8 patients (5.5%), few patients had risk factors for coronary heart disease, mainly dyslipidaemia (8.3%). Chest pain was present in 86.8% of patients. The evidence of an acute viral infection was present in 64.1%, but witout a seasonal pattern of presentation. 23 patients presented fever at admission. Initial ECG with ST segment elevation (> 1mm) was seen in 71.7% of patients, predominantly diffuse elevation pattern. Pericardial effusion was found in 18 patients (12.4%), neither with echocardiographic or clinical tamponade findings. On ECG monitoring we found non sustained ventricular tachycardia in 12 patients (8.3%). Mean MB mass was 58.2 ± 47.5 ng/mL and mean Troponin I peak level was 14.09 ± 10.8 ng/mL. Left ventricular wall motion abnormalities were described at admission in 28 patients (19.3%) with a complete recovery in all of them at discharge. Mean ejection fraction at admission was 60.6 ± 6.3% (range 40-78), of the 17 patients (11.7%) with initial impaired systolic function (Ejection fraction < 55%) ejection fraction normalized in all of them. The median of follow-up was 1262 days, and the mean 1358.79 ± 836.6 days. Only one patient died during the follow-up. Recurrence during the follow up occurred in 9 patients (6.2 %), 7 myopericarditis and 2 pericarditis. The only factors related with a recurrence in the follow-up were absence of ST elevation at diagnosis (HR 4.0, 95% confidence interval 1.03 to 15.8, p = 0.044) and previous myopericarditis (13.3, 2.5 to 70, p = 0.002).

Conclusion: We found a benign course for adult contemporary acute myopericarditis, with few recurrences. A previous history of myopericarditis seems to have a strong relationship with new episodes in the follow up.

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A new tissue Doppler parameter in predicting future development of atrial fibrillation in patients hospitalized with acute decompensated heart failure

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Onset of atrial fibrillation (AF) in patients with heart failure (HF) is usually associated with a high occurrence of cardiovascular complications. E/ (E'×S') ratio (E = early diastolic transmitral velocity, E' = early mitral annular diastolic velocity and S' = systolic mitral annulus velocity) has been shown to reflect left ventricular filling pressure. We investigate whether E/ (E'×S') could be a predictor of new-onset AF in patients hospitalized with acute decompensated HF (ADHF).

Methods: We determined E/ (E'×S') in 131 consecutive patients hospitalized with ADHF, in sinus rhythm, after appropriate medical treatment. The average of the velocities from the septal and lateral mitral annular sites was used. Patients with inadequate echocardiographic images, congenital heart disease, paced rhythm, significant primary valvular heart disease, acute coronary syndrome, coronary revascularization during follow-up, severe pulmonary disease, malignant neoplasia, were excluded. Only 105 patients formed our study group. The primary study end-point was the new-onset AF. Results: During the follow-up period (36.5 ± 12.7 months), 30 patients (28.5%) developed AF. Mean E/ (E'×S') was 3.12 ± 1.17 in these patients, while it was 1.74 ± 1.02 in the rest (p < 0.001). The optimal E/ (E'×S') cut-off to predict new-onset AF was 2.45 (84% sensitivity, 78% specificity). New-onset AF was higher in patients with E/ (E'×S') >2.45 than in patients with E/ (E'×S') ≤2.45 [15 (57.7%) versus 15 (18.9%), p < 0.001] (Figure 1). On multivariate Cox analysis including the echocardiographic parameters that predicted AF on univariate analysis, E/ (E'×S') was the only independent predictor of new-onset AF (hazard ratio = 2.06, 95% confidence interval = 1.03-4.49, p = 0.02).

Conclusions: E/ (E'×S') is a powerful predictor of new-onset AF in patients with ADHF.

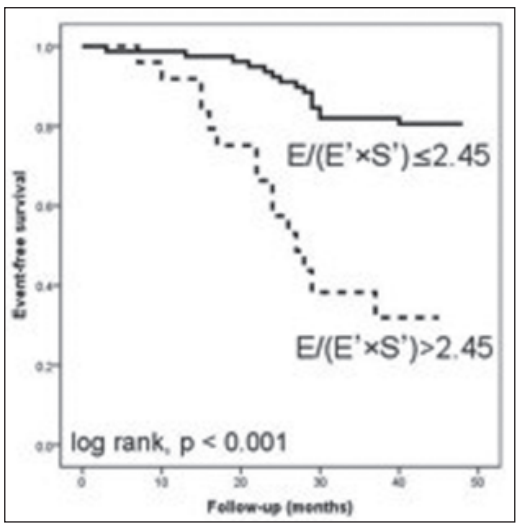


Figure 1. Kaplan-Meier analysis.

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Poster Session 1
Sunday, 21 October 2012 - 08:30 - 12:30

Acute coronary syndromes: STEMI

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Prognostic value of circulatory markers of biomechanical stress in patients after q-wave myocardial infarction

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Background: Following acute myocardial infarction (MI), myocytes and the interstitium are changed immediately. Extracellular matrix reposition after MI is considered as a one of powerful integral mechanisms of cardiac remodeling that determinates individual cardiovascular risk value. Matrix metalloproteinases (MMPs) play an important and pivotal role in processes around heart architectonic disorders in subjects after acute MI.

The objective of this study was to compare of prognostic value of MMP-3, MMP-9 and NT-pro-BNP for fatal and non-fatal complications in Q-wave myocardial infarction patients in acute MI and post-MI periods.

Materials and methods: 85 patients (male and female) with documented Q-wave myocardial infarction (MI) were observed during 1 year after hospitalization period. Including criteria are: acute Q-wave MI defined by development of acute new Q-wave electrocardiographic changes associated with increased levels of creatine kinase MB fraction >50 IU/L (normal reference 0 to 25 IU/L) or troponin T level >0.1 ng/dL, or new onset left branch bundle block within 72 hours; age older than 18 years; sinus rhythm; written informed consent for participation to the study. Clinical endpoints were identified through the hospital patient tracking system, with review of medical records for each recorded endpoint. LV ejection fraction (LVEF) and wall motion index (WMI) were calculated accordingly conventional methods. Measurements of MMP-3, MMP-9, and NT-pro-BNP concentrations were performed by ELISA.

Results: In the ROC curves, a cut-off of 9.7 ng/ml for MMP-3 showed the best discriminatory power (sensitivity = 77.8%, specificity = 90.8%). We found also that optimal cut-off for MMP-9 was 18.1 ng/ml (sensitivity = 70.5%, specificity = 75%), and cut-off for NT-pro-BNP was 885 pmol/l (sensitivity = 58%, specificity = 68.6%). MMP-3 and MMP-9 are tightly related with positive prognostic value of 70% (sensitivity and specificity y are 84% and 82% respectively). Analysis of obtained outcomes in our study had been shown that combination of MMP-3 and MMP-9 lets with high degree of reliability to a prediction value of 1-year mortality in cohort patients after Q-wave MI independently for GRACE index, NT-pro-BNP, LVEF, symptomatic heart failure and other cardiovascular risk factors.

In conclusion, we predispose, that obtained data can be helpful for further stratification of the patients into high cardiovascular mortality risk group.

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STEMI networks and its influence on PCI/primary PCI rates in Spain

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Purpose: To evaluate the rate of primary percutaneous coronary intervention (pPCI) and its relationship with the overall number of PCI according to the presence of an established ST segment elevation myocardial infarction (STEMI) network in the different autonomous communities in the country.

Methods: The National Registry of the Interventional Cardiology Working Group of the Spanish Society of Cardiology records the characteristics and indications of PCI of all hospitals in Spain. We analyzed total PCI, primary PCI and primary PCI/total PCI rates of 2010 data according to the presence of an established pPCI network in each of the 17 autonomous communities in Spain.

Results: In 2010, 64, 331 PCI were performed in Spain. Of those, 14.248 (22.1%) were PCI for STEMI patients and 10.339 (72.6% of STEMI PCI) were pPCI. Overall, regions with STEMI networks (7 [41%] autonomous communities) presented higher mean rates of pPCI/million inhabitants as compared to those without (324 (50) vs. 159 (79) $p < 0.001$) despite similar numbers in overall number of PCI/million inhabitants (1254[181] vs. 1377[203] $p = 0.81$) (Figure 1). As a result, the rate of pPCI/PCI (0.26[0.06] vs. 0.11[0.05] $p < 0.001$) was higher in those autonomous communities with established STEMI networks.

Conclusions: Communities with STEMI networks are associated with a higher rate of pPCI without any significant increase in the total number of PCI.

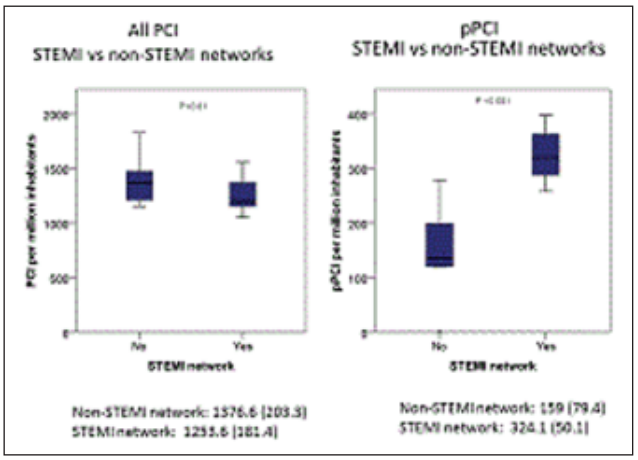


Figure 1.

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Management of acute myocardial infarction in italian intensive care units: measurement of performance and outcomes

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Background: implementation of guidelines into clinical practice may improve the outcomes of patients hospitalized for acute myocardial infarction (MI)

Objective: to assess and promote compliance of Italian Cardiological Intensive Care Units (CCUs) with evidence-based guidelines for the management of MI.

Methods and results: the process of diagnosis and treatment of MI was prospectively evaluated in 163 CCUs by use of 30 indicators during two enrolment phases, each followed by a feedback of local and general performance. Overall, 5854 patients with ST-segment elevation MI (STEMI) and 5852 with non-ST-segment elevation MI (NSTEMI) were consecutively enrolled. The target for each indicator was defined as compliance with the relevant recommendations in > 90% of suitable patients and it was met for 9 (30%) and 10 (33.3%) indicators in the first and in the second phase, respectively. Regardless of target, a significant improvement in compliance was observed in the second phase in 10 out of 30 indicators. Use of pre-hospital ECG, expedite delivery of reperfusion therapy, dosage of anti-thrombotic drugs and non-pharmacological implementation of secondary prevention were often off-target. Similar in-hospital mortality was observed in phase I vs. II, both in patients with STEMI (4.0% vs 4.2%, p = 0.79) and NSTEMI (1.8% vs 2.4%, p = 0.11). Overall, 30-day mortality were 5, 7% for patients with STEMI and 3, 4% with NSTEMI.

Conclusions: performance indicators can accurately weigh the process of diagnosis and treatment of patients with MI, and monitor improvements in the quality of care. In our large population of consecutive patients, satisfactory 30-day outcomes were observed despite suboptimal adherence to guidelines for some indicators of prognostic relevance.

Table 1. Clinical outcomes

	STEMI (5854)		NSTEMI (5852)	
	In ICU/ ward	30-day	In ICU / ward	30-day
Death	237 (4.1)	315 (5.7)	122 (2.1)	189 (3.4)
Reinfarction	62 (1.1)	72 (1.4)	57 (1)	66 (1.3)
Stroke	43 (0.7)	52 (1.0)	34 (0.6)	42 (0.8)
Hemorrhagic complications	224 (3.8)	230 (4.4)	225 (3.8)	227 (4.4)
Blood transfusions	75 (1.3)	NA	111 (1.9)	NA
Congestive heart failure	629 (10.7)	646 (12.2)	671 (11.5)	683 (13.1)

Outcomes during hospital stay, and at 30 days: number and (%).

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Inflammatory mechanisms underlying microvascular obstruction after primary percutaneous coronary intervention

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Background: Microvascular obstruction (MO) after primary percutaneous coronary intervention (PPCI) is a dynamic process with MO reversibility being associated with preserved left ventricle function. However, mechanisms involved in MO reversibility have not been fully clarified. We evaluated the role of inflammatory biomarkers in MO evolution.

Methods: Forty consecutive patients (64 ± 12.5 years; male sex, 32%) presenting with ST-elevation myocardial infarction and undergoing PPCI within 12 h of symptom onset were enrolled. Angiographic MO was defined as a final TIMI flow 2 or final TIMI flow 3 with MBG < 2 (n = 15 patients, 37.5%). All patients underwent repeat in-hospital coronary angiography before discharge (mean of 5 days). Patients with MO found to have TIMI and/or MBG improvement leading to a final TIMI 3 and MBG ≥ 2 were classified as reversible MO (n = 10 patients, 25%); the remaining as sustained MO (n = 5 patients, 12.5%). Variables predicting angiographic MO patterns, were assessed among clinical, angiographic and laboratory data, including Endothelin-1 (ET-1), C-reactive protein (CRP) and Myeloperoxidase (MPO) levels (expressed as ng/mL, mg/L, ng/mL, respectively). Variation (Δ) in biomarker levels between pre-discharge (2) and basal values (1) was calculated and related to MO evolution.

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Results: Sustained MO patients had longer time to PPCI (311 ± 50 min) compared with those with myocardial reperfusion (MR) (190 ± 89 min) or reversible MO (227 ± 87 min; Bonferroni-adjusted (Ba) -p = 0.02 and 0.05, respectively). Δ (2-1) CRP and MPO levels were higher in sustained MO patients [8.00 (6.88-11.48); 197.39 (74.36-359.34), respectively] as compared to those with reversible MO [4.20 (3.31-5.73), Ba-p = 0.02; 111.37 (49.91-143.04), Ba-p = 0.01, respectively], and MR [0.84 (0.38-2.44) Ba-p < 0.001; 38.57 (11.91-60.54), Ba-p < 0.001, respectively], while Δ (2-1) in ET-1 levels were similar in the three groups [0.330 (0.120-0.425) vs 0.196 (0.131-0.302) vs 0.131 (0.065-0.217), p = 0.24].

Conclusions: Sustained angiographic MO before discharge is associated with a persistent CRP and MPO level increase, suggesting that inflammatory mechanisms may contribute to MO persistence. Targeting inflammatory mechanisms soon after PPCI should be evaluated in clinical studies aiming at reversing MO.

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Change over fifteen years time of the reperfusion strategies of acute myocardial infarction: Insights from the MIRAMI registry

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Background: Management of ST elevation myocardial infarction (STEMI) is mainly based on reperfusion therapy either by thrombolysis or primary angioplasty (PAMI). However, many patients (pts) do not receive this therapy because of misdiagnosis, late presentation or spontaneous reperfusion. Management of STEMI has evolved considerably worldwide during the past two decades.

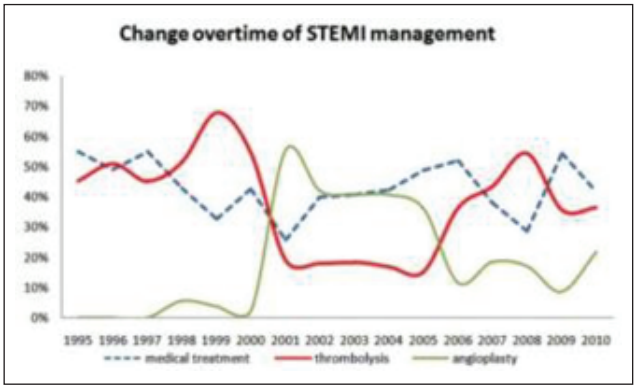
Aim: To describe the change over time of reperfusion strategy in STEMI pts among the population of MIRAMI registry.

Methods: A total of 1318 pts admitted for AMI between January 1995 and December 2010 were included in our MIRAMI (MonastIR Acute Myocardial Infarction) registry. We evaluated the change over time of each treatment strategy during the mentioned study period.

Results: (picture)

The proportion of pts receiving a reperfusion therapy was fluctuating but relatively stable during the last 16 years ranging from 45.2% in 1995 to 58.2% in 2010 with a peak of 74.2% in 2001. From 1995 to 2000, reperfusion was almost exclusively performed by thrombolysis whereas a dramatic increase of the use of PAMI was observed between 2000 and 2005 followed by a decrease in favor of the use of thrombolysis during the following 5 years probably due to an increase of the use of prehospital thrombolysis that ranged from14.3% in 2001 to 84% in 2009 among the thrombolysed pts.

Conclusion: In our MIRAMI Registry, the rate of reperfusion therapy was relatively stable over the 16 year-period of the study. Over all, thrombolysis was more frequently used than angioplasty except for the period between 2000 and 2005.The most frequently recent use of thrombolysis over angioplasty was presumably due to an increase of its use in the ambulance.



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Primary angioplasty in nonegerian with acute myocardial infaction.

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Purpose: Acute myocardial infarction (AMI) leads to more complications and increased mortality in very old patients. The purpose of this study is to evaluate the outcome of nonagenarian with AMI undergoing primary angioplasty.

Methods: We studied short and long term outcomes of 24 consecutive nonagenarian (93.5+-2.5 years, 25% men, 17% diabetic, 17% dyslipidemia, 42% previous myocardial infarction) with AMI who were eligible for primary angioplasty between January 2003 and September 2011.

Results: Of the 24 patients, 11 (46%) had anterior infarct; 1 (4%) had anterolateral infarct; and 12 (50%) had inferior infarct, including 1 (4%) patient accompanied with right ventricular infarct. Of the 24 patients, 9 (38%) were regarded as Killip class I, 1 (4%) as Killip class II, 2 (8%) as Killip class III, and 12 (50%) as Killip class IV. After diagnostic coronary angiography, 19 (79%) patients had multivessel disease. Primary angioplasty failure occurred in 3 (13%) patients. Stenting of the infarct vessel was accomplished in 18 (75%) patients. The 30-day mortality rate was 29% and 1-year survival rate was 50%. The mortality rate was 50% in patients with cardiogenic shock and

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8% in patients without cardiogenic shock. The mortality rate was 67% in patients with angioplasty failure and 33% in patients with angioplasty success.

Conclusions: Nonagenarian with acute myocardial infarction had low probability of coronary risk factors, high probability of multivessel disease and increased mortality rate. The results of this study suggest that the benefits of primary angioplasty apply to nonagenarian.

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Ischemic periconditioning: a new way to reduce infarct size in STEMI patients

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Objectives: The aim of this study was to compare 2 different methods in use to achieve cardiac periconditioning: myocardial and remote. Primary end point was the reduction in infarct size, measured by ST-segment resolution and Troponin I (TnI) release curve; secondary end point was the improvement in cardiac ejection fraction evaluated by means of echocardiography at 3 months.

Background: Periconditioning, i. e. cycles of ischemia and reperfusion following a prolonged ischemic insult, applied either intracoronary (culprit lesion) or on a remote organ, is an effective way to reduce infarct size.

Methods: We enrolled 41 pts (study in progress), randomized in 2 arms as follow: A myocardial periconditioning (21 pts), B remote periconditioning (20 pts). Measures of efficacy were: ST-segment recovery and peak TnI during hospitalization, LVEF and LVWMSI evaluated at 3 months.

Results: No statistically significant differences were found between group A and B, in terms of full ST-segment recovery and reduction of ST-segment deviation score (57% and 76 ± 15% vs 55% and 77 ± 18%, p = 0.97 respectively) and peak TnI (119 ± 41 vs 130 ± 46, p = 0.4). The LVEF and LVWMSI differences did not achieve statistical significance (48 ± 10% vs 49 ± 9% pre, p = 0.73; 55 ± 11% vs 54 ± 9% post, p = 0.92; 1.6 ± 0.4 vs 1.7 ± 0.4 pre, p = 0.73; 1.3 ± 0.4 vs 1.4 ± 0.4 post, p = 0.69, group A and B respectively).

Conclusions: This study (preliminary data) shows that remote periconditioning is non-inferior to myocardial for the prevention of reperfusion injury, and is even a safer, easier to do and faster method (no procedural time prolonged).

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Platelets demonstrate luminol-enhanced chemoluminescence in patients with acute coronary syndrome

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Purpose: In a previous study (Platelets, September 2010; 21 (6): 486-489), we demonstrated the possibility of platelets' luminol-enhanced chemoluminescence (PLEC) in vitro during stimulation with platelet activating factor (PAF). The aim of this study was to compare this phenomenon in patients with acute coronary syndrome (ACS) and in healthy subjects.

Methods: PLEC was studied in 48 ACS patients and 25 healthy volunteers. PAF stimulated PLEC was measured with a Berthold Sirius test-tube chemiluminometer. To assess platelet function we used light transmittance aggregometry with evaluation of spontaneous platelet aggregation and ADP-induced platelet aggregation, thromboelastography with Platelet mapping, VerifyNow Aspirin and P2Y12 assays, and multiple electrode platelet aggregometry (MEA). Also, we estimated the markers of systemic inflammation, including plasma levels of the high-sensitivity C-reactive protein (hsCRP) and sP-selectin.

Results: In patients with ACS, PLEC levels were higher than in healthy volunteers. Thirteen ACS patients had PLEC levels higher than 272 RLUs, whereas none of the healthy subjects had a PLEC level over 272 RLUs [two-tailed Fisher exact; p = 0.003]. In healthy subjects, we found a moderate correlation between the levels of neutrophils and PLEC [Spearman R = 0.58; p = 0.0025] and between the levels of segmented neutrophils and PLEC [R = 0.49; p = 0, 011]. The PLEC level also correlated with levels of 5 or 10 μM ADP-induced platelet aggregation [R = 0.55 (p = 0.0053) and R = 0.55 (p = 0.015), respectively]. A positive correlation was found between the PLEC level and plasma levels of hsCRP [R = 0.72; p = 0.03]. In ACS patients, no significant correlations between levels of PLEC, platelet aggregation, and hsCRP were revealed.

Conclusions: In our study, we showed that the levels of PLEC in ACS patients were significantly higher than in healthy volunteers. Significant correlations of PLEC levels with ADP-induced aggregation and hsCRP were found only in healthy subjects. The mechanism of PLEC and its association with platelet function and inflammation in patients with ACS need further investigation.

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Predictors of in-hospital complications in ST-segment elevation myocardial infarction treated by primary percutaneous coronary intervention

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Background: The advent of coronary care units and early reperfusion therapy has decreased in-hospital complications and mortality.

Purpose: The purpose of the present study was to identified potential predictors of in-hospital complications of patients (pts) with STEMI treated with primary percutaneous coronary intervention (PCI).

Methods: 1336 pts with STEMI were included in a national multicenter registry; we studied 904 pts with STEMI treated by primary PCI. We considered 2 groups: pts with and without in-hospital complications. We defined in-hospital complications the presence of at least one of the following: Killip class IV, use of inotropics drugs, use of intraaortic balloon pump, severe or life-threatening GUSTO Bleeding Classification, need for blood transfusion, and mechanical ventilation. We compared in the 2 groups age, gender, cardiovascular risk factors, history of chronic renal failure and bleeding, heart rate, blood pressure and ejection fraction (EF) at admission, baseline hemoglobin value and minimum value, number of vessels with significant lesions and in-hospital mortality. We used multivariate analysis to identify potential predictors of in-hospital complications of pts with STEMI treated by primary PCI.

Results: The presence of in-hospital complications was present in 15.4% (139 pts). The pts with in-hospital complications were older (67.8 ± 13.9 vs. 62.0 ± 13.1 years; $p < 0.001$), was associated with a lower baseline hemoglobin value (13.3 ± 2.3 vs. 14.2 ± 1.7 g/dL; $p < 0.001$), lower hemoglobin minimum value (11.3 ± 2.4 vs. 12.9 ± 1.7 g/dL; $p < 0.001$) and lower EF at admission (40.9 ± 13.2 vs. 52.5 ± 12.6%; $p < 0$, 001). There were no differences in cardiovascular risk factors, history of chronic renal failure and bleeding in the 2 groups. The pts with in-hospital complications was associated with a higher heart rate (82.8 ± 26.9 vs. 75.1 ± 18.0 bpm; $p < 0.001$) and lower blood pressure at admission (systolic:116.4 ± 30.3 vs. 138.1 ± 30.2 mmHg; $p < 0.001$ and diastolic:71.6 ± 20.3 vs. 82.0 ± 17.7 mmHg; $p < 0.001$). There were no differences in the 2 groups in the complexity and number of disease vessels. The pts without in-hospital complications was associated with lower in-hospital mortality (0.7 vs. 29.5%; $p < 0.001$). We identified as predictors of in-hospital complications: heart rate >98.5 bpm, systolic blood pressure < 128.5 mmHg, hemoglobin minimum value < 11.7 g/dL and left ventricular function.

Conclusions: Our results suggest that heart rate, systolic blood pressure, EF at admission and hemoglobin minimum value to be constituted as an independent predictors of in-hospital complications of pts with STEMI treated by primary PCI.

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Early outcomes after primary percutaneous coronary intervention for acute left main coronary artery occlusion or stenosis

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Background: Patients presenting with ST-segment elevation myocardial infarction (STEMI) represent 30% of all acute coronary syndromes (ACS). Acute occlusion of the left main coronary artery (LMCA) is an infrequent but lethal form of acute myocardial infarction with a very high in-hospital mortality of 83.3 to 94.0%. We hypothesized that prompt recognition and early reperfusion therapy using primary percutaneous coronary intervention (PPCI) may lead to better early outcomes in this cohort of high-risk patients. Aim: To determine the in-hospital mortality of acute left coronary artery occlusion or stenosis among patients who underwent PPCI for STEMI in a single PPCI centre.

Methods: This retrospective observational study was performed at a large tertiary centre in the North of England with a catchment population of approximately 1.8 million. Data were collected on all consecutive patients referred for PPCI from Jan 2010 to Dec 2010. Fisher's exact test was used to establish statistical significance.

Results: 649 patients were included in the analysis (all treated with PPCI). Out of these 71% were males. Mean age of our cohort was 63.11 patients (1.7%) had significant LMCA occlusion or stenosis and underwent PPCI. The overall in-hospital mortality of the PPCI population was 4.2 (27/649) as compared to 45.4% (5/11) in the LMCA occlusion or stenosis group (p value = 0.0002). Of the LMCA occlusion or stenosis group 4/11 (36%) were in cardiogenic shock and 3/11 (27%) required the insertion of an intra-aortic balloon pump (IABP), which was significantly higher as compared to the overall PPCI population.

Conclusion: Although the in-hospital mortality of our LMCA occlusion or stenosis group was significantly higher as compared to the overall PPCI population, it was significantly lower than the early mortality reported in studies of PPCI for acute LMCA occlusion or stenosis. The LMCA occlusion or stenosis patients often presented with cardiogenic shock and required greater IABP use.

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Mortality predictors in women with ST elevation acute coronary syndrome

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Introduction: Despite recent advances in the treatment of ST elevation acute myocardial infarction (STEMI) and improvement of revascularization times, differences in mortality and morbidity between men (M) and women (W) still remains.

Purpose: The aim of this study was to determine if women (W), admitted to a Cardiology Department (CD) with the diagnosis of STEMI have a higher mortality and events rate, both in-hospital and after discharge and determine the mortality predictors.

Methods: We conducted a retrospective, descriptive and correlational trial, encompassing W admitted in a CD with STEMI between January 2006 to October 2010.We evaluated baseline characteristics, admission data, treatment performed and in-hospital and after discharge events and mortality. A telephone follow-up was conducted by a cardiologist. Statistical analysis was performed using SPSS 13.0.

Results: Of the 1039 patients admitted, 24.5% were W, they were older (67.4 vs. 61.7 years, $p < 0.001$), more frequently hypertensive (64.3% vs. 51.1%, $p < 0.001$), diabetic (25.1% vs. 18.0%, p 0.013) and less often smokers (17.3% vs. 41.2%, $p < 0.001$) when compared with M. W had more frequently a history of angina (34.5% vs. 25.3%, p 0.004).

The time between the onset of symptoms and arrival at the CD was higher in W (8:53 h vs. 6:92h, p 0012). The electrocardiographic location of STEMI in women was more often anterior (55.1% vs. 47.2%, p 0.028).

During hospitalization, there was no difference in mortality (3.9% vs. 2.6%, p 0.256) or events rate between the two groups. Hospitalization duration was higher in W (5.4 days vs. 4.6 days, p 0.01).

During the median follow-up of 38.3 ± 15.4 months, W had a higher overall and cardiovascular mortality rate, respectively, (18.2% vs. 10.0%, p 0.001) and (13.6% vs. 6.1%, $p < 0.001$), but without differences between the groups regarding non-fatal events.

Age was the main predictor of mortality in W, both overall (p 0.003) and cardiovascular (p 0.005) mortality. The presence of preserved left ventricular systolic function was the main protective factor (p 0.01).

Conclusions

1. When compared with men, women were older, more often hypertensive and diabetic, less smokers.
2. In-hospital mortality was similar in both genres, but during the follow-up overall and cardiovascular mortality was higher in W.
3. Age was the main predictor of overall and cardiovascular mortality.
4. The presence of preserved ventricular systolic function was the main protector indicator.

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A novel score based on the pre-hospital electrocardiogram and reperfusion delay to predict myocardial salvage evaluated by cardiac magnetic resonance

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Background: Current guidelines on ST segment elevation (STE) myocardial infarction base the choice of reperfusion strategy - primary percutaneous coronary intervention or fibrinolytic therapy - on expected time delay to reperfusion. Time from symptom onset to reperfusion might be biased by inaccurate patient recall or angina prodromes leading to pre-conditioning of the myocardium and thereby cardio-protection. We hypothesized that electrocardiogram (ECG) scores are superior to historical timing in prediction of myocardial salvage.

Methods: In the pre-hospital ECG, 1) the Anderson Wilkins (AW) score designates the ischemia acuteness phase based on STE, tall T and abnormal Q-waves; 2) Ischemia severity grade 3 (GI3) is defined as absence of S waves below the iso-electric line (V1-3) or J point amplitude ≥ 50% of the R wave amplitude (other leads). Myocardial area at risk (AAR) and infarct size (IS) were assessed by magnetic resonance. Myocardial salvage index (MSI) was calculated by [AAR - IS) /AAR] (% of left ventricle).

Results: In 53 patients, treatment delay (symptom onset to balloon inflation) did not correlate with MSI, while system delay (SD) (alarm to balloon inflation) was negatively correlated with MSI ($r = –. 292$ $p = 0.038$), and the AW score correlated positively ($r = . 458$ $p = 0.001$). GI3 predicted larger IS ($p = 0.035$). This led us to the suggestion of a novel formula:

Pre-hospital salvage score PHSS = AW acuteness score/ (system delay*grade of ischemia)

PHSS was a strong predictor of MSI ($\beta = . 636$ $p < 0.001$).

Conclusion: System delay, but not the widely used treatment delay, predicts MSI. The AW acuteness score is superior to historical timing. ECG scores of the acuteness and severity of myocardial ischemia have synergistic effect when combined with reperfusion delay in predicting MSI.

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This might assist future decisions on reperfusion strategy by identifying patients with particular myocardial salvage benefit by early reperfusion outweighing possible bleeding complications.

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Contrast-induced nephropathy in patients undergoing primary angioplasty.

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Objectives: Contrast-induced nephropathy (CIN) is the third leading cause of acute renal failure in hospitalized patients and has a negative prognostic impact with increased mortality and hospital stay. In patients with acute myocardial infarction undergoing primary angioplasty, the risk of CIN is higher than in programmed coronary angiographies. However there are few published data on prevention of CIN in this context. Our objective is to describe the incidence of CIN and the risk factors associated with it in patients admitted to a coronary care unit (CCU) undergoing primary angioplasty.

Methods: We studied 124 patients admitted with acute myocardial infarction with persistent ST elevation (STEMI) in a tertiary hospital CCU those who underwent primary angioplasty.

Contrast-induced nephropathy was defined as an increase in serum creatinine by ≥ 0.5 mg/dL within 48-72 hours following the procedure, ruling out other causes of deterioration.

We analyzed the incidence of CIN, the factors associated with it and the application of prophylactic strategies, which according to the protocol of our center in scheduled coronary interventions consist of hydration and administration of N-acetylcysteine in patients with risk factors and absence of contraindications.

Results: 78.2% were men with a mean age of 62.2 ± 14.9 years. 26.6% had diabetes mellitus (DM) and 41.1% hypertension. Prior to the procedure, 8.9% had impaired renal function, 8.1% anemia, 28.2% heart failure and 18.5% hemodynamic instability. In-hospital mortality was 4.8%.

71.8% received a contrast of iodixanol and 25.8% of iohexol with a mean of 177 ± 73 cc (71.8% ≥ 140 cc). Prevention of CIN was performed only in 4 patients.

9.7% developed CIN. No patient required renal replacement techniques.

In the patients who developed CIN the presence of anemia (25% vs. 6.2%, P = 0.05) and creatinine> 1.5 mg / dL before the procedure (50% vs 4.5% p < 0.0001) were more frequent. There were no significant differences in terms of developing CIN regarding to DM, age higher than 70 years or the type or volume of contrast media.

Conclusions: 9.7% of patients undergoing primary angioplasty developed CIN. Anemia and the presence of Cr ≥ 1.5 mg/dl prior to the procedure were the variables associated with it. A high percentage of patients undergoing primary angioplasty has risk factors for developing CIN, and its prevalence is higher than in programmed procedures. However, preventive measures are not commonly performed because they are urgent procedures. Prevention strategies should be optimized in these patients.

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ST-segment elevation resolution in patients treated with manual thrombus aspiration during primary percutaneous coronary intervention

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Purpose: Manual thrombus aspiration is an effective adjunct to primary percutaneous coronary intervention (PPCI) in ST-segment elevation myocardial infarction (STEMI). We investigated effects of catheter aspiration during PPCI in patients with different extent of coronary thrombus in terms of ST-segment elevation resolution.

Methods: The study included 88 patients with STEMI; 38 patients had no or possible thrombus (thrombus grade scale, TS 0-1) and 50 patients had angiographic evidence of obvious thrombus (TS 2-5). Paired electrocardiographic recordings (baseline and 60 minutes after PPCI) were done to determine the ST-segment resolution.

Results: In patients with TS 0-1, the complete (≥70%) ST-segment resolution was observed in 25 (66%) cases, while partial (30-70%) resolution was found in 10 (26%) cases and no resolution in 3 (8%) cases. In patients with TS 2-5, the complete resolution was observed in 35 (70%) cases, while partial resolution was found in 12 (24%) cases and no resolution in 3 (6%) cases. Differences in ST resolution between TS 0-1 and TS 2-5 group were not statistically significant (p = 0.898). Aspiration catheter was successfully advanced across the lesion in 89% in TS 0-1 group and 94% in TS 2-5 group (p = 0.437). Number of aspirations varied from 1 to 2 in TS 0-1 group, and from 1 to 5 in TS 2-5 group, and was significantly greater in TS 2-5 group (p = 0.01). In patients with right coronary artery in comparison to those with left anterior descending artery as a culprit vessel, the odds of better ST-segment resolution (≥70% vs. 30-70%), adjusted for TS group, were 4.8 (95% confidence interval [CI]: 1.4 to 16.4; p = 0.013).

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Conclusions: ST-segment elevation resolution is successful either in patients with angiographically obvious thrombus as in patients with no visible thrombus if manual aspiration is used. Patients with infarcted right coronary artery seem to have greater odds for better ST resolution in comparison to those with infarcted left anterior descending artery.

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Is an invasive strategy beneficial in patients hospitalized for ST segment elevation myocardial infarction with more than 12 hours?

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Purpose: The aim of this study was to determine if there is any benefit in the invasive strategy between 12 and 72 hours in patients (P) admitted to a Cardiology Department (CD) for ST segment elevation myocardial infarction over 12 hours (STEMI>12H) of evolution, without evidence of ongoing ischemia.

Methods: We conducted a retrospective, descriptive and correlational study, based on a prospective registry, encompassing P with STEMI>12h admitted in a CD between January/2006 and September/2010. We evaluated the baseline characteristics, diagnostic and therapeutic strategies [coronary angiography (CA), angioplasty (PCI) in the culprit lesion and in the non-culprit lesion], in-hospital complications (IHC) - re-infarction (RE-MI), stroke (S) and major bleeding (MB); complications during follow-up (CDF) - acute coronary syndrome (ACS) and stroke- and the rate of in-hospital mortality (IHM) and after hospital discharge [cardiovascular (CM) and overall mortality (OM). Monitoring was conducted at a medium term (± 38 months, follow-up (FU) rate of 89%).

Results: Of the 183 P admitted for STEMI>12H, 67% were male, mean age 67 ± 13 years and 53% had anterior wall infarction. CA was performed in 153 P and of these 75% underwent PCI. The IHM was 5.5%. At the time of FU, the rate of CM was 12% and OM was 15.2%.

The P that performed CA were younger ($p < 0, 001$), presented less history of S ($p < 0, 001$) and coronary bypass surgery ($p = 0, 001$) and had a higher left ventricle ejection fraction (LVEF) >50% at discharge ($p = 0, 005$).

There were no differences regarding to IHC. The P that performed CA had a lower IHM ($p = 0, 003$).

Predictors of IHM were not performing of CA ($p = 0, 003$) and not performing culprit lesion PCI ($p = 0, 047$).

In the FU, P that performed CA had fewer ACS ($p = 0, 002$), less S ($< 0, 001$) and had lower CM ($p < 0, 001$) and OM ($p < 0, 001$). The P who underwent PCI had lower CM ($p = 0, 029$) and OM ($p = 0, 011$), with no significant differences in IHC and IHM.

The nonculprit lesion PCI (73.9%) compared to the culprit lesion PCI (26.1%) showed a trend toward a lower IHM ($p = 0, 077$), without no differences in mortality at medium term.

During FU, predictors of CM were LVEF < 30% ($p = 0, 007$) and not realization CA ($p = 0, 001$). The predictors of OM were LVEF < 30% ($p = 0, 023$), diabetes mellitus ($p = 0, 039$) and not performing CA ($p = 0, 004$).

Conclusions:

1 - The performance of CA between the 12-72 H, reduced IHM and at medium term, the frequency of ACS, S, CM and OM.

2 - Not performing CA was an independent predictor of IHM, CM and OM after discharge.

3 - The PCI realization between 12 and 72 H reduced CM and OM at FU.

4 - Nonculprit lesion PCI showed a trend toward a lower IHM. Not performing nonculprit lesion PCI was an independent predictor of IHM.

Acute coronary syndromes: Non-STEMI

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The short-term exposure to atmospheric sulphur dioxide is associated with significant obstructive lesions in acute coronary syndrome

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Purpose: Urban air pollutants are composed by a heterogeneous mixture of substances in gas and aerosol states. The inhalation of pollutant gases may provoke an inflammatory response in the lungs with the consequent release into the circulation of prothrombotic and inflammatory cytokines causing endothelial injury and increasing the risk of atherosclerotic plaque rupture and thrombosis. The aim of this study was to compare the effects caused by exposure to contaminants in the gas phase in ambient air in patients hospitalized for acute coronary syndrome (ACS) regarding the presence or absence of significant obstructive lesions in coronary arteries epicardial.

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Methods: We analyzed a total of 2110 ACS patients. We determined the mean concentrations of contaminants in the gas phase from the day before until 7 days prior to admission (1 to 7 days lag time). We divided the study population into those with presence or absense of significant obstructive lesions and those analyzed their relationship with the different parameters of contaminants in the gas phase.

Results: Of the 2110 ACS patients, 1892 presented significant obstructive lesions and 218 without significant obstructive lesions. When comparing the concentrations of contaminants in the gas phase, we observed that the sulphur dioxide in patients with significant obstructive lesions had a trend toward higher values ($p = 0.004$; table). We carried out multivariable binary logistic regression analysis, using a stepwise selection model. This analysis showed that exposure to sulphur dioxide in ambient air was a significant predictor of significant obstructive lesions in ACS patients (OR = 1.036, CI95% 1.006 to 1.067, $p = 0.01$).

Conclusions: In our study population of ACS patients, exposure to sulphur dioxide, as a constituent of atmospheric air pollutants, is associated with the presence of significant obstructive lesions.

Table 1.

Gaseous pollutants	Patients with significant obstructive lesions	Patients without significant obstructive lesions	Value P
Carbon monoxide (μg/m³)	177.85 ± 31.69	175.49 ± 28.23	0.43
Sulphur dioxide (μg/m³)	10.93 ± 9.31	8.33 ± 6.77	0.004
Nitrogen dioxide (μg/m³)	11 ± 8.47	9.47 ± 7.64	0.08
Ozone (μgr/m³)	54.46 ± 15.85	52.87 ± 13.85	0.25

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Serial sampling of inflammatory biomarkers in patients with non ST segment elevation acute coronary syndromes

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Purpose: To determine whether serial measures of interleukin-6 (IL-6) and high-sensitivity C-reactive protein (hs-CRP) provide additional prognostic information to baseline measures for long-term risk stratification of non-ST-segment elevation acute coronary syndromes (NSTEACS) patients.

Methods: Two-hundred and sixteen consecutive patients with moderate to high-risk NSTEACS (ischemic symptoms lasting 10 minutes or more and occurring within 72 hours before admission and either ST-segment deviation of 1 mm or more or elevated levels of a cardiac biomarker of necrosis) were prospectively included. Blood samples were obtained within 24-hours of hospital admission and at 30 days of follow-up to measure IL-6 and hs-CRP. The study endpoint was a composite of the rate of all cause death, nonfatal myocardial infarction or acute decompensated heart failure.

Results: Over the study period a total of 44 (20.3%) patients had the composite endpoint (16 deaths, 26 non-fatal myocardial infarctions and 15 ADHF hospitalizations). Median IL-6 levels were higher among patients with the composite endpoint than those without, either at presentation and at day 30 (both $p = 0.001$). By contrast, only hs-CRPday1 levels (but not hs-CRP on day 30) were higher among those with the composite endpoint. Both IL-6 and hs-CRP levels decreased from day 1 to day 30, regardless of adverse events (both $p < 0.001$). IL-6 levels at the 2 time points (IL-6day1, per pg/mL, HR:1.003, 95% CI: 1.001 to 1.006, $p = 0.018$ and IL-6day30, per pg/mL, HR: 1.053, 95% CI: 1.026 to 1.080, $p < 0.001$) were independent predictors of adverse events, whereas hs-CRPday1 and hs-CRPday30 levels were not. Patients with IL-6day1≤8.24 pg/mL and IL-6day30≤4.45pg/mL had the lowest events rates (4.7%), whereas those with both above the median values had the highest events rate (35%). C-index and reclassification analyses demonstrated use of serial IL-6 measures resulted in improving the accuracy for mortality prediction.

Conclusions: Among NSTEACS patients, both IL-6 and hs-CRP concentrations decrease after the acute phase, and serial sampling of IL-6 (but not hs-CRP) concentrations improve the prognostic stratification of these patients.

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Copeptin in acute chest pain: detection of acute coronary syndrome and obstructive coronary artery disease on coronary CT angiography

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Purpose: To determine the diagnostic accuracy of copeptin in suspected ACS patients and its correlation with obstructive coronary artery disease (CAD) on coronary CTA.

Methods: Copeptin concentrations were measured at arrival in 65 consecutive patients (56 ± 10 years, 45 males) with chest pain suggestive of acute coronary syndrome (ACS), but no indication for immediate invasive angiography. All

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patients also underwent coronary CTA without disclosure of the results to the patient or treating physician. Results were classified as obstructive CAD (>50%) in one or more vessel or no obstructive CAD (≤50%). The population consisted of 53 (82%) patients with a low TIMI risk score and 12 (18%) with an intermediate risk score.

Results: Median copeptin concentration was 7.42 (95% CI 3.71-18.72) pmol/L in 10 (15%) patients with ACS and 3.40 (1.13-6.27) pmol/L in the remaining 55 patients with other causes of chest pain (p = 0.02). In an ROC-analysis, the combination of copeptin with the TIMI risk score had a better diagnostic performance than copeptin or TIMI alone (AUC 0.85 [95% CI 0.73- 0.97] vs. 0.74 [95% CI 0.60-0.89] for copeptin and 0.76 [0.59-0.92] for TIMI risk score). Coronary CTA revealed obstructive CAD in 20 (31%) patients. Copeptin concentrations did not differ between patients with (4.87 [95% CI] and without obstructive CAD (3.60 [95% C]) (p = 0.20).

Conclusion: Copeptin can be used to identify patients with ACS in an early stage and it has incremental diagnostic value over traditional risk models used in the ED.

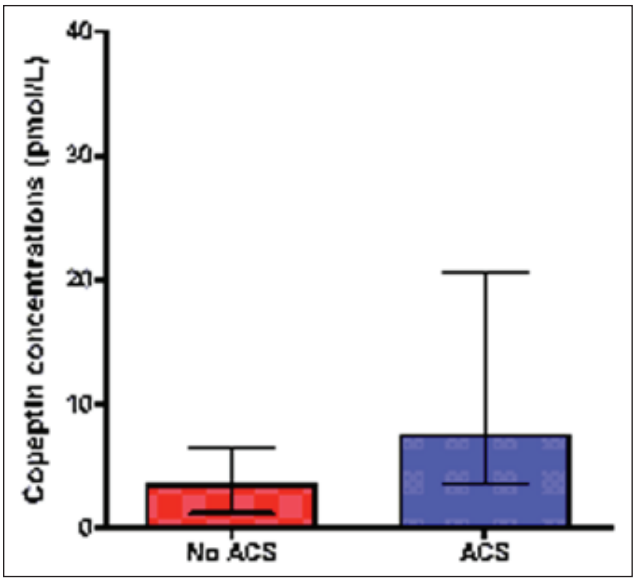


Figure. Copeptin concentrations in ACS

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Referral for angiography in patients presenting with myocardial infarction at a peripheral hospital with no cardiac cathetarisation facilities

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Purpose: Angiography is an important diagnostic procedure in managing patients presenting with myocardial infarctions (MI). In Northern Ireland (NI), only one hospital (located centrally) has 24/7 cardiac cathetarisation facilities. The peripheral hospital where this study is carried out is one of at least six peripheral hospitals with no cardiac cathetarisation facilities. Patients presenting with MIs peripherally are thus referred for angiography. Could the absence of a cathetarisation laboratory at this peripheral hospital be a cause of delay in patients receiving diagnostic angiograms? The aim was to identify whether patients presenting with MI (ST and non-ST segment elevated- STEMI/NSTEMI) are receiving angiography within the time frame suggested by the European Society of Cardiology guidelines and whether this was done as an inpatient or outpatient. Guidelines suggest that once a diagnosis of NSTEMI is made, patients must be risk stratified using the 'GRACE' score (The Global Registry of Acute Coronary Events). Patients who are high risk (>3) must receive angiography within 24 hours of presentation; whereas low (< 1) and intermediate (1-3) within 72 hours.

Methodology: Two studies were carried out in retrospect, two years apart. The first study included patients presenting between January-May 2009, whilst the second included patients presenting between January-April 2011.Data was collected for patients diagnosed with STEMI/NSTEMI. Risk stratification using GRACE score and timing to angiography were not addressed in the first study. Both were taken into consideration in 2011.

Results: In 2009, 50% NSTEMI, 76% STEMI patients presenting to this peripheral hospital received angiography when referred centrally. In total 95% were as inpatients, 5% as outpatients. In 2011, 74% NSTEMI, 95% STEMI patients received angiography centrally. All of these were as inpatients. The average waiting time (in days) for high GRACE score was 8, intermediate- 7, low- 3.

Conclusion: The initial study in 2009 highlighted the need for an angiography service at this peripheral hospital. In 2011, more patients were referred for angiograms centrally, and the targets for timing to angiography in light of GRACE scores were not met, with high GRACE scores waiting longest for angiograms. This has highlighted that a cathetarisation laboratory is essential in peripheral hospitals due to increased presentations of MIs. From February 2012, a pilot cathetarisation laboratory has been running at this peripheral hospital, and it is anticipated that this should significantly improve waiting time to angiography and thus improve patient care.

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Non ST segment elevation acute coronary syndrome - mortality predictors

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Purpose: The aim of this study was to determine the complications and mortality (M) during hospitalization and follow-up (FU) in patients (P) admitted for non-ST segment elevation acute coronary syndrome (NSTACS) and compare with the results of the GRACE and OPERA registries. We also sought to determine the predictors of in-hospital and FU M.

Methods: We conducted a retrospective, descriptive and correlational study, based on a prospective registry, encompassing 1086 P admitted in a Cardiology Department between January 2006 and October 2010 with a diagnosis of NSTACS. We evaluated the baseline characteristics, admission data, in-hospital events-Killip-Kimball (KK) class, ventricular fibrillation (VF) and complete atrioventricular blockade (BAVC), re-infarction (RE-MI), major bleeding (MB) and M–and events at FU– RE-MI, stroke, hemorraghic stroke (HS), readmission for heart disease (RHD) and M (cardiovascular –CVM-and overall-OM). The M results were compared to the results of the GRACE and OPERA registries. We performed a univariate and multivariate analysis for predictors of in-hospital M and CVM and OM after discharge. Monitoring was conducted by a cardiologist, with a medium term of 41 ± 16 months (FU rate 93%).

Results: During hospitalization, 82% performed cardiac catheterization (CAT) and 57% underwent coronary angioplasty (PCI). The mean hospitalization duration was 3, 6 days (D). Most P (75%) had good left ventricular ejection fraction (LVEF>50%) on echocardiogram at discharge.

Regarding in-hospital complications, 5, 9% presented at KK III and IV, 1, 8% with VF and 2, 4% BAVC, 1, 2% had RE-MI, 1, 9% had MB and the in-hospital M rate was 1, 5%.

The only predictor of in-hospital M was no performance of CAT (p = 0, 018).

During FU, 12, 8% had RE-MI, 4, 2% stroke, 1, 3% HS, 23, 9% had RHD and the CVM was 7, 8% and the OM of 10, 7%.

After discharge, the CVM predictors were LVEF < 30% (p < 0, 001) and KK III and IV (p < 0, 001). The OM predictors were DM (p = 0, 031), age older than 65 years (>65Y), LVEF < 30% and KK III and IV (p < 0, 001).

Conclusions:

1-Most patients admitted for NSTACS performed CAT and more than half performed PCI with a low rate of in-hospital events and an average length of hospital stay of 3, 6 days.

2-The in-hospital M was lower than the mortality in the GRACE registry (4%) and in the OPERA registry (4, 3%).

3-The predictor of in-hospital M was not performing CAT.

4-During the FU, P had a high rate of complications, associated with a high M, most of them due to non-CVM. Even so, our M at 3 years was inferior to the M at one year in the Opera registry (11, 6%).

5-During FU, the CVM predictors predictors were KK III and IV and LVEF < 30%. DM and age>65Y were also predictors of OM.

Acute heart failure

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Cardiogenic shock in acute myocardial infarction: still looking for the best inotrope

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Purpose: Acute myocardial infarction (AMI) with cardiogenic shock (CS) has a high mortality (50-60%). Although all conventional inotropic agents exert favorable hemodynamic effects, none have produced consistent improvement in symptoms and many have shortened the survival. Compared with other inodilators, levosimendan (Lv) by virtue of its mechanism of action seems to be better tolerated by patients (P) with ischemic heart disease. The purpose of this study was to compare P with AMI in CS according to the use or not of Lv.

Methods: From a population of 815 P admitted for AMI along 24 months, we identified 4.5% (n = 37) of P (56.8% male; age 76.0 ± 11.1 years) who developed CS. P were separated in 2 groups according to the use of Lv. A follow-up (FU) (10.6 ± 10.9 months) regarding MACCE was done.

Results: Lv was used in 32.4% (n = 12) of P. Lv P were younger (68.2 ± 10.7 vs 79.7 ± 9.4; p = 0.002); more often were male gender (83.3% vs 44.0%; p = 0.024) and diabetic (58.3% vs 24.0%; p = 0.041); presented at admission with higher heart rate (99.8 ± 21.1 vs 74.7 ± 28.3; p = 0.010) and blood pressure (113.1 ± 27.7 vs 89.8 ± 21.9; p = 0.009). Regarding therapeutic strategy, a vasopressor was always used with Lv; and Lv P more often were treated with Gp IIb/IIIa inhibitors (66.7% vs 24.0%; p = 0.012) and intra-aortic balloon pump (100% vs 16.0%; p = 0.029). There were no differences in the performance of coronary angiography or angioplasty. Lv P had higher maximum troponin I (432.1 ± 477.1 vs 108.7 ± 168.3; p = 0.006) and more frequently had left ventricle ejection fraction (LVEF) < 30% (70.0% vs 6.7%; p = 0.001). No differences were found regarding the severity of coronary artery disease, the incidence of cardio-renal syndrome or in-hospital mortality (66.6% vs 68.0%; p = 0.935). Although the decision to use Lv was taken by the attending physician, we realize that Lv was used in more acutely and severely ill patients. At discharge the therapeutic strategy was similar. During FU there was no difference in MACCE incidence

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(60.0% vs 50.0%; p = 0.725), namely in re-hospitalization due to heart failure (0% vs 14.3%; p = 0.428).

Conclusions: In this study levosimendan was a therapeutic option in patients with more acute and more severe left ventricular dysfunction (higher troponin I and lower LVEF). The similar incidence of adverse events, both in-hospital and during follow-up, suggests a potential anti-stunning and anti-ischemic effect of levosimendan in this setting.

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Impact of pulmonary artery catheter on long term survival in cardiogenic shock

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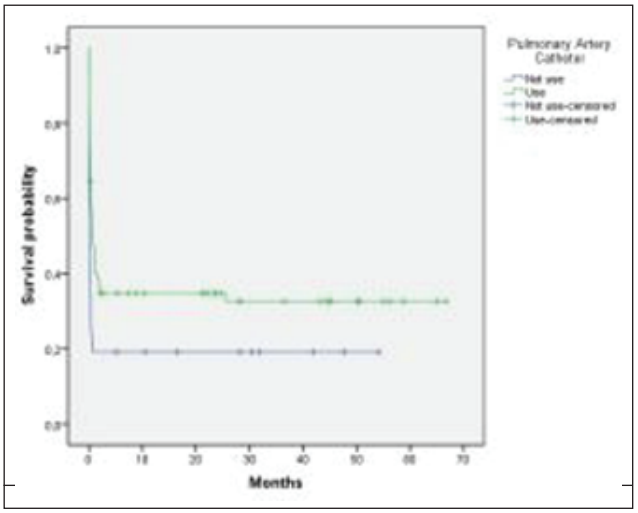
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Purpose: The impact of pulmonary artery catheter (PAC) on survival in patients with cardiogenic shock (CS) is not well established and its use remains controversial. This study aimed to assess whether PAC monitoring is related to in-hospital and long term survival in patients with CS.

Methods: Between December 2005 and May 2009, all consecutive patients with a first admission for CS were enrolled into the registry. Follow-up was assessed reviewed by clinical records. Median follow-up for patients discharged from the hospital was 26.82 months. Long term survival was calculated by Kaplan Meier curve. Hazard ratio (HR) and 95% confidence intervals (CI) were assessed by the Cox's proportional hazard model.

Results: A total of 130 patients were included. In 51.1% an acute coronary syndrome (ACS) was the cause of CS. In the univariate analysis, increased in-hospital mortality was associated with age (71.8 ± 11.73 vs 59.4 ± 15.48 years, P < 0.001), absence of CS on admission (83.3% vs 60.9%, P = 0.010) and lower left ventricular ejection fraction (LVEF) (36 ± 15.0% vs 43 ± 16.3, P = 0.013). No relation between in-hospital mortality and sex or ACS was observed. PAC was used in 63.1% of patients and it was significantly associated with less in-hospital mortality (61.0% vs 79.2%, P = 0.032). The use of PAC was related to increased long term survival (P = 0.001) as shown in Kaplan Meier curve. Multivariate modelling revealed that PAC monitoring adjusted to age, CS on admission and lower LVEF was not an independent predictor for higher survival rates (HR 0.793, 95% CI 0.481-1.308, P = 0.364).

Conclusion: In our registry, the use of PAC in patients with CS for any cause was related to lower in-hospital mortality, but it had no influence as independent predictor for long term survival.



Long term survival by Kaplan Meier curve

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Mortality predictors for patients with acute heart failure

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Aim: Heart failure (HF) is one of the leading causes of death worldwide. The aim of present study was to investigate predictive value of classification systems in the Emergency Department (ED) patients (pts) presenting with acute HF (AHF).

Methods: In the hospital there were 22, 713 ED pts in year 2010, 1, 526 (6.7%) with diagnosis of AHF. Prospective, observational study included 726 AHF pts treated during six months period. Clinical presentation of AHF, New York Heart Association (NYHA) Functional Classification, Simplified Acute Physiology Score II (SAPS II) and Acute Physiology and Chronic Health Evaluation II Score (APACHE II) were recorded.

Results: The pts were allocated into six groups according to the recently published ESC Guidelines for the diagnosis and treatment of AHF: 1) Worsening or decompensation of CHF (49.5%); 2) Hypertensive HF (23.6%); 3) Isolated right HF (11.8%); 4) Pulmonary edema (7.5%); 5) Cardiogenic shock (3.8%); and 6) ACS and HF (3.8%). The overall mortality rate was 67 pts (9.2%); autopsy was performed in 10.4% of non-survivors. There was statistically significant difference in outcome according to the New York Heart Association (NYHA) Functional Classification. The pts were distributed by NYHA Classification as follows: NYHA I 1.8%, NYHA II 45.5%, NYHA III

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42%, and NYHA IV 10.7%. Pts classified as NYHA II had significantly better survival than NYHA IV (48.5:7.2%, $p < 0.001$). There was no gender dependent difference in survival for females (56.8:43.2%, $p = 0.319$). Pts treated only in ED had significantly better survival rate than pts treated in hospital (62.6:37.4, $p < 0.001$). SAPS II and APACHE II were also calculated, mean value of SAPS II was 27.5 points, SD ± 7.7 with 10.3% mortality rate and APACHE II 10.96 points, SD ± 4.6 with mortality rate 14.4%.

Conclusion: Classification of AHF pts on their admission can predict outcome. It can be used to increase quality of therapeutic procedures. SAPS II has better prognostic value for AHF pts than APACHE II. NYHA Classification is excellent prognostic factor easy to implement in AHF treatment. In providing best care to complicated patients as AHF pts are it is necessary to use mortality predictors.

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The acute changes in brain natriuretic peptide during hospitalization and risk of adverse outcomes: if the baseline is high, better will be a great fall

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Introduction: Studies have assessed the value of BNP in the diagnosis, treatment and prognosis of patients (P) with heart failure (HF). However, the percentile difference of BNP during hospitalization could be an important predictor of adverse outcomes.

Purpose: Evaluate the impact of the percentage reduction in the BNP levels during hospitalization for HF, in the rates of death/rehospitalization (D/rH) at 3, 6 and 12M.

Methods: Study started in April of 2009 in the ambit of RICA (acute HF registry). Included 600 P (Female-51.5%) admitted in a Cardiology department for HF of different etiologies. Selected P with BNP levels at admission (BNPa) and pre-discharge (BNPpd) ($n = 322$), and calculated the differential BNP levels (BNPd) and their percentage (%BNPd). Constituted 2 groups (G) GA-%BNPd < 30% ($n = 129$) and GB-%BNPd>30% ($n = 193$) and compared those with clinical, analytical and echocardiographic (echo) parameters. Follow-up at 3, 6 and 12 M with endpoints: D or rH for HF. Statistical analysis using SPSS.

Results: The overall mean age was 77.2 years (identical in G) with males prevailing in both G. At the medical history, the hypertension and AMI prevailed at GB, with no other differences found. In the medication at admission the GA was under greater percentage of loop diuretics, spironolactone and digitalis, while in GB prevailed the thiazides, ACEI/ARB and β-blockers. On the ECG, the % of AF was higher at GA being the prevalence of QRS>120 ms and LVH similar. On admission, the GB owned higher blood pressure profiles ($p < 0.05$), without differences at the mean HR and BMI. Analytically, the BUN was higher in GA, with no differences in the values of Hb, RDW, Na+ and CrClMDRD; the BNPa was higher at GB (with lower BNPpd). On the echo, the LVDD, IVS and LVEF were similar between G, being the LA, E/em, PCWP and PASP higher at GA ($p < 0.05$). In the intravenous medication there were differences in use of dopamine (>GA) and nitrates (>GB). The average of hospital stay was 8.7 days, being higher at GA. At the 3M endpoint, a %BNPd>30% proved to be an independent predictor (GA-34% vs GB-22%, OR-0.561;[CI 0.33-0.96], p-0, 026), translated in the survival curves (Kaplan-Meier Log rank:p-0, 047) remaining this predisposition at 6M (38.6 vs 32.7%) and 12M (51.5 vs. 45%).

Conclusion: The highest rates of D/rH occurred in the first 3M, being higher at GA (revealing the %BNPd>30% an independent positive predictor). However, the cumulative proportion of P with D/rH between the G continued to diverge along time, suggesting that patients with %BNPd < 30% possess an increased risk of long-term events, which may benefit from a more intensive intervention.

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Clinical, biological and echocardiographic patterns with hemodynamic value in acute heart failure

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Purpose: There are few standardized, proven therapies that lower mortality in acute heart failure (AHF), most of them being part of the classical approach. This is partly due to the relatively straightforward classification of AHF. If the clinical, laboratory and hemodynamically relevant echocardiographic parameters are taken into account, there are subgroups of patients that can be identified and benefit from certain individualized treatment plans. Also, a scoring system could be developed to aid the prognostic stratification of these patients.

Methods: We analyzed a group of 125 patients presenting with AHF, consecutively admitted to the Cardiology Department of the "Sf. Pantelimon" Emergency Hospital from June 2011 to April 1st 2012.The group was divided by criteria of clinical presentation and ejection fraction (EF).

Results: Out of the 125 admitted patients, 54.4% were male and 45.6% female with an average age of 71.54 years old. 6.4% presented with hypertensive AHF, 32% with acute pulmonary edema, 58.4% with decompensated chronic

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congestive heart failure (CHF). We excluded patients with AHF with acute coronary syndromes. 14 (11.2%) patients presented with an EF < 30%, 39 (31.2%) with an EF between 30-40% and 72 (57.6%) with an EF > 40%. Ischemic etiology was found in 78.6% patients with an EF < 30%, 53.8% with an EF between 30-40% and 23.6% with an EF >40%. EF < 40% was significantly associated with ischemic etiology of AHF ($p < 0.001$), without significant differences regarding the initial clinical presentation. EF < 40% was also correlated with NTproBNP>2000 pg/ml ($p < 0.05$) and a QRS duration > 120ms ($p < 0.05$). Severe arterial hypertension (>180mmHg) on arrival was significantly associated with an EF>40% ($p < 0.05$), to a greater extent for the patient group presenting with acute pulmonary edema. Restrictive filling pattern was significantly associated with an EF < 30% ($p < 0.001$) and smoking status with acute pulmonary edema upon presentation in patients with an EF < 30% ($p < 0.005$). The regression equation identified the right atrium size (RA) ($t = 3.583$, $p < 0.001$) and the maximum pressure gradient between right ventricle and the right atrium ($t = 3.162$, $p < 0.05$) as independent predictor factors for the EF.

Conclusions: There are proven individual risk factors for prognosis in AHF. The association of these parameters rises the prognostic value, stratifies the patients to a greater extent, individualizes the treatment plan and allows the definition of subgroups of patients. Using these prognostic factors, a complex risk stratifying score could be generated.

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Diuretic therapy in patients with acute heart failure, in whom do we help, and in whom do we harm?

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Aim of the study: To evaluate the efect of diuretic dose in patients with acute heart failure to renal function.

Method: Pts. with acute heart failure (AHF), were analyzed. Renal toxicity was defined as increase for >25% of creatinin level from baseline. We evaluated: age, gender, type of AHF, presence of chronic heart failure (CHF), preexisting renal insufficiency (PRI), CVD risk factors, co morbidities, cardiomyopathy type, LVEF, LV function, sodium, potassium, urea and creatinin levels at admission and highest values, 24 hour diuresis, diuretic dose, inotrope and vasodilator therapy used.

Results: 47 pts. (23 f/24m), age 68 ± 8y were analyzed. Patient characteristics are presented in Table 1.59% had CHF, AHF type I-17, II-49, and type III 34%. 9% had PRI, 99% hypertension, 48% diabetes and 25% HOPD. Mean diuretic dose was 126 mg/24h, 36% resieved vasodilators, and 23% inotropes (renal doses). No gender differences were found, except for LVEF (53% vs. 46% p = 0, 046 f/m).

Significant correlation for diuretic dose and: PRI (r. 585, s = 0.000), diuresis (r -. 505/p 0.000) and use of inotropes (r = . 362/p = 0.012) was found.

29.8% of pts. developed renal imparement (group I). Comparative analyze between groups identified as univariate predictors high diuretic dose (r. 426/beta. 426/p = 0.003), and PRI (Wald 9.184/OR -2.741/p 0.002). Multivariate regression analysis that included eight variables (mean square 1.624/p = 0.000) identified two independent predictors: PRI (beta. 522/t 4.225/p = 0.000) and AHF type (beta. 264/t 2.139/p = 0.038). 12, 8% developed acute renal failure during treatment for acute heart failure, one required hemodialysis.

Conclusion: According to our data, high diuretic dose is not a factor for worsening of renal function in all patients with AHF, but only in patients with PRI.

Table 1. Patients characteristics

VARIABLE	mean±SD
Age	68.8±8.5
EF	49.8±12.3
Na^{++} adm.	140.3±5.3
Na^{++} disch.	138.8±4.7
K^{+} adm.	5.1±1.2
K^{+} disch.	4.9±1.0
Urea adm.	12.8±9.2
Urea disch.	14.4±11.5
Creatinin adm.	158.0±114.2
Creatinin disch.	163.2±125.3
Diuresis (ml)	2276.6±1460.3
Diuretic dose	126.2±67.6

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22-year experience of heart failure as one of prediction factor for occurrence of non-fatal myocardial infarction in patients with prior revascularization

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Background: The prognosis of patients (pts) after coronary artery bypass surgery (CABG) has been noted in many

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studies, but only few studies analyzed prognosis of pts with acute myocardial infarction (AMI) after prior CABG. It is well known that pts who have clinical evidence of heart failure after AMI and CABG have a poor prognosis. The aim of this prospective study was to evaluate the 12-year rate of non-fatal AMI in pts with previous CABG in relation to age, sex and congestive heart failure (CHF). Non-fatal AMI was defined as myocardial infarction not followed by death in the following 21 days.

Methods: We studied 243 pts who developed non-fatal AMI after CABG – Group 1 and control group of 256 pts with prior CABG and without AMI – Group 2.The pts with early perioperative AMI were excluded from the study.

Results: The table 1 shows: total pts (N), number of non-fatal AMI (NFAMI) and 22-year NFAMI-rate (%) for two groups.

12-year NFAMI-rate was not related to sex ($p = 0.21$), or age ($p = 0.11$) but to CHF ($p = 0.012$).

Conclusion: The long-term rate of non-fatal AMI is significantly related to CHF, but not to age or sex.

Table 1.

	Men	Women	CHF	No CHF	<50 yrs	50-65 yrs	>65 yrs
N	194	62	58	198	36	126	94
NFAMI	181	62	58	185	34	120	89
%	26.9	29.1	30.2	26.8	25.9	27.1	29.2

Arrhythmias

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Atrial preexcitation and a fixed stimulus-atrial interval in relation to the fusion zone are superior to PPI-TCL in identifying SVT mechanism

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Intoduction: Differentiation between atrioventricular reentrant tachycardia (AVRT) and AV nodal reentrant tachycardia (AVNRT) can be sometimes challenging. Right ventricular (RV) pacing during supraventricular tachycardia (SVT) produces progressive QRS fusion before the QRS morphology becomes stable. This fusion zone (FZ) may differentiate AVRT from AVNRT independent of entrainment success. Also Post-pcaing interval - tachycardia cycle length (PPI-TCL) during RV entrainment can help in differentiation. We thought to compare the accuracy of atrial timing perturbation (AP) & stimulus-atrial (S-A) interval fixation in relation to fusion zone in identifying the mechanism of SVT.

Methods: A routine electrophysiological study was performed according to the SVT protocol.

We studied prospectively the effect of properly timed RVP on atrial timing during FZ. All patients had RVP within 40 ms of TCL. S-A interval and atrial CL were measured during FZ and with each QRS complex thereafter. AP was defined as change ≥ 10 ms and A fixed S-A interval as variation ≤ 5 ms during RVP.

Results: 57 consecutive patients with SVT undergoing catheter ablation were prospectively studied. 9 patients were excluded due to cycle length oscillation >10 ms before or after the onset of RVP and 2 patients were excluded due to atrial tachycardia. In the remaining 46 patients, PPI-TCL was significantly longer in AVNRT patients. AP occurred during FZ in most AVRT patients and after FZ in most AVNRT patients. However, S-A fixation occurred during FZ in all AVRT patients and after FZ in all AVNRT patients (Table). Fixation of S-A interval during FZ was more accurate than either AP or PPI-TCL in identifying the mechanism of SVT (100%, 92.4% and 84.8% consecutively).

Conclusions: During RVP within 40 ms of the tachycardia cycle length, fixed S-A and AP in relation to FZ were superior to PPI-TCL measurement in identifying the mechanism of SVT.

Table 1. Results

	AVNRT (n=29)	AVRT (n=17)	P value
Age (years)	45±12	31±14	0.001
PPI-TCL (ms)	155±32	73±35	<0.001
PPI-TCL ≥115 ms	86.2%	17.6%	0.001
AP during FZ	3.4%	88.2%	<0.001
Fixed S-A during FZ	0%	100%	<0.001

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Is ability to diagnose potentially life threatening conditions from the electrocardiogram associated with qualifications and backgrounds of a professional?

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Purpose: Northeast England has a lower rate of pacemaker and ICD implantation. This may be due to limited experience in analysing ECG, resource availability and (lack of) knowledge of indications for pacing and ICD implantation. As majority of patients requiring devices are older and have first contact with non Cardiac Medical teams, it is possible that some with indications for device implant may be missed due to lack of awareness of the indications. We tried to identify variability in reporting associated with professional background.

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Methods: The audit was performed at Grand Rounds in a large District General Hospital in Northeast England and had 52 respondents. No prior notification of the audit was made in order to avoid selection or preparation bias. 10 ECG tracings demonstrating indications for ICD/CRT/Pacemaker implantation were chosen from a SCST standard log book. A short summary of clinical presentation and specific queries relating to rate, rhythm, indication for Specialist referral and for pacemaker or ICD implantation for each ECG tracing were provided.

Results: 33 Medical staff of various grades, 8 Cardiac Physiologists and 11 Cardiology team members participated in the audit.

6 [18%] of non Cardiology Medical respondents answered at least 75% of the answers correctly, 16 [48%] answered at least 50% correctly.

7 [88%] of Cardiac Physiologist respondents answered at least 75% of the answers correctly 1[12%] answered at least 50% correctly.

4 [100%] of Cardiology Consultant respondents answered at least 75% of the answers correctly.

3 [43%] of Cardiology associate respondents answered at least 75% of the answers correctly. 4 [57%]answered at least 50% of the answers correctly.

Our results reiterate the need for an improved system for identifying patients requiring device implantation.

Conclusions: Cardiology Consultants are better at recognising ECG criteria for device implant. Physiologists are better than Non-cardiology respondents and almost as good as cardiology consultants. Our audit shows that despite published evidence, recognition of indications for device implantations remians poor. An algorithm driven reporting of ECG tracings by experienced Cardiac physiologists may be a reliable tool for identifying patients in need of prognosis modifying and quality of life improving device implants. Such a novel service may be cost effective in the longterm by reducing healthcare costs associated with unrecognised and untreated cardiac conductive tissue disease.

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The story of a twisted heart - how simple is a case of acute decompensated heart failure by new-onset atrial fibrillation?

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Introduction: Torsades de pointes (TdP) is a polymorphic ventricular tachycardia that displays a unique electrocardiographic feature of twisting of the mean electrical axis of QRS complexes around an isoelectric line on the surface electrocardiogram (ECG). It is associated with long QT syndrome and has many precipitating mechanisms and etiologic factors.

Case report: A 72 year old women, with no medical history, was admitted to the hospital after 5 days of dyspnoea on exertion and palpitations. On the ECG we found atrial fibrillation (AF) with a mean heart rate (HR) of 150 bpm, criteria for left ventricular hypertrophy and normal QTc interval. The chest X-ray was unremarcable and the echocardiography showed a left ventricular ejection fraction of 40% with a normal sized left atrium. A diagnosis of acute heart failure with new onset AF was made. Treatement consisted at first of digoxin 0.25 mg, administred iv and beta-blocker for rate control with angiotensin converting enzyme inhibitor for blood pressure control and anticoagulant therapy. In the same night the patient experience an episode of sincope and on the ECG were recorded multiple episodes of nonsustained polymorphic ventricular tachycardia and AF. On the morning after, the ECG showed AF but with macroscopic T-wave alternans. Cardiac enzymes were normal. The Holter ECG monitoring revealed AF with HR averaging from 45 to 175/bpm, with pauses of 2000 ms and multiple episodes of torsades de pointes (TdP). She was not taking drugs that have a risk of causing TdP nor did she had hypokalemia, hypomagnesemia or hypocalcemia. Coronarography found only a mild plaque on the right coronary artery so the ischemic etiology was excluded. But our patient had a number of risk factors for TdP: HF, advanced age, female sex and bradycardia. In this settings we believe that slow HR episodes could have triggered a QT prolongation that lead to TdP but we emphasize that AF itself may exert a heretofore poorly understood influence on the QT interval. After adequate rhythm control, the patient was discharged with no dispnoea, no new TdP episodes and normal QT interval.

Conclusion: TdP can have many ethiologies, some of witch are not well understood, like the effect of AF on QT interval. Recognition of the ECG harbingers of TdP like macroscopic T wave alternans can lead to adequate treatment, removal of any prolonging QT medication and correction of other exacerbating factors, including the prevention of bradycardia and long pauses.

Biomarkers

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Renal biomarkers other than creatine as prognostic predictors in non-ST elevation acute coronary syndromes

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Purpose: β-trace protein (BTP) is a more sensitive marker than serum creatinine for detecting renal dysfunction, but its prognostic value in acute coronary syndromes (ACS) remains unknown. The aims were to evaluate the prognostic value of BTP in patients with non-ST elevation ACS and to compare its prognostic ability to that of cystatin C (CysC), creatinine and eGFR. Moreover, we also asses whether BTP or CysC provide additional information to the GRACE risk score in this clinical scenario.

Methods: We prospectively recruited 227 consecutive patients with high risk non-ST elevation ACS (ischemic symptoms lasting 10 minutes or more and occurring within 72 hours before admission and either ST-segment deviation of 1 mm or more or elevated levels of a cardiac biomarker of necrosis). Blood samples were obtained within 24-hours of hospital admission to measure BTP, CysC and creatinine. All patients were clinically followed and all-cause death was the study endpoint.

Results: During the follow-up (859 days [524-1164]), 24 (11%) patients died. Decedents had higher concentrations of BTP (1.03 [0.89-1.43] vs 0.74 mg/L [0.61-0.92], $p < 0.001$), CysC (1.16 [0.91-1.59] vs 0.90 mg/L [0.76-1.08], $p = 0.001$), serum creatinine (1.10 [0.87-1.46] vs 0.94 mg/L [0.80-1.10], $p = 0.004$), and lower eGFR (60 ± 20 mL/min/1.73m2 vs 80 ± 24 mL/min/1.73m2, $p < 0.001$). After multivariable adjustment, both BTP (×mg/dL, HR 6.17, CI 2.37 to 16.1; $p < 0.001$) and CysC (×mg/dL, HR 3.19, CI 1.39 to 7.74; $p < 0.011$) were predictors of all-cause death, while estimated GFR ($p = 0.095$) and serum creatinine ($p = 0.299$) concentrations did not achieve statistical significance. In stratified analyses according to kidney function, elevated BTP (≥0.88 mg/dL) and CysC (≥1.13 mg/dL) were associated with a higher risk of all-cause death. Furthermore, reclassification analyses showed that BTP and CysC added complementary information to GRACE risk score.

Conclusion: In patients with non-ST elevation ACS, both BTP and CysC levels are associated with all-cause death risk, and modestly improved prognostic discrimination beyond the GRACE risk score.

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Cardiorenal syndrome: acute cardiac hemodynamic stress predicts acute kidneyinjury in community acquired pneumonia

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Background: The hemodynamic and humoral interaction between the heart and the kidneys seems to predict outcome in multiple acute care conditions including community-acquired pneumonia (CAP). Acute kidney injury (AKI) is an important complication of CAP. Early and accurate risk-stratification is an unmet clinical need. We hypothesized that acute cardiac hemodynamic stress may play an important role.

Methods: We prospectively enrolled 341 patients presenting to the emergency department with CAP (mean age 72, male 61%). Blinded measurementsof three natriuretic peptides (NT-proBNP, MR-proANP and BNP) were performedupon presentation. The primary endpoint was the accuracy of the natriuretic peptides to predict acute kidney injury within 48 hours.

Results: AKI occurred in 21 patients (7.6%) within the first 48 hours. NPs and creatinine were significantly higher in AKI compared with patients without AKI (NT-proBNP 9517 [2042-26792] vs 1177 [280-4167] pg/ml; MR-proANP 641 [196-1075] vs 182 [99-352] pmol/l; BNP 592 [230-1630] vs 160 [64-463] pg/ml; creatinine 166 [131-289] versus 100 [78-134] µmol/l, $P < 0.001$ for each). Predictive-accuracy as quantified by the area under the receiver operating characteristicscurve was moderate to high: NT-proBNP 0.79 (95%CI 0.70-0.88), MR-proANP 0.78 (95% CI 0.67-0.88), BNP 0.74 (95% CI 0.63-0.85), creatinine 0.77 (95% CI 0.66-0.88). In multivariate logisticregression analysis NPs remained the only independent AKI predictors: NT-proBNP (increase of 200 pg/ml) OR = 1.01, 95% CI 1.00-1.01, $P = 0.009$; MR-proANP (increase of 100 pg/ml) OR = 1.23, 95% CI 1.09-1.39, $P = 0.001$; BNP (increase of 100 pg/ml) OR = 1.08, 95% CI 1.03-1.14, $P = 0.002$.

Conclusions: Acute cardiac hemodynamic stress as quantified by NP levels at presentation is a powerful predictor for early in-hospital AKI in patients with CAP.

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Uric acid: a new prognostic biomarker in ST elevation acute myocardial infarction

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Introduction: Previous studies have demonstrated the role of uric acid (UA) as a cardiovascular risk factor, being associated with adverse cardiovascular events in patients (pts) with hypertension (HT), diabetes and cerebrovascular disease. However, it is not clear its prognostic value in ST-segment elevation acute myocardial infarction (STEMI).

Objective: To evaluate UA short- and long- term prognostic value in STEMI pts.

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Methods: Prospective observational study of consecutive pts admitted with the diagnosis of STEMI that underwent primary coronary angioplasty. UA levels were determined in a serum sample collected at the beginning of angioplasty. The short-term prognosis value was assessed by the composite endpoint of cardiogenic shock or in-hospital death, and long-term prognosis value by the composite endpoint of death, reinfarction or re-hospitalization for cardiac causes.

Results: We studied 164 STEMI pts (76% male, 61 ± 12 years), 60% with HT, 52% with dyslipidaemia and 25% with diabetes. UA serum concentration (5.4 ± 1.6 mg/dL) has gradually increased with maximum values of urea and creatinine at the first 72 hours ($p < 0.001$ and $p < 0.001$) and correlated with glomerular filtration rate assessed by MDRD formula ($R2 = –0.373$, $p < 0.001$). UA levels were higher in pts evolved in Killip-Kimball class III and IV ($p = 0.009$). During hospitalization, 10% pts progressed to cardiogenic shock or death. In these pts UA levels were significantly higher, having moderate accuracy to predict these endpoint (AUC 0.62, 95%CI: 0.68 to 0.88, $p < 0.001$). Pts with UA levels ≥6 mg/dL (3rd tertile) have four times higher probability of short-term unfavorable prognosis (OR 3.97, 95%CI: 1.44 to 10.96, $p = 0.008$). Long-term follow-up was available for 133 pts (20 ± 6 months, event rate: 25%; mortality: 8%). Pts with UA admission levels ≥7.1 mg/dL have 2.5 times higher probability of long-term unfavorable prognosis (HR 2.5, 95%CI: 1.06 to 5.77, $p = 0.036$). Finally, in multivariate Cox regression analysis, UA was an independent predictor of long-term prognosis, regardless of glomerular filtration rate.

Conclusion: UA levels at admission are related to STEMI outcome, having short- and long- term prognosis value in these patients.

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The better test: high sensitive troponine t assay, opportunities in the coronary emergency rooms

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Purpose: Patients with chest pain are among the most common patients in the coronary emergency rooms (CER) with large impact on available resources. Decisions concerning dismissal are based upon clinical judgement, ECG and troponin T or I. The novel biomarker, high sensitive Troponine T (HsT) makes it possible to move forward this decision making to an earlier stage. Aim of the study was to establish an early (4-6 hours) dismissal on the CER for patients with chest pain based on HsT. METHODS: During 4 months in 2011, all patients with chest pain, without STEMI/NSTEMI were included. HsT levels were determined at three time intervals: entry (T1), 4-6 hours after initial complaint (T2) and 8-10 hours after initial complaint (T3). A HsT level of < 0.014 is considered as normal. The HEART score was calculated. 30 days following dismissal major adverse cardiac events (MACE) were registered. RESULTS: 89 patients were included (58% male, mean age 61 (range 20-90)). Mean HEART score was 4, 34, MACE occurred in 11 (12%) of the patients. At T2 68 (76%) patients had a HsT < 0.014µmol/L. In 17 (19%) patients HsT ≥ 0.014 µmol/L and ≤ 0.05µmol/L. In 4 (5%) patients HsT ≥0.05µmol/L. On T3 HsT changed in only 7 (8%) patients. The mean HEART score in all these patients was more than 6, 5 of them had a history of vascular disease, and in 4 (57%) of these patients MACE occurred.

Conclusion: The majority of patients with chest pain can be identified as a low risk population using HsT in association with the HEART score within 4-6 hours after initial complaints. In these patients early dismissal is feasible and save. In contrast, patients with initially normal HsT but a high HEART score need a longer follow up.

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New highly sensitive (HS) troponin t audit

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Coronary heart disease is the most common cause of death in the UK. The presence of cardiac Troponin T alongside signs and symptoms of Myocardial Infarction (MI) are suggestive of an acute MI.

Background: In November 2010, The Royal Liverpool University Hospital introduced the new Elecsys Highly Sensitive (HS) Troponin T. Its serial measurement at 6 and 12 hours increases the incidence of MI diagnoses and also allows rapid diagnoses.

Objective: To evaluate the performance of The Royal Liverpool University Hospital against the standards set by NICE guidelines which recommends that all Troponin T levels between 14ng/L-100ng/L should be repeated after 6-9 hours.

Methods: In March 2011, a hundred and four patients were collated and information on time of Troponin T request was gathered from the ICE system. We found that standards were not met, with only 41% of those repeated samples were done between 6-9 hrs.

Interventions: Posters were put up in clinical settings and lectures were given to educate junior doctors.

Re-audit results: In September 2011, a re-audit consisting of a further hundred and five patients, showed that 50% of samples are repeated within the appropriate timeframe.

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Conclusion: There is an overall mild improvement of 20% in achieving targets. Further strategies are necessary to encourage adherence to NICE guidelines. Therefore, we have designed the 'HS Troponin T Interpretation' proforma to be incorporated into the Acute Coronary Syndrome Integrated Care Pathway.

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Therapeutic implication of endothelial activation and impaired autonomic function in patients with acute coronary syndromes

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Purpose: In this study we assessed the effects of low and moderate dose rosuvastatin treatment, on circulating markers of endothelial and monocyte activation and indice of autonomic dysfunction in patients admitted for acute coronary syndromes without ST segment elevation.

Methods: 30 patients with ACS without ST segment elevation were randomized into two groups, and received rosuvastatin 10 mg/day (n = 16) or rosuvastatin 20 mg/day (n = 14) for 12 weeks. Circulating levels of soluble vascular cell adhesion molecule (sVCAM-1), intercellular adhesion molecule-1 (sICAM-1) and serum neopterin were measured on admission, and at the end of the study by ELISA technique. Cardiac autonomic function was assessed by frequency-domain HRV analyses (VLF, LF, HF, LF/HF ratio) for the entire 24 hours.

Results: No correlations were found between changes in LDL-cholesterol over 12 weeks and changes in s-ICAM-1 (r = 0.198, p = 0.29), sVCAM-1 (r = 0.193, p = 0.31) and neopterin (r = 0, 3, p = 0, 6) during the same period. After 3 months, patients in the 20 mg rosuvastatin group demonstrated a significant decrease in serum levels of sICAM-1 (from 439, 4 to 324, 7 ng/ml, p = 0, 01) and sVCAM-1 (from 1327, 4 to 962, 4 ng/ml, p < 0, 001). There were no significant differences in changes between the two treatment groups for either soluble adhesion molecules levels, but for sICAM-1 we found out a trend towards lower concentrations in the 20mg treated pts (p = 0.07). Serum levels of neopterin were significantly decreased in both rosuvastatin-treated groups with a more pronounced decrease in the highest dose group (p = 0, 03). A significant inverse correlation was observed between markers of endothelial activation and HRV variables, with the strongest association being found for sVCAM-1 and HF amplitude (r = −0.506, p = 0.004) and LF amplitude (r = –0, 4, p = 0.02). In addition, autonomic balance was shifted to greater vagal predominance with the highest statin dose - both increase of HF and decrease of low frequency/ high frequency ratio, p = 0.05.

Conclusions: Our findings support the hypothesis that statins decrease endothelial injury and activation in patients with acute coronary syndromes. During the study period an increase of high frequency component which represents the parasympathetic contribution to the spectrum was observed, whereas low frequency remained unchanged. Our findings may contribute to the achievement of specific treatment goals for each patient with proper drug selection and dose titration in patients with elevated markers of endothelial/ monocyte activation and depressed HRV.

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Correlation between electrocardiographic changes and troponin levels in acute coronary syndrome

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Introduction: Patients with acute coronary syndromes (ACS) have a wide variation of clinical course and subsequent cardiac events risks. In order to select appropriate therapeutic approach, there is a need for precise diagnostic and risk evaluation of future cardiac events, so evaluation should be done early, based on available clinical electrocardiographic and sensitive and specific biomarkers.

Aim of the study was to examine cardiac markers values in diagnostic of ACS, especially in group UAP/NSTEMI, interconnections of ECG markers and cardiac troponin levels, as well as their prognostic value.

Material and methods: In the examined population there were 333 patients involved. The total follow-up period was 3 months. Control check-ups were in the 1st and 3rd month since discharge and they involved clinical examination, ECG, following the course of the illness regarding recurrent angina, reinfarction, revascularisation or percutaneous interventions, as well as the results obtained from it. Laboratory analysis involved troponin T and I (TnT, TnI), myoglobin, CK-MB and CK-MB mass. Most of the examined patients had NSTEMI, that is 50%. Total number of male patients was 251 or 2/3 and there were 106 or 1/3 female patients. Mean age in male patients was 61.86 ± 11.02 and in female 64.19 ± 10.14. Although women were older for 2.33 years, that difference was not statistically important.

Results: Analysis of frequency and severity of ST depression showed that most of the patients had ST depression (1mm and 2mm, each by 21%), in the abovementioned subgroups. Depression of 3 and 4 mm was present in 10% and of 5 mm in 2.63 % of patients. There is a significant correlation between ST depression and elevated TnT levels. In all the subgroups of patients with ST depression there was high, statistically significant troponin level increase. About 40% of patients with negative T wave

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had TnT increased, and with TnI that relation was more expressed (50% positive). Out of 220 patients with UAP/NSTEMI without Q-wave on admission, 18 or 8.18% patients developed Q-wave during hospitalisation. In 10 (13.51%) patients presented on admission as NSTEMI, new Q-wave was developed in TnI positive, while in the troponin negative group there were no Q-waves, which was statistically significant.

Conclusion: High sensitivity and specificity of troponins in diagnosis of acute coronary syndrome, as well as their correlation with the rate of ST depression, changes in T wave and occurrence of new Q-wave was proved. In our research troponin levels were especially valuable in making diagnosis NSTEMI and in risk stratification.

General intensive care

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Brugada electrocardiographic pattern elicited by psychotropic drugs overdose

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Brugada syndrome is a rare inherited disease, channelopathy causing cardiac cells' action potential disorders, which may lead to sudden cardiac death and it is representative of ECG changes. It is known that such ECG pattern may also be due to other causes, including intoxication with psychotropic drugs.

Purpose: The aim of this study was to evaluate the causes and impact on clinical course of Brugada electrocardiographic pattern elicited by psychotropic drugs overdose.

Materials and Methods: The study was carried out in Lithuanian University of Health Sciences Hospital. There were analyzed ECG of 356 patients treated in Intensive Care Unit because of acute psychotropic drugs overdose. 137 (38, 5%) men and 219 (61, 5%) women aged from 18 to 86 years (average – 37, 5 (95% CI 35, 9–39, 1) were enrolled into the study. Patients' demographic and clinical data were recorded. 163 patients used 1 drug, 193 used 2 or more drugs of different pharmacological groups, 134 suicided after drinking alcohol. The dose was known for 165 patients, the mean of it was 18, 92 (95% CI 15, 25–21, 07) of WHO DDD. Data were analyzed using SPSS/w19.0 software.

Results: Brugada ECG pattern of 1 or 2 tipes were found in 21 cases: 11 of theses patients used 1 drug (3 were overdosed tricyclic antidepressants, 6 – atypical neuroleptics, 1 – carbamazepine, 1 was used high dose of alprazolam with alcohol) and 10 patients used two or more drugs of different pharmacological groups. Statistical analysis showed that there were no significant differences for appearance of Brugada ECG pattern with respect to patients' sex, age, duration after poisoning and arrival at the hospital time, using of alcohol, the dose of drug (expressed in DDD). However, the frequency of Brugada ECG pattern was statistically significantly more evident in cases of poisoning with 2 or more drugs of different pharmacological groups, compared with those who used only one drug. Threatening complications – pulmonary edema, cardiac rhythm or conduction disorders, severe hypotension observed in 21 persons and had a statistically significant increase in individuals whom reported typical Brugada electrocardiographic pattern, compared with those to whom these signs were not. One of the patients who have Brugada EKG pattern had ventricular tachycardia, terminated with cardioversion.

Conclusions:

1. The frequency of the Brugada ECG pattern in acute intoxicated with psychotropic drugs patients was 5, 89%.
2. The transient Brugada ECG pattern significantly correlated with more frequent cardiovascular complications.

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Sepsis in a coronary care unit: a single center experience

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Aim: Infection is a major cause of morbidity and mortality in intensive non-coronary care units worldwide. In the last ten years there has been an increase in the admission, to coronary care units, of highly complex patients with non cardiovascular diagnoses, such as sepsis. Little information is known about microbiological and clinical characteristics of sepsis in coronary care units.

Methods: Demographic, physiological, bacteriological and outcome data were collected for patients admitted, with a diagnosis of sepsis, to our coronary care unit (CCU) between January 2009 and December 2010.

Results: Of 1026 patients admitted to our CCU, 98 (9.5%) had a clinical or microbiological diagnosis of sepsis. 42 (43%) of these patients developed nosocomial infections. Lung was the most common site of infection (28.6%), followed by the urinary tract (18.4%) and the bloodstream (18.4%); in 14 (14.3%) patients multiple sites of infection were identified. Cultures were negative in 13 (13.3%) patients. Gram positive microorganisms (45%) were isolated more commonly in bloodstream and catheter related infections. Among Gram positive microorganisms, Staphylococcus Epidermidis was

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the most common one and was isolated from 38% of cultures; Enterococcus Faecalis and Staphylococcus Aureus were found respectively in 17% and 16% of Gram positive cultures. Gram negative microorganisms (45%) were involved more commonly in lung and urinary tract infections. Escherichia Coli (25%) was the most common Gram negative microorganism, followed by Pseudomonas Aeruginosa (21%) and Enterobacter Cloacae (16%). Even fungi (5%) were involved in lung infections. About 88% of Staphylococcus were methicillin-resistant; moreover, 10% of Enterococcus were vancomicina-resistant and 30% of Pseudomonas were multidrug-resistant. Severe sepsis or septic shock occurred in 50 (51%) patients. These patients presented more comorbidities and had often undergone invasive procedures. Median coronary care unit length of stay was 11.3 ± 8.6 days. Intrahospital mortality was respectively 27% in all patients and 40% in patients with severe sepsis or septic shock.

Conclusions: Infections are an emerging problem both in intensive care units and in coronary care units. Microbiological surveillance studies provide important information for the identification of pathogens and antimicrobial resistance, and guide clinician decisions regarding the appropriate treatments. Sepsis is associated with considerable morbidity, mortality, and costs. In our population, it increased both length stay and mortality by three and four times respectively.

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Safety and efficacy of a rapid acetylsalicylic acid desensitization therapy in patients with acute coronary syndrome and long term follow up

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Introduction: Sensitivity to acetylsalicylic acid (aspirin) is an important problem in patients with ischemic cardiopathy. Aspirin constitutes the main treatment in acute coronary syndromes, with an event reduction rate around 33%. Prevalence of sensitivity to aspirin varies from 0.6 to 2.5% in the general population.

Objectives: The aim of this study was to evaluate the safety and efficacy of a rapid aspirin desensitization therapy and its long-term follow up.

Methods: Since October 2007 until January 2012, we studied 18 patients with sensitivity to aspirin who were admitted to our hospital for acute coronary syndrome. 9 patients with acute coronary syndrome without ST segment elevation and 4 with acute coronary syndrome with ST segment elevation. We made a rapid oral desensitization in the coronary care unit with 25mg of hidroxyzine and progressive doses of aspirin every 20 minutes 0.1, 0.3, 1, 3, 10, 20, 40, 60 and 100 mg. Electrocardiogram, blood pressure and heart rate were recorded in all patients.

Results: No patients exhibited any complications during the desensitization. Treatment with aspirin was continued with 100 mg daily since desensitization during a median follow up of 739 (range 73-1625) days.

No patients had a new acute coronary syndrome and all of them keep taking treatment with 100mg of aspirin daily.

Conclusion: Aspirin desensitization is safe and successful, and its rapid response allows us to initiate treatment with aspirin as soon as possible in these patients. During the follow up, all patients were able to take aspirin daily and no acute coronary events occurred.

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From the Coronary Care Unit to the Intensive Cardiac Care Unit: the experience of a tertiary centre

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Purpose: Recent observational studies describe an evolution in processes of care, comorbid illness and characteristics of patients admitted to Coronary Care Units (CCU) of tertiary centres (Katz, Critical Care Medicine, 2010). Whether these CCUs should be directed by specially trained cardiologists, by intensivists or through a collaborative approach is still a question of debate. In December 2009 the Cardiosurgical activity was introduced in our Hospital and the Cardiovascular Department was re-organised in order to promote a multidiscliplinary approach: object of the study was to evaluate the changes in activity, processes of care and outcomes of patients consecutively admitted to our CCU.

Methods: All 2341 consecutive patients admitted to the CCU from January 2009 to December 2011 were enrolled in this retrospective registry.

Results: In 2011 the number of patients referred from other Hospitals or other Wards significantly increased (from 17.2 in 2009 to 33.6% in 2011). Statistically significant was also the increase of patients with ST elevation MI (from n = 190 to n = 230), shock (from n = 20 to n = 62), cardiac arrest (from n = 2 to n = 17), aortic dissection (from n = 0 to n = 12). Conversely, the number of patients admitted for acute coronary syndromes without ST elevation and GRACE risk score < 140 significantly decreased (from 169 to 44). In parallel, a statistically significant increase in the use of intra-aortic balloon

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pump (from 2 to 7%), continuous hemofiltration (from 0.5 to 5%), non-invasive ventilation (from 6 to 13%) and mechanical ventilation (from 0.5 to 8%) was observed. Intensive care devices were more frequently used in the subgroups affected by cardiogenic shock (percutaneous revascularisation: from 76 to 97%, balloon pump: from 41% to 89%, mechanical ventilation: from 5 to 71%, continuous hemofiltration: from 0 to 20%), acute coronary syndromes without ST elevation and GRACE risk score > 200 (percutaneous revascularisation: from 60 to 69%, balloon pump: from 5 to 16%, non invasive ventilation: from 17% to 40%, continuous hemofiltration: from 0 to 9%) and heart failure (non invasive ventilation: from 25 to 45%, continuous hemofiltration: from 3 to 24%). Interestingly, despite the increase in high risk clinical conditions and comorbid illness, intra-CCU mortality only marginally increased (3.1 vs 4.4%).

Conclusions: A CCU model based on the sharing of cardiological and cardio-anesthesiological expertise is effective in increasing admission appropriateness, improving standards of care and developing intensive care skills in a cardiological environment in a short period of time.

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Withdrawn

Predictors of acute kidney injury requiring continuous renal replacement therapy after cardiac surgery.

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Introduction: Acute kidney injury (AKI), which is a major complication in cardiac surgery, is associated with very high mortality, especially required continuous renal replacement therapy (CRRT). Our aim was to assess the risk factors for postoperative AKI requiring continuous renal replacement therapy (CRRT) and whether the addition of perioperative management variables can improve AKI prediction.

Method: We reviewed 882 patients operated from January 2009 to February 2012 in a single institute, retrospectively. Of these patients, CRRT was required in 34 patients (3.9% of all patients) due to acute kidney injury after surgery (Group A). CRRT was performed when oliguria, uremia (elevated creatine level or urea concentration), hyperkalemia, metabolic acidosis or fluid overload were occurred. Group B included 848 patients who not required CRRT after surgery.

Results: The hospital mortality was 32.4% in group A, which was much higher compared to group B (1.3%, $p < 0.001$). Univariate analysis identified the following as significant risk factors: emergent cases, age, diabetes, elevated serum creatinine, history of cerebral vascular disease, NYHA = 4, aortic surgery, cardiopulmonary bypass time, circulatory arrest, IABP use ($p < 0.05$).

Conclusions: Several factors influence acute kidney injury development after cardiac surgery. Perioperative patient management significantly affects acute kidney injury occurrence. By identifying higher risk patients, early planned preventative measures should be readily available to reduce the incidence of such a complication.

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The use of intra-aortic counterpulsation balloon pump in the setting of acute coronary syndromes

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Background: Intra-aortic counterpulsation baloon pump (IABP) is a very effective procedure during cardiogenic shock and as a mean of hemodynamic support during high risk percutaneus coronary interventions. It is a very effective mean of treatment when we want to improve coronary perfusion.

Within every year and more this kind of procedures are being performed worldwide, the accesibility is becoming easier and indications range is getting wider.

Methods: This study was performed in a University hospital. It is a retrospective analysis of 300 cases when IABP was used. 67% of patients were males (201 patients). The patients were divided into two groups: survivors and non-survivors and statistical comparisson was performed.

Results: Average age of patients was 69.5 ± 10.4 years, the survivors age was 68.3 years, they were on average 4.2 years younger ($p = 0.002$). The average hospitalization stay was 17.3 ± 14.9 days, while the average IABP duration was 110.7 hours. In patients who survived IABP was inserted for 9 hours longer ($p = 0.001$). Medical history of MI or CABG did not predict worse outcome ($p > 0.05$). The most common indication for the use of the IABP was cardiogenic shock (n = 124, 41.3%). In this group the mortality was the highest (n = 63, 50.8%). Patients with acute MI had the highest survival rate (77.98%). The average BNP level in the survivors was 2.5 times lower than in non-survivors ($p < 0.001$). The mean creatinine value was 30% higher ($p < 0.001$) in non-survivors. The analysis of vital sign changes showed, that after IABP insertion, heart rate, systolic and diastolic blood pressure remained unchanged whereas left ventricular ejection fraction increased up to 4.4% ($p < 0.05$).

Conclusions: Intraaortic balloon pump therapy has a beneficial effect on hemodynamic parameters, the EF increases and the complication rate of is low. IABP is a cost effective preventive and treatment device. The BNP and creatinine levels can reliably predict a negative outcome.

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Hypertension

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Association of adiponectin levels with abdominal obesity in hypertensive patients

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Purpose: Adiponectin is a protein produced from adipose tissue, which has anti-inflammatory effects in the vascular endothelium and appears to play an important role in atherogenesis. However, it is unknown if adiponectin concentrations associated with high cardiovascular risk, in patients with other risk factors for atherosclerosis, such as hypertension and abdominal obesity. Study purpose was to investigate whether there is a relation between adiponectin plasma levels and abdominal obesity, in patients with arterial hypertension.

Methods: We studied 100 hypertensive outpatients (33 men, 67 women) with medically treated arterial hypertension (mean age 65.8 ± 10.8 years). Blood samples were taken from a peripheral vein and human adiponectin levels were measured using an enzyme immunoassay. Males with waist circumference >102 cm and females >88 cm, considered to have abdominal obesity.

Results: From our study population, 52 patients (52%) with abdominal obesity have significantly lower adiponectin levels, in comparison with 48 patients (48%) without abdominal obesity (22.1 ± 6.9 μg/ml vs 32.8 ± 14, 7 μg/ml, p = 0.000).

Conclusions: In hypertensive patients, adiponectin levels are associated inversely with abdominal obesity. Although the mechanisms linking obesity and cardiovascular disease remain unclear, low adiponectin concentrations may be considered as an early event in the atherosclerotic process.

Invasive imaging - cardiac catheterisation and angiography

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Randomized comparison of two universal dedicated catheters for the right transradial approach

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Randomized Comparison of Two Universal Dedicated Catheters for the Right Transradial Approach.

Introduction: The transradial approach has been proven to be a feasible alternative to the femoral approach. No ideal universal catheter for the transradial approach has been found.

Objective: To compare the diagnostic performance of two dedicated different catheters for the transradial approach:the TIGER II Catheter and the Impulse Radial Catheter. The primary end-point was defined as the successful engagement of both coronary arteries with the catheters being studied. No conflict of interest exists.

Methods: Thirty nine patients referred for right transradial diagnostic coronary angiography were enrolled and randomized to one of two groups. Twenty two patients wererandomized to the TIGER II catheter group and 17 patients to the Impulse Radial Catheter group.

Results: In all patients in the TIGER II group both coronary arteries could be successfully engaged. In the Impulse Radial group in 6 patients both coronary arteries could not be successfully engaged. There were no major complications in both groups.

Conclusions: The Impulse Radial Catheter could not accomplish the primary end-point in 45%. This catheter behaves like an extra backup curve with a stiffer manipulation. The TIGER II curve is manipulated moreless like a Judkins left kind of catheter and has a more dynamic manipulation in theaortic root that resulted in a higher success rate to engage both coronary arteries (100%).

Table 1. Demographic and Angiographic Characteris

	TIG Catheter n = 22	Impulse Catheter n = 17	P
Age (years)	58 ± 11.06	63.17 ± 8.62	0.17
Gender (male)	13 (59)	15 (89)	0.04
Diabetes Mellitus (%)	6 (27)	5 (29)	0.88
Hypertension (%)	13 (59)	12 (70)	0.45
Dyslipidaemia (%)	13 (63)	12 (70)	0.64
Time to radial introducer installation (seconds)	167 ± 203	214 ± 170	0.45
6F Introducer (%)	20 (91)	17 (100)	0.31
Successfully engagement of both coronary arteries (%)	22 (100)	11 (65)	0.02
Time to engage the left coronary artery	62.8 ± 95.1	97 ± 105.9	0.07
Time to engage the right coronary artery	55.81 ± 70	173 ± 148	0.02
Complications (%)	0 (0)	2 (3.3)	0.18

P: = P value.

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Non invasive imaging - Echocardiography, CMR,CT and nuclear techniques

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Assessment of right ventricular function in mild mitral stenosis

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Purpose: Mild mitral stenosis (MS) defined by a valve area between 1.5 and 2 cm², usually does not have clinical consequences. The aim of this study is to assess right ventricular (RV) function in asymptomatic patients with mild mitral stenosis.

Method: We included 32 asymptomatic patients in sinus rhythm with pure mild MS (mean mitral valve area = 1.73 ± 0.21 cm²) and 35 healthy subjects. The 2 groups had similar mean ages and sex ratio. All included subjects had no evidence of hypertension, diabetes mellitus, ischemic heart diseases or chronic pulmonary diseases. We used standard echocardiography and tissue Doppler imaging.

Results: We observed no difference in conventional indices of global left ventricular function between the 2 groups. Also, RV ejection fraction, the conventional Tei index and the tricuspid annular plane systolic excursion were similar in both groups. Conversely, the tricuspid annulus systolic velocities obtained at the basal RV free wall were significantly decreased in mild MS patients (11.3 ± 1.3 cm/s vs. 14.9 ± 1.6 cm/s, $p < 0.01$). In addition tricuspid annulus early diastolic velocities were significantly reduced in mild MS subjects (-7.5 ± 1.4 cm/s vs. –10.9 ± 1.3 cm/s, $p < 0.01$) with lower ration of early to late diastolic velocities (0.7 ± 0.15 vs. 1.24 ± 0.18, $p < 0.01$). Among mild MS patients, impaired RV systolic and diastolic indices are significantly pronounced in the subgroup with mitral valve area < 1.7 cm².

Conclusion: Our data show the presence of subclinical systolic and diastolic RV dysfunction in pure mild mitral stenosis patients detected by Tissue Doppler imaging.

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Evaluation of the use of echocardiograms by non-cardiologists in the acute management of hospitalized patients

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Background: Echocardiography is an accurate method in the non-invasive evaluation of the cardiovascular system, being relevant to the diagnosis and follow-up of cardiovascular diseases. However, it is crucial that this method be used judiciously. The aim of this study was to evaluate clinical indications, appropriateness of prescriptions and clinical utility of in-patients two-dimensional transthoracic echocardiograms, ordered by non-cardiologists.

Materials and methods: the authors evaluated, retrospectively, the in-patients transthoracic echocardiograms, consecutively ordered by internists for 6 months. For each request were collected the following data: clinical indication; the appropriateness of prescription, classified as class I (appropriate), class II (of doubtfully appropriateness) or class III (inappropriate), in agreement with the American College of Cardiology/American Heart Association guidelines; the synthetic result of each exam, classified as normal versus abnormal; and the clinical utility of each exam. The utility of the exam was classified as none, if the test did not result in new information; marginal, when the test did not result in relevant information, able to alter in a significant way the diagnostic and therapeutic pre-test orientation; or substantial, when the results of the test modified the pre-test diagnostic and therapeutic strategies. Results: 272 echocardiographic examinations were evaluated (116 in women, 156 in men; mean age 63, 5 ± 13, 6 years). Test indications were classified as appropriate in 82, 7% (class I) and inappropriate (class III) in 4, 8% of the cases. The tests were considered useful (of marginal or substantial utility) in 76%; a useful result was found in 67% of class I exams, 63% of class II exams and in 62% of class III exams. An abnormal result was found in 72% of the cases; in particular, an abnormal result was found in 74% of class I exams, in 63% of class II exams and in 62% of class III exams.

Conclusion: Our data reveals an unexpected adequate level of appropriateness of requests for transthoracic echocardiograms. Furthermore, exams in class II of appropriateness are significantly more useful (Chi-square = 0, 77; $p < 0$, 05) and more frequently abnormal (Chi-square = 0, 02; $p < 0$, 05) than exams in class III of appropriateness.

Miscellaneous

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Prognostic impact of the infectious agent on infectious endocarditis

C Jorge[1], P Carrilho-Ferreira[1], N Cortez-Dias[1], D Silva[1], D Magalhaes[1], R Placido[1], J Silva Marques[1], MJ Metrass[1], MG Lopes[1] and A Nunes Diogo[1]

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Introduction: Infectious endocarditis (IE) is a less common, but serious disease that can be caused by multiple infectious agents. Etiology can influence short and long-term prognosis.

Aim: To characterize IE etiological agents and assess its long-term prognostic.

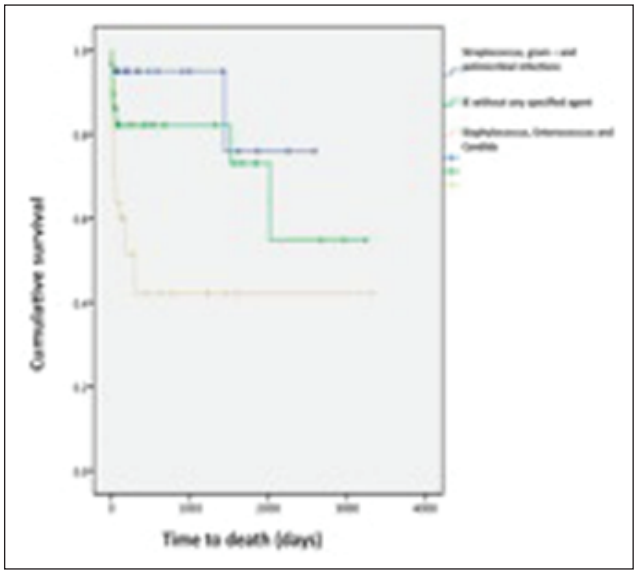
Methods: Longitudinal observational study of patients with IE. Clinical and microbiological variables were evaluated and their association with prognosis was assessed.

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Results: 81 patients were evaluated (72% males; 64 ± 14 years-old; 22 ± 28 months follow-up). The aortic valve was affected in 54, 3% and mitral valve in 46, 9% of the patients. The more frequent etiological agents were Staphylococcus spp (n = 19, 23, 5%), Enterococcus spp (n = 10, 12, 3%), Streptococcus spp (n = 9, 11, 1%), Enterobacteriaceae (n = 7, 8, 6%), Candida spp (n = 2, 2, 5%) and Bartonella spp (n = 1, 1, 2%). There were three cases of polymicrobial infection (3, 7%). It wasn't possible to identify the etiological agent in 37, 0% of the cases (n = 30). Mortality during hospitalization was of 22, 2% and of 30, 9% during the follow-up. Long-term mortality was associated with IE etiology (p = 0, 002), which was higher in cases of infections with Candida spp (100%), Enterococcus spp (50, 0%) and Staphylococcus spp (47, 4%), intermediate in the cases of IEwithout any specified agent (23, 3%) and lower in the remaining (Image).

Cox's univariate regression analysis confirmed the worst long-term prognosis for patients infected by Candida spp, Enterococcus spp or Staphylococcus spp, compared to there maining agents (HR 3, 86, IC 95% 1, 68-8, 88, p = 0, 001).

Conclusion: IE etiology has an important impact on prognosis. Long-term mortality is significantly higher in IE by Candida spp, Enterococcus spp and Staphylococcus spp.



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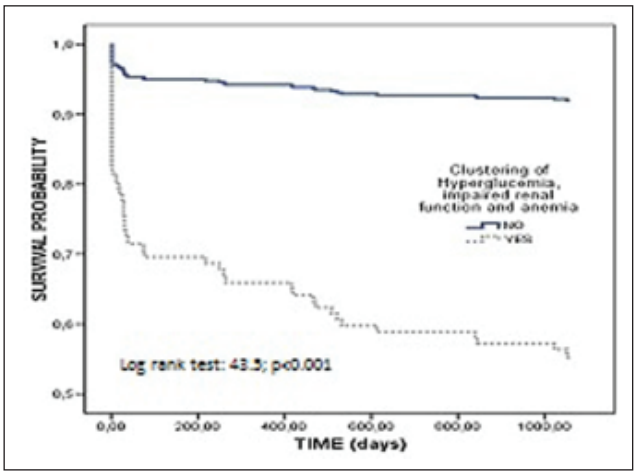
Impact of clustering of hyperglucemia, impaired renal function and anemia on admission on in-hospital and long-term outcome of patients with acute coronary syndrome in clinical practice.

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Aims: to study the impact of the presence of clustering of hyperglucemia, impaired renal function (IRF) and anemia on admission on in-hospital and long-term outcomes of patients with ACS. Methods: analysis of 490 unselected consecutive patients registry admitted with ACS diagnosis (53.7% STEMI/BCRIHH; 46.3% NSTEMI). In-hospital and long-term outcomes were studied. Results: Hyperglucemia was present in 189 (38.6%), IRF (glomerular filtration rate < 60 ml/min, Cockroft-Gault formula) was present in 104 (21.2%), anemia on admission was present in 83 (16.9%) and the all the three conditions was present in 26 (5.3%) of the patients. Patients with the triad were predominantly female (8.7 vs 3.8%; p < 0.05), had a higher prevalence of previous coronary heart disease (9.2 vs 3.7%; p < 0.02), heart failure (23.1 vs 4, 9%; p < 0.02) and peripheral vascular disease (18.5 vs 4.6; p < 0.01) compared with patients without the three risk factors. During hospitalization, medical treatments, use of coronary angiography and revascularization was similar in both groups. Patients with the three risk factors shown higher in-hospital complications: HF (11.9 vs 3.6%; p < 0.05), shock (14.8 vs 4.8%; p < 0.05), MACE (13.6 vs 3.6%; p < 0.01) and higher mortality (26.1 vs 4.3%; p < 0.01). Long-term mortality is shown in the figure.

Conclusions: In an unselected cohort of ACS patients, those with hyperglucemia, IRF and anemia on admission represent a group with particularly high risk of in-hospital major adverse cardiac events and long-term mortality.



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Withdrawn

Dementia as an independent predictor of mortality for one year after hospital discharging of elderly subjects with cardiovascular diseases

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Background: Dementia has been associated with higher overall mortality in the elderly. However, the impact of dementia in the mortality rates of those older adults who had undergone hospitalization due to cardiovascular diseases (CVD) has been poor elucidated.

Aim: To evaluate the association between dementia and short-term all-cause mortality rates of older adults hospitalized with CVD during one year of following up.

Study design: Prospective cohort study.

Methods: Were included a total of 102 consecutive patients aged 65 years or older who were discharged from a cardiology ward of a tertiary-care hospital. Mini mental state examination (MMSE) was applied. Individuals were divided into groups: group 1 with dementia diagnosis, and group 2 without dementia diagnosis. Demographic characteristics, blood analysis and cardiovascular parameters at the time of hospital discharging were analyzed. In the sample studied all individuals were followed up for one year or dead within this period. McNemar test was applied in order to compare the mortality rates between the groups providing the difference between the proportions with 95% confidence interval (CI). Chi-square and Kruskal-Wallis tests were applied in order to seek out differences among categorical and continuous variables between the groups, respectively. Statistical significance was set at $p < 0.05$.

Results: Group 1 comprised 47 subjects, and group 2 comprised 55 subjects. There were no differences between the groups regarding mean of aging nor sex distribution. Group 1 demonstrated, in relation to group 2, higher all-cause mortality (14.9% vs. 3.6%; $p < 0.0001$). Dementia was an independent predictor of all-cause mortality (Difference 37.2%; 95% CI 27.9% to 40.7%; $p < 0.0001$) in the sample studied.

Conclusion: In our study dementia was independently associated with higher overall mortality among the elderly with CVD leading to hospitalization.

Implications: Dementia diagnosis seems to be a powerfull tool for predicting poor outcomes in the elderly with CVD, thus its diagnosis scale should be applied more often in the cardiology divisions.

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Determinants of mean platelet volume variation at presentation of patients with unstable, stable and atypical angina

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Purpose: Platelet activation quantified by mean platelet volume (MPV) could be used as a potential indicative of severity in patients presenting with angina, without EKG or cardiac enzyme changes. The aim of our study is to determine what are the comorbidities that influence the value of MPV as well as to what extent this parameter could be used in guiding the diagnosis in the acute setting of chest pain.

Methods: We retrospectively analyzed data from 108 patients presenting with chest pain, diagnosed with stable (SA), unstable (UA) or atypical angina (AA) admitted consequently to our clinic from January 1st to February 29th 2012.49 (45.37%) presented with UA, 28 (25.92%) with SA and 31 (28.71%) with AA. 60 (55.55%) were female and 48 (44.45%) male, with a mean age of 62.56 ± 14.26 years old.

Results: Patients with UA had a MPV of 9.39 ± 1.05 fL while those with SA 8.86 ± 1.1 fL ($p = 0.05$) and atypical angina 8.91 ± 1.12 fL ($p = 0.04$). Among the patients with dyslipidemia, those with UA had a mean MPV of 9.48 ± 1.12 fL compared to 8.84 ± 1.20 fL ($p = 0.08$) in those with UA. Diabetes mellitus increased the platelet reactivity in patients with UA – MPV = 9.81 ± 1.26 fL as well as in those with SA – MPV = 9.92 ± 1.65 fL, but not in those with AA – MPV = 8.51 ± 0.72 fL ($p = 0.02$). While a significant bivariate correlation could not be established between the systolic blood pressure (SBP) at presentation and MPV, subgroup analysis showed that patients with SBP < 140 mmHg, diagnosed with UA had a MPV of 9.48 ± 1.07 fL vs. 8.69 ± 1.20 fL ($p < 0.01$) for those with SA and 8.88 ± 1.43 fL ($p = 0.05$) for those with AA. Patients with SBP < 160 mmHg and UA had a MPV 9.45 ± 1.12 fL vs. 9.00 ± 1.10 fL ($p = 0.08$) for those with SA and 8.85 ± 1.23 fL ($p = 0.03$) for those with AA. SBP>160mmHg was associated with higher values of MPV in all patients, regardless of etiology of chest pain, without significant differences between them.

Conclusions: MPV is significantly elevated in patients with UA, in comparison to those with SA or AA. MPV could guide the differential diagnosis, but the interpretation of its value for patients complaining of angina with acute onset should take into consideration cardiac risk factors such as diabetes and elevated SBP that stimulate thrombocyte reactivity as independent parameters. Analysis of a larger group of patients is necessary in order to establish the use of MPV in the diagnostic workup and severity assessment of patients presenting with new onset of chest pain.

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Predictors of poor outcome in patients with cardiac amyloidosis - preliminary report

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Introduction: Primary amyloidosis with cardiac involvement is releated with poor prognosis. Its early diagnosis is challenging because of its infiltrative and progressive nature. Diagnosis of subtle myocardial functional abnormalities may help to select patients (pts) with AL amyloidosis for early treatment (chemotherapy plus autologous stem cell transplantation). Only a few data exist about predictors of outcome in pts with cardiac amyloidosis.

Aims: Our ongoing, prospective, non-randomized, observational trial is designed to determine whether bortezomib treatment and autologous stem-cell transplantation could comes to regression of cardiovascular changes in pts after successful transplantation, based on changes in selected electrocardiographic, echocardiographic and magnetic resonance imaging parameters (MRI). Second aim is to evaluate the occurrence of death, death from cardiovascular causes, cardiac arrest, hospitalization for worsening heart failure. We also seek to determine predictors of poor outcome in these group of patients.

Materials and methods: Fourteen pts with a history of primary amyloidosis with cardiac involvement (in echocardiography assessment), were treated in our departments from January 2011 to February 2012.Three of them were treated with autologous stem cell transplantation, 11 pts were treated with chemotherapy.

Results: Four of patients (28, 6%) died due to heart failure. Time from first symptoms of amyloidosis to diagnosis was from 1 month to 2 years. In 9 patients other organs were involved (kidneys n = 9, lung n = 1, gastrointestinal tract n = 1). All patients had elevated troponin and NTproBNP. Mean ejection fraction was 48% (+/-19). In the group who died mean NTproBNP level was significantly higher than in group who alived (NTproBNP 13075 vs. 6237 ng/L respectively; p < 0, 05). Troponin level was also significantly higher in the group who died (0, 51 vs. 0, 18 ng/ml; p < 0, 05).

Conclusions: Because of the rapid progression of the disease, early diagnosis and aggressive treatment is critical. High NTproBNP and troponin I levels may may indicate poor clinical outcome in patients with cardiac amyloidosis.

Nursing

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A validity and reliability study of the coping and adaptation processing scale in Turkey

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Objectives: Evaluation of the validity and reliability of "The Coping and Adaptation Processing Scale (CAPS)" in Turkey.

Methods: This is a methodological study. Written consent was obtained from the owner of the scale, the institutions and patients with also approval of the concerned ethics committee. The study sample was composed of 235 patients who underwent coronary artery bypass graft surgeries at cardiovascular surgery clinics of a two public hospitals and three university hospitals. The CAPS developed by Roy (2004) was translated into Turkish. The CAPS is a self-reported questionnaire used to assess individual's coping strategies based on the Roy Adaptation Model and Roy's Nursing Model of Cognitive Processing. The scale is consisted of 47 items and five subscales which are assessed by a Likert type 1 and 4 rating scale. The theoretical scores of the CAPS range from 47 to 188, with a total high score representing the best use of cognitive adaptation strategies. The internal consistency reliability coefficient was. 93 for the total scale and ranging between .78- .86 for subscales.

Results: The scale was translated into English by four specialists and re-translated into Turkish by four specialists for the language validity. In addition, the English expression determined after translation and back translations are presented to Callista Roy developed the CAPS. After Roy's recommendations, it has been seen linguistic validity of the scale. For the content validity, opinions of 15 experts (10 faculty members expert in the field of surgical nursing and 3 faculty members expert in the field of psychiatric nursing, 1 clinical psychologist, 1 sociologist) were obtained and following an analysis, the scores of the experts were found to be consistent with each other (KW = .034, p = .103) The internal consistency reliability coefficient was. 82 for the total scale. As a result of the item analysis, the item-total score correlation coefficients were found to be statistically significant ranging between .32–.64 (p = .000). All of items were retained. Five factors were found with the loading cutoff point of .30, and 40.23% of explained variance.

Conclusion: The Coping and Adaptation Processing Scale –Turkish version (PLNS-TR) was concluded to be valid and reliable utilized in Turkey for the investigation of the patients' coping and adaptation processes.

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Acute myocardial infarction with st elevation and withoutST elevation: impact on quality of life

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Purpose: The Acute Myocardial Infarction (AMI) requires urgent medical intervention to improve the survival and

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survivors' Quality of Life (QOL). Time is myocardium! For that, health systems should provide a place for accessible care in time. It is imperative that an emergency room is equipped with the best strategies with regard to its diagnosis and treatment. On the other hand, scientific societies have been proposing clinical guidelines and performance protocols based on best evidence. So, being a disease with such a great impact, not only on health but also on economy, we intend to relate the type of AMI with the QOL.

Methods: It is a quantitative transverse study. The sample consisting of 131 subjects with a medical diagnosis of acute myocardial infarction (AMI) at least six months and which last episode occurred between January 1 of 2008 and August 31 of 2011.We used a questionnaire (sociodemographic characteristics and Quality of Life - Mac New QLMI) self-administered to patients in an outpatient setting at Hospital Center in Portugal. They have ages between 41 and 86 years (media = 67.11 ± 11.78) and 74.0% are men. Through Green Lane for Acute Myocardial Infarction (GL-AMI) were admitted 44.3% of patients with AMI, 42.0% had AMI with ST-elevation and the rest had AMI with non-ST-elevation, 94.5% of the patients AMI with ST-elevation MI were admitted through GL-AMI. The majority of patients (97.7%) have risk factors (RF), of which 84.0% with hypertension, 73.3% with dyslipidemia, 54.8% with obesity, 27.5% with mellitus II diabetes, 18.3% smokers and 13.0% with stress. As for the numbers of associated RF, 10.9% have one RF, 29.7% have two and 59.4% have more than three RF.

The type of treatment made after the AMI, 45.8% was primary-Percutaneous Coronary Intervencion, 35.9% Percutaneous Coronary Intervencion, 9.9% Coronary artery bypass grafting, 4.6% symptomatic treatment and 3.8% thrombolytic terapy.

Results: We found that most patients who suffered AMI with ST-elevation referred better perception of QOL than those who had AMI with non-ST-elevation, both on total value ($t = 5061$, $p = 0.000$), as on dimensions of QOL: emotional ($t = 5.646$; $p = 0.000$), physical ($t = 4.570$; $p = 0.000$) and social ($t = 4.480$; $p = 0.000$).

Conclusion: According to the challenge set by WHO (1998) which states that is not enough "give years to life", it is crucial to give "life to years". Thus, evaluating QOL is a key component in both the construction of the clinical decision, as the effectiveness of established treatment.

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Type of treatment and quality of life in patients after acute myocardial infarction

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Purpose: The importance of Quality of Life (QOL) has been increasing, following the change in the concept of Health. It no longer is considered the individual as a binomial health / disease and now it is approached in a holistic aspect.

The relationship between health and QOL has existed since the birth of social medicine in the 18th and 19th centuries. The discussion on QOL, technological advances and the advent of Intensive Care Units has helped to extend the patients' lives, that before were unrecoverable.

There is no doubt that exist a recognition, and an awareness, of the importance of acute myocardial infarction (AMI) in individuals' QOL. We intend to relate the treatment of AMI with QOL, bearing in mind that is a multidimensional, subjective and dynamic concept.

Methods: It is a quantitative and cross study. The sample was consisted of 131 subjects with a medical diagnosis of AMI for at least six months and whose last episode was between 1st January 2008 and 31st August 2011.We used a questionnaire (sociodemographic characterization and QOL - NewMac QLMI) self-applied to patients in an outpatient setting who were attended at the outpatient hospital Viseu.

They have ages between 41 and 86 years (average = 67.11 ± 11.78). 74.0% are men, most (72.5%) are married, live in the village (54.2%), had primary education (58.8%), are retired (49.6%). Only 22.9% of respondents are employed. Regarding the financial situation, 51.9% reported having some difficulties and 13.7% is very problematic.

The type of treatment made after the AMI, 45.8% was primary-Percutaneous Coronary Intervencion (pPCI), 35.9% Percutaneous Coronary Intervencion, 9.9% Coronary artery bypass grafting (CABG), 4.6% symptomatic treatment and 3.8% thrombolytic terapy.

Results: It was found that most individuals have a high QOL (67.9%) in subgroups: emotional (66.4%), physical (64.1%), social (71.0%).

We found that patients who underwent primary angioplasty have a better perception of QOL. We proved by multiple comparison of averages (ANOVA and Tukey) that the statistical differences are located in:

- emotional dimension ($F = 9.378$, $p = 0.000$; $R2 = 0.023$) between pPCI and PCI ($p = 0.000$), and pPCI and CABG ($p = 0.003$)
- physical dimension ($F = 8.218$, $p = 0.000$; $R2 = 0.21$) between pPCI and PCI ($p = 0.000$), and pPCI and CABG ($p = 0.001$)
- social dimension ($F = 7.341$, $p = 0.000$; $R2 = 0.19$), between pPCI and PCI ($p = 0.000$), and pPCI and CABG ($p = 0.001$)

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Conclusion: The assessment of perceived of QOL allows a better knowledge and adaptation to the patient's condition. We found that the type of treatment is a determining factor in QOL of individuals victims of AMI.

Pulmonary hypertension

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The evaluation by angio-CT of right ventricular dysfunction in acute pulmonary thromboembolism: the value of an embolic load score

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Introduction: The pulmonary angio-CT is the method of choice for the diagnosis of pulmonary embolism (PE) due to its speed, sensitivity, direct visualization of clots and ability to provide alternative diagnoses. Some studies have demonstrated that the severity of PE can be estimated with systems of embolic load score.

Purpose: Evaluate the correlation between an embolic load angiographic score (Score Qanadli-QS) with signs of right ventricular dysfunction (RVD) in patients admitted for PE

Methods: Retrospective study of 107 patients (P) (Female-60%) admitted to PE (intermediate/high risk) at ICU (Jan. 2007 to Sept. 2011). The images of angio-CT were reviewed in 102 P (MDCT 16C) and quantified the embolic load (QS). Established a cut-off of 18 points by ROC curve. Constituted 2 groups (G) (A < 18 vs B ≥ 18 points) and compared the clinical, analytical, ECG, echocardiography (echo) and angioTC parameters. Statistical analysis using SPSS.

Results: The overall mean age was 61.4 years (identical among G), prevailing the females in both G. At the admission symptoms, there was a prevalence of complaints of fatigue, chest pain and syncope at GB (21.2 vs 45.6% p-0, 017) being the Geneva, Wells score and Shock Index (p-0.006) higher at GB. In the ECG, the % of RBBB was similar between G, being the HR, % of T-wave inversion (v1-v3) and S1Q3T3 (p-0, 034) higher at GB, leading to superior ECG Score (GA-3, 3 vs GB- 5.6 points, p-0, 009). Analytically, the GB had higher values of troponin and PDF, being the CrClMDRD (p-0, 020) and the ratio PO2/fiO2 inferior. In Echo, the PASP values were higher in GB.

In angio TC, GB had higher diameters of RV, superior vena cava (VC), azygos vein and coronary sinus, being the ratio RV/LV (p-0, 002) superior at this same group. The diameters of the pulmonary artery (PA) and the ratio PA/aorta were similar between G. The percentage of IV septum overload and reflux in the inferior VC (p-0, 001) were higher at GB, revealing the QS> 18 an independent predictor of RVD (RV/LV>1) (OR:10, 85 [CI 3, 20-36, 77]; p < 0, 001) (AUC ROC: 0, 79; p < 0, 001; Sens: 78, 4%; Specif:79%). The proportion of fibrinolytic therapy was superior in GB (51.5 vs. 71.4%, p-0, 045) being the hospital mortality rate (overall-4, 9%) identical between G.

Conclusions:

- A QS> 18 points proved to be an independent predictor of RVD in PE, correlated linearly with multivariable attached to higher morbidity/mortality rates.
- The cut-off used provides an objective and reproducible tool with clinical and imagiological high impact, allowing the stratification of P on a scale of risk, selecting "candidates" to more aggressive therapies.

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Echocardiographic prognostic factors in patients with pulmonary hypertension and acute heart failure

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Purpose: To identify the echocardiographic parameters that correlate with mortality in patients with pulmonary hypertension (PH) and acute right ventricular failure.

Methods: We included 90 patients known with chronic PH that necessitated ICU admission and inotropic support; the

Table 1. Clinical and echographic parameters

Parameter	Deceased N = 20	Non-deceased N = 70	p
Age, years	65.7 ± 11.53	65.61 ± 12.98	0.97
Gender, male, n (%)	10 (50%)	37 (52.85%)	0.82
NYHA class IV when last stable, n (%)	17 (85%)	33 (47.14%)	0.002
sPAP, mm Hg	77.42 ± 4.79	72.33 ± 20.09	0.29
LVEF, %	43.93 ± 22.47	44.16 ± 16.05	0.96
PAT/PET	0.32 ± 0.2	0.35 ± 0.16	0.82
TAPSE, mm	11.42 ± 6.8	15.6 ± 5.35	0.01
RVEDD, mm	46.87 ± 8.23	40.06 ± 8.54	0.005
IRAA, mm^2/m^2	20.83 ± 7.52	16.27 ± 5.56	0.005
Pericardial fluid, n (%)	6 (30%)	8 (11.42%)	0.04
S, cm/s	9 ± 2.4	11.1 ± 2.96	0.03
Right ventricle Tei index	0.98 ± 0.45	0.58 ± 0.38	0.027

sPAP: systolic pulmonary artery pressure; PAT/PET: pulmonary acceleration/ejection time; RVEDD: right ventricle end diastolic diameter; IRAA: indexed right atrium area; S: tricuspid S wave velocity

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patients suffered from idiopathic pulmonary arterial hypertension (3), pulmonary arterial hypertension associated with congenital heart disease (7), PH due to left heart diseases (47), PH due to lung diseases (10) and chronic thromboem bolic PH (23). We analyzed clinical and echocardiographic parameters. The end-point was in-hospital mortality.

Results: Median age was 65.92 ± 12.9 years, male/female ratio of 1.09/1.The mean ICU length of stay was 10.6 ± 5.18 days; mortality was 22.22%. Results are shown in table. We found significant correlation with mortality for NYHA class, TAPSE, right ventricle end diastolic diameter, indexed right atrium area, pericardial fluid, tricuspid S wave velocity and right ventricle Tei index.

Conclusions: Echocardigraphy can provide very useful tools for prognostic evaluation in patients with PH and acute heart failure. The main risk factor is the onset of the right ventricle dysfunction. A thorough assessment of the right ventricle function is therefore needed.

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The simple comparison of right ventricular dysfunction with strain and 3d echocardiography in patients with pulmonary hypertension

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Background: While right ventricular (RV) function and size are important clinical markers in several cardiac conditions, the assessment of RV function by two-dimensional (2D) echocardiography remains insufficient, due to the complexity of RV geometry. We therefore tried to assess RV function with 2D strain and 3D echocardiography in patients with pulmonary hypertension (PHT).

Methods: We enrolled 15 patients affected by PHT and 11 age-matched controls, who underwent transthoracic echocardiography and analysis with 2D strain and 3D echocardiography for assessment of RV function.

Results: Systolic longitudinal strain (S) and strain rate (SR) of lateral apex of RV is significantly different in two groups (S, controls, -22.10 ± 2.4%, PHT, -12.77 ± 3.2%; SR, controls: -1.71 ± 0.74%, PHT; -1.25 ± 0.81). SR of lateral apex is significantly correlated with those of the other segments. By 3D analysis, ejection fraction (EF) of RV is significantly different in two groups (controls, 50.03 ± 13.01 %, PHT, 37.90 ± 10.18%, p = 0.004). Systolic tricuspid annular peak velocity was significantly correlated with RVEF by 3D analysis (r = –0.465, p = 0.009). But systolic SR of lateral apex showed only tendency of positive correlation with RV ejection fraction (r = 0.472, p = 0.055).

Conclusion: 2D strain and strain rate of lateral apex of RV gave more precise information of RV function and 3D echocardiography can assess the global RV function in pulmonary hypertension.

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Is it possible to use an ECG score for risk stratification in patients with pulmonary embolism?

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Introduction: The risk assessment of patients (P) with pulmonary embolism (PE) is crucial for the selection of appropriate treatments, being the shock and hypotension recognized signals for a more aggressive treatment. The PE may manifest on the ECG as a broad spectrum of changes ranging from rhythm, heart rate and conduction disorders.

Purpose: To assess whether the qualitative features of the ECG on admission can be quantified in a ECG score for risk stratification of P with PE.

Methods: Retrospective study of 107 P (Female (F) - 60%) admitted to PE (intermediate/high risk) at ICU (Jan. 2007 to Sept. 2011). The images of angio-CT were reviewed in 102 P (MDCT 16C). An ECG score of 14 points was created (with varying relative weight): HR> 100 bpm (2), BIRD (1); RBBB (3), T wave inversion v1-v3 (4); S1Q3T3 (4). Established cut-off of 5 points by ROC curve. Constituted 2 groups (G) (A < 5 vs. B≥ 5 points) and compared the clinical, analytical echocardiographic (echo) and angio-TC parameters. Statistical analysis using SPSS.

Results: The overall mean age was 61.4 years (lower in GB), prevailing the females in both groups. In the symptoms of admission, there was a prevalence of syncope at GB (24.5 vs. 53.3%, p-0, 003) with higher Geneva and Wells scores being the Shock index superior (p-0, 002). Analytically, the GB showed higher values of troponin with lower ratio PO2/fiO2 and CrClMDRD. In echo, the PASP values proved to be similar between G (± 52 mmHg).

In angio-TC, GB had higher embolic load (Qanadli score; p-0, 002) being the diameter of the RV and ratio RV/LV (p-0, 002) superior. The diameters of the pulmonary artery (PA), superior vena cava (VC) and coronary sinus didn't reveal differences between G, being the ratio AP/aorta and azygos vein diameter greater at GB. The overload percentage at IV septum and reflux in the inferior VC (p-0, 026) were higher at GB, revealing the ECG score an independent predictor of right ventricular dysfunction (RVD: RV/LV>1) (ECG Score >5 OR: 2, 85 [CI 1, 046-8, 62]; p-0, 045) (AUC ROC: 0, 71; p 0, 004). The proportion of fibrinolytic therapy was superior in GB being the hospital mortality rate (overall-4, 9%) identical between G.

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Conclusion: The ECG score proved to be a simple and independent method on the stratification of the PE severity, verifying a dynamic surface interaction with the RVD signals measured by angio-CT.

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Right ventricular assessment can triage patients presenting with pulmonary emabolism for outpatient management.

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Background: Echocardiography (echo) has not been established for diagnostic assessment in pulmonary embolism (PE) but its routine use in selecting patients for more intensive v less intensive management remains unknown.

Aim: To assess Right Ventricular dysfunction (RVD) and Pulmonary embolism severity index (PESI) score for its usefulness in triaging patients with suspected PE.

Methods: Patients presenting to acute medical unit with suspcted PE underwent echo and relation of RVD with clinical outcome was evaluated. RVD was defined by elevated pulmonary systolic pressure (PAP), Right ventricle (RV) diameter > 3cm, Reduced TAPSE or RV myocardial performance index.

End points: Death, Readmission, Longer admission (more than 3 days of inpatients stay), symptoms at 3 months.

Results: Out of total of 220 patients 64 had RVD 43 (66%) of these had PE, whereas in group without RVD there were 146 patients of these 22% had PE (p 0.01). Patients with RVD had inpatient stay of > 3 days in 90% as compared to 15% in group without RVD (p 0.001) and more readmissions 40% v 10% (0.03) but symptoms at 3 months were similar.

Deaths: Deaths in both group were due to co-morbidities, 4 in RVD and 3 without RVD (NS). 4 patients with RVD subsequently had thrombolytic therapy and one had PEA arrest from which he survived. Echo also showed other pathologies, such as significant valvular disease, LV dysfunction or wall motion abnormality. RVD was marker of poor outcome in patients without PE, where RVD was due to severe respiratory or heart failure. Absence of RVD in PESI II and III was associated with good outcomes.

Conclusion: Routine echocardiography in patients with possible PE identified poor outcomes. Absence of RVD was associated with good outcomes and OP management was suitable for patients with PESI I, II and III scores. A large multicentre study is needed to further evaluate the role of echocardiography to risk stratify patients with suspected PE.

Table 1. RESULTS

	RVD	No RVD	
Numbers % in brackets	64 (29)	146 (71)	
Deaths	4	3	NS
LOS > 3	60 (90%)	22 (15%)	0.001
Readmissions	25 (40%)	15 (10%)	0.03
Symptoms at 3 months	16 (25%)	22 (15%)	NS

Sudden death / resuscitation

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Time to target temperature in therapeutic hypothermia after cardiac arrest and relation to outcome

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Purpose: Therapeutic hypothermia (TH) as a neuroprotective strategy in comatose survivors after out-of-hospital cardiac arrest (OHCA) is recommended to be initiated as soon as possible. However, randomized trials found a beneficial effect of TH, despite a median time of 8 hours for reaching target temperature (TT). The optimal time to TT for achieving the maximal beneficial effects of TH remains unclear.

The purpose of this study was to evaluate time from OHCA to target temperature as a predictor for outcome in comatose survivors of OHCA.

Methods: We retrospectively studied comatose survivors of OHCA admitted to the intensive care unit for therapeutic hypothermia in the period 2004-2010.TH was initiated with intravenous cold fluids on admission to hospital and continued with surface cooling for maintaining target temperature (32.5 – 33.5 ˚C) for 24 hours. The population was stratified by the median time from cardiac arrest to reaching target temperature, TT_early and TT_late.

Multiple logistic regression for cerebral outcome and proportional hazard analysis were applied in order to adjust for potential confounders.

Results: A total of 281 comatose patients (82% males, age 60 ± 13 years) were included. No differences in baseline demographics including sex, age, initial rhythm, witnessed arrest, bystander CPR and time to ROSC were found between TT_early and TT_late. Median time for reaching TT was 283 minutes (IQR 197-434). BMI was found to be correlated with time to TT, r = 0.24, p = 0.0001.

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Survival at 30-days was 68% and 63% in the groups TT_early and TT_late, respectively, p = 0.42. Adjusting for potential confounders including BMI, found that increasing time to TT was not associated with poor survival (adjusted HR = 1.02 per 30 min; (0.98-1.07), p = 0.34).

Conclusions: Target temperature is achieved within 6 hours in the majority of patients in an unselected consecutive cohort, and thus within the time frame found in landmark clinical trials. Time to target temperature does not seem to be an important predictor of outcome in comatose survivors of OHCA.

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Early repolarization with horizontal ST segment is associated with sudden cardiac arrest

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Recent studies showed association between Early repolarization (ER) and sudden cardiac arrest (SCA). These results called attention to risk stratification of ER. Recently the diagnostic value of ST segment in identifying malignant ER has been reported.

Method: We reviewed data of 25 survivals from sudden cardiac arrest without structural heart disease who admitted our center from August 2005 to August 2010. The control group consists of 60 healthy subjects matched for age, sex and underlying disease. Early repolarization was defined as an elevation of J point at least 0.1mV above the baseline in at least two continuous inferior or lateral leads, manifested as QRS slurring or notching. Ascending ST segment was defined as >0.1-mV elevation of the ST segment within 100 ms after the J point and horizontal ST segment was defined as ST elevation was ≤0.1 mV within 100 ms after the J point. We also examine the prevalence of other suggested malignant features of ER such as J-point elevation >2mm and inferior lead ER.

Result: The prevalence of ER was not statistically different comparing SCA group and control group (20 % Vs. 6.7 % p>0.05). The prevalence of ER with horizontal ST segment was more frequent in SCA group than control group (20 % Vs. 1.7 %, p = 0.008). J-point elevation more than 2 mm was more common in SCA group than the control group (12 % Vs. 0 %; p = 0.025). More aborted SCA subjects had ERP in the inferior lead, as compared with the control group (19.2 % Vs. 1.7 %, p = 0.003).

Conclusion: The ER with horizontal ST segment was associated with sudden cardiac arrest. This result suggests ST morphology has a value to recognize malignant ER.

Table 1. Comparison of sudden cardiac arrest group

	Sudden cardiac arrest (n = 25)	Control (n = 60)	p value
Early repolarization (inf+lat) No. (%)	5 (20)	4 (6.7)	P = 0.116
J point elevation >2mv No. (%)	3 (12)	0 (0)	p = 0.023
ER with horizontal ST segment	5 (20)	1 (1.7)	P = 0.008
ER with ascending ST segment	0	3 (5)	P = 0.346
Distribution of ER			
Inferior lead No. (%)	4 (16)	1 (1.7)	P = 0.025
Lateral lead No. (%)	1 (4)	3 (5)	P = 1.0

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Cardiopulmonary resuscitation by clinical profile at admission in patients hospitalized for acute heart failure syndromes- Data from the Romanian acute heart failure syndromes (RO-AHFS) registry

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Purpose: Clinical profile at admission facilitates early decision making regarding potentially life-saving therapies in patients hospitalized for Acute Heart Failure Syndromes (AHFS). The aim of the study is to evaluate the epidemiology and prognosis of cardiopulmonary resuscitation (CPR) in AHFS patients by clinical profile at admission.

Methods: The Romanian AHFS (RO-AHFS) registry enrolled 3224 consecutive patients admitted for AHFS at 13 centers over a 12-month period. Patients were classified into the five clinical profiles at admission: acute decompensated heart failure (ADHF), cardiogenic shock (CS), pulmonary edema (PE), right heart failure (RHF), and hypertensive heart failure (HT HF). CPR has been considered as event on course of hospitalization and all the data were prospectively collected. Successful resuscitation was defined as restoration of spontaneous circulation.

Results: CPR was attempted in 274 patients (8.5% of cohort) during hospitalization.

Of total number of CPR attempts, 29.1% have been performed for ADHF, 39.5% for CS, 28.5% for PE and 2.9% for RHF patients (Table 1). CPR was not attempted in the subset of patients with HT HF.

The primary arrest mode (PAM) was determined to be cardiac in 91% of cases and respiratory in 9% of cases.

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Ventricular fibrillation or ventricular tachycardia were recorded as the first pulseless rhythm before initiating CPR in 18.7% of patients. Restoration of spontaneous circulation occurred in 28.4% of CPR attempts but only 14% of patients survived to discharge.

Conclusions: The incidence and prognosis of CPR differ substantially by clinical profile at admission. Specific strategies for each clinical profile may help to prevent and to treat cardiac arrest. Admission clinical profile may play an important role in discussing code status.

Table 1. CPR characteristics and clinical profile

	ADHF (n = 1840)	CS (n = 164)	PE (n = 925)	RHF (n = 130)	HT HF (n = 161)
CPR (%)	4.34	65.85	8.4	6.8	0
CPR in ICU (%)	55	82	72	50	
CPR in the first day of admission (%)	61	75	70	59	
PAM-Cardiac (%)	94.3	93.1	78.2	84.6	
Pulseless rhythm VF/VT (%)	28.3	13.4	18.1	15.4	
Succesful resuscitation (%)	33	12.2	26.2	23.5	
Discharged alive after CPR (%)	16.2	6.5	10.4	11.1	

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Cardiopulmonary resuscitation in patients admitted with acute heart failure syndromes-Insights from the Romanian acute heart failure syndromes (RO AHFS) registry

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Purpose: Survival rate after in-hospital cardiopulmonary resuscitation (CPR) is influenced by clinical setting and by prompt application of advanced cardiac life support therapies. Limited data exist as regard to epidemiology and outcome of CPR in patients hospitalized with acute heart failure syndromes (AHFS).

Methods: The Romanian Acute Heart Failure Syndromes (RO-AHFS) Registry enrolled 3224 consecutive patients with primary diagnosis of AHFS hospitalized in 13 Romanian medical centers, during a 12-month period. CPR has been considered as event on course of hospitalization and all the data were prospectively collected. Immediate successful resuscitation was defined as restoration of spontaneous circulation after CPR.

Results: CPR was performed 318 times in 274 patients (8.5% of cohort). Mean time from admission to CPR was 4.3+3 days, although 57% of CPR attempts occurred within the first 24 hours of admission. The ICU was the clinical setting for 59% of CPR attempts.

The primary arrest mode was identified to be cardiac in 91% of cases and respiratory in 9% of cases. CPR was successfully performed in 28.4% of attempts but only 14% of patients requiring CPR survived to discharge. The first pulseless electrical rhythm before initiating CPR included VF/VT (18.7%), Asystole (28.1%), and PEA (53.2%). The rate of survival to discharge for VF/VT, Asystole, and PEA were, respectively, 29.6%, 7.7%, and 11.6%.

Conclusions: In patients hospitalized with AHFS, restoration of spontaneous circulation occurred in 28.4% of CPR attempts but only half of these patients survived to discharge.

Valvular heart disease

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Predictors of developing severe mitral regurgitation following percutaneous mitral commissurotomy (PMC) and redo PMC

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Background: Severe mitral regurgitation (SMR) remains a major PMC procedure-related complication. The incidence of SMR after PMC in the literature varies between 1.4% and 7.5%.

Objectives: This study was designed to evaluate the occurrence rate and the predictive factors for SMR (grade3 or 4) following PMC and redo PMC using Inoue balloon technique.

Methods: Our study is retrospective enrolling 190 patients, hospitalized in the cardiology department between January 1994 and January 2011 who benefited from a PMC.

Results: The incidence of SMR following PMC using Inoue technique was 5.26% (10 patients). Grade 4+ mitral regurgitation was developed in 3 patients (1.5%) and grade 3+ in 7 others (3.6%). No clinical, echocardiographic measurements, hemodynamic or procedural variables could predict the development of SMR. In our study 40 patients benefited from a redo PMV. Using Doppler color flow imaging before the procedure, 27 patients had (67.5%) grade +1 MR and 4 patient (10%) had grade +2 MR. After the procedure, 3 patients developed SMR. The only predictive factors of

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SMR after redo PMC identified by the univariate analysis in our study was a preprocedural small left atrium area ≤ 25 cm^2.

Conclusions: We concluded from our study that no baseline clinical characteristics, preprocedural hemodynamic data, echocardiographic measurements or procedural techniques were predictors of SMR following Inoue PMC.

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Infective Endocarditis in the cardiac critical care unit results in eleven years

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Infective endocaditis (IE) were mainly caused by the Streptococcus oralis (viridians). However, nowadays there is an increase in the cases produced by Staphylococcus aureus and coagulase-negative staphylococci. Patients with IE develop a critic clinical state andt he treatment remained a challenge for critical care units during perioperative period.

Objectives: We review the cases of IE during the last 11 years admitted to CCU. Material and

Method: Retrospective analysis from 2000-11 of patients admitted to CCU.

Variables: heart valve affected, responsible microorganism and complications developed.

Results: 98 patients with 111 valves affected of IE. Surgery of IE represented 2.91%. IE was present in native valves in 80 patients (72%), while prosthetic valves were affected in 31 cases (27.9%); $p < 0.0001$.The valve most affected IE was mitral 45.9%, followed by aortic 36.9%, tricuspid 1.8% and pulmonary 2.7%. 8.1% of the cases presented mitroaortic affectation. Global mortality was of 15.3%. However, mortality was 22.2 % for mitral-aortic EI, almost twice than of the involvement of a single valve ($p>0.05$). Table 1 show main microorganism isolated. 70.7% of the staphylococci were meticilin-resistant ($p < 0.001$). Mortality was higher in IE of fungi. Prosthetic replacement was more frequent than valve repair 64.8% vs. 35.1%, ($p < 0'0001$). Main causes of death were uncontrollable bleeding (2), respiratory failure (4), stroke (3), acute renal failure (2) and cardiac failure (4). Main perioperative morbidity was renal failure (20.4%), respiratory failure (11.8%); implant of pacemaker (8.6%) and stroke (6.5%). Mortality was increased due to absence of completion of preoperative antibiotherapy ($p = 0.003$), renal failure ($p = 0.026$) and stroke ($p = 0.046$).

Conclusions: We have observed a high incidence of IE due to meticilin-resistant staphylococci. Despite the antibiotic treatment and critical care, IE keeps with high morbid-mortality.

Table 1.

Ioslated Germen	Number and mortality (%)
Staphylococo auresus	32 (9.3)
Staphylococ coagulase-negative	26 (11.5)
Enterococus	11 (9.09)
Gram negative	10 (0)
Fungus	8 (25%)

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Functional cardiac improvement immediately after trans-catheter aortic valve implantation (TAVI) evaluated with a non-invasive finger cardiac output device

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Background: Very little is known about any short-term functional improvement after TAVI. Because of the impracticalities and risks in performing a maximal exercise test in elderly patients with severe aortic stenosis, this area has received sparse attention. However, as these patients are limited in their daily life by any effort, studies need to explore whether these patients do really benefit from the procedure.

Methods: Thirty elderly high-risk patients (Euroscore 24, mean age of 86) scheduled for TAVI were assigned a moderate exercise challenge. Usually this involved walking the hospital corridor for 3 minutes. This was deemed similar to their usual exercise activity at home. Exercise testing was performed the day before the aortic valve procedure and then on the 4th to 6th day after implantation. Using a non-invasive finger cuff hemodynamic monitor, heart rate (HR), stroke volume index (SVI), systolic and diastolic blood pressure (SAP, DAP), and oxygen saturation were monitored at rest, at peak effort and 5 min after recovery. The exercise-induced hemodynamic changes were compared at the two time periods (pre-and post-implantation).

Results: Data were obtained in 25 patients who were able to complete the exercise tests assigned to them. At rest, HR and SAP were significantly lower post-implantation whereas SVI was significantly higher compared with pre-implantation period. During exercise, there was a larger increase in SVI after valve implantation (+21% vs +13% pre-implantation, $P < 0.05$) whereas changes in HR (+16% and + 21%, n. s.) were similar at both time periods.

Conclusions: In high-risk patients with critical aortic stenosis undergoing TAVI, we were able to demonstrate significant improvement in cardiac output during exercise within the first week after TAVI. Noninvasive hemodynamic assessment with a finger cuff device provides an attractive alternative in "frail" patients unable to perform standardized testing of aerobic capacity.

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Acute aortic syndrome

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Acute type A aortic dissection in octogenarians

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Purpose: We analyzed a consecutive series of patients aged 80 years or older with acute type A aortic dissection and evaluated the differences in the hospital and long-term outcomes among elderly patients, with a comparison to younger patients.

Method: Between 2002 and 2012, 128 patients underwent emergency operation for acute type A aortic dissection. 106 were younger than 80 years (group Y), and 22 patients were 80 years of age or older (group O). We compared the two groups in terms of hospital outcomes and late mortality.

Results: Patients in the group O consisted of 3 males and 19 females with a mean age of 85.4 years (ranged from 80 to 95 years). Most operative variables did not differ between the two groups, with exception that all patients in the group O underwent replacement of the ascending aorta in (100%, p = 0.03). Postoperative complications were similar in the two groups. There is no difference in 30-day mortality between the two groups, which were 12.3% in the group Y and 9.1% in the group O (p = 0.47). Actuarial survival rates at 3 years were 84.4% in the group Y and 80.0% in the group O, without any statistically significant difference (p = 0.22).

Conclusion: No significant differences were observed in the 30-day mortality and actuarial survival between the two groups. We believe that surgery for acute type A aortic dissection in patients 80 years of age or older can be performed with acceptable risk of death.

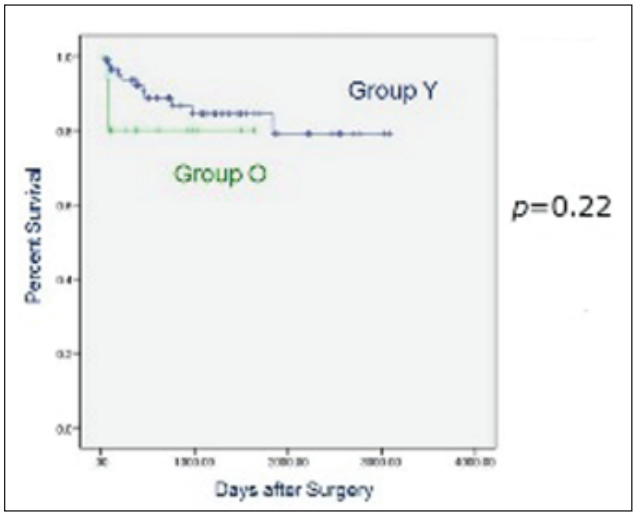


Figure. Actuarial survival curves

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Variability in clinical presentation of acute aortic dissection

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Acute aortic dissection is a catastrophic disease of the aorta with a high mortality rate. The clinical presentation is variable. High clinical suspicion is required for rapid diagnosis and intervention.

Purpose: We retrospectively assessed all cases of acute aortic dissection admitted to our hospital during the last three years regarding the principal clinical picture they developed.

Methods: 17 patients with an ultimate diagnosis of aortic dissection were transfered from our hospital to a cardiosurgery unit of a tertiary centre during the last three years. Mean age of the patients was 61 years old, with a male preponderance (58% males, 42% females). Review of their medical history revealed hypertension in 82% of patients and atherosclerotic vascular disease in 67%. Confirmation of diagnosis as well as the extent of dissection was made by computed tomography.

Results: The main clinical symptom was abrupt onset severe chest pain in nearly all patients (88%). Back pain only was reported in 17% of patients suffering from type B dissection. ECG signs of acute myocardial infarction were found in 22% of patients, with an exceptional case of acute anterior infarction in a 55 year old patient due to type A dissection. Syncope was the only clinical manifestation in 12% of patients. The majority of patients were hypertensive at presentation. Total mortality in the study group was about 60% after medical and surgical intervention.

Conclusion: Acute aortic dissection can mimic other acute medical conditions with devastating consequences because of a missed diagnosis. Therefore awareness of the disease is required which should be considered in the differential diagnosis of acutely ill patients.

Table 1.

Chest pain Anterior radiating to back Migrating	88% (15/17) 59% (10/17) 12% (2/17)
Back pain only	17% (3/17)
Cerebrovascular accident	5% (1/17)
Myocardial infarction Inferior Anterior	22% (4/17) 17% (3/17) 5% (1/17)
Syncope	12% (2/17)
Hypertension	53% (9/17)
Shock	12% (2/17)
Difference in BP between arms	30% (5/17)
Total mortality	58% (10/17)

Clinical presentation of patients with acute aortic dissection

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Databases, registries and surveys

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Cost-effectiveness of vascular closure devices for the prevention of vascular complications after urgent percutaneous coronary interventions in acute coronary syndromes

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Purpose: Complications of vascular access are among the most common adverse events after transfemoral percutaneous coronary intervention (PCI) particularly in acute coronary syndromes because of the concomitant use of antithrombotic drugs. Vascular closure devices (VCD) have the potential to reduce the time to hemostasis, facilitate patient mobilization and improve patient satisfaction. However, whether VCD as compared with conventional compression might prevent vascular complications and might be cost-effective in patients with acute coronary syndromes remains controversial.

Methods: A total of 2896 consecutive ACS patients undergoing transfemoral PCI were studied through a single centre prospective registry from January 2005 to December 2010.VCDs were available from July 2008 and were implanted in 474 of the 1760 patients (27%), based upon clinical and angiographic characteristics of the patients and at the discretion of the operator. The influence of VCD on vascular complications and post- PCI length of hospital stay was determined using logistic and hurdle regression models with correction for 15 different baseline risk factors. Vascular direct medical costs (VCD, diagnosis and treatment of vascular complications, post PCI hospital stay) were compared between patients with and without VCD. Mean cost differences and confidence intervals were estimated by bootstrapping (10, 000 iterations).

Results: The overall vascular complication rate was 3.0 % (n = 86), and was composed of false aneurysm (75%), hematoma requiring transfusion/surgery (11%), arteriovenous fistula (8%) and arterial occlusion (1%). The use of VCD was independently associated with a 56% reduction in vascular complications (3.3% vs 1.7%) and with a 51% reduction in post- PCI length of hospital stay (mean 3.8 vs 2.0 days). Female gender was the most important independent predictor of vascular complications.

Mainly due to the reduced mean length of stay, patients with VCD cost on average €879 less than patients without VCD (95% confidence interval: -€4192, €13708), and the use of VCD has a median cost per avoided vascular complication of about €9375.

Conclusions: In this large all-comers ACS population, the use of VCD post transfemoral PCI was associated with over 50% reductions in the rate of vascular complications and in post PCI hospital duration. VCD use was cost-saving for the average patient who was selected to receive VCD in this population.

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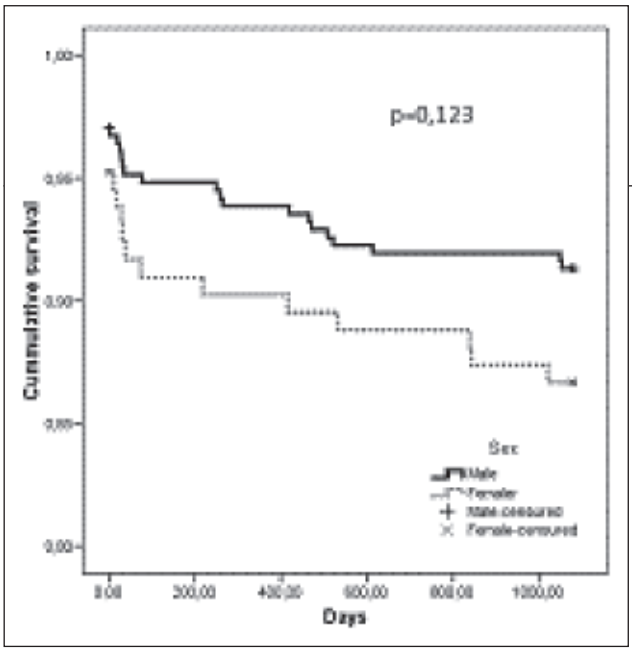
Gender disparity persists in the treatment and prognosis of patients with acute coronary syndrome? analysis of a contemporary unicentric registry

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Objectives: We seek to determine whether sex differences persist in management and prognosis of ACS patients in daily practice.

Methods: prospective unicentric registry analysis from November 2006 to February 2009.Clinical and risk factors, treatments used, hospital and long term mortality were studied. Results: 491 patients (70.3% male, 29.7% women) were included. Women had higher age (68 ± 11 vs 60 ± 12 years, $p < 0.001$), prevalence of diabetes (49.3 vs 34.0%, $p < 0.01$), hypertension (71.5 vs 51.5 %, $p < 0.001$), previous HF (5.5 vs 1.7%, $p < 0.05$), previous ASA treatment (44.8 vs 33.5%, $p < 0.01$) and lower



Cummulative survival by sex at 36 month

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smoking (28.8 vs 74.1%, p < 0.001). ACS type at admission was similar (STEMI 46.7% men, 43.2% women; NSTEMI 53.3% men, 56.8% women). Women had higher proportion of Killip>2 (17.8 vs 11%, p < 0.05). The degree of troponin elevation, ventricular function, use of antithrombotic therapy, coronary angiography, coronary disease severity, and PCI performed was similar in both sexes. There were no gender differences in the percentage or type of stents implanted. However, primary PCI in STEMI was performed with significantly lower frequency in women (28.8% vs 39.1%, p = 0.018). Women had a higher degree of complications (HF 17.7 vs 10.4%, p < 0.05; re-infarction 1.2 vs 4.3%, p < 0.05). However, hospital stay and mortality was similar in both sexes. Women had significantly higher 30 days follow-up mortality (3.0 vs 0.3%, p = 0.03) not observed at 36 months follow-up. Adjusted three-year mortality curves are shown in figure.

Conclusions: In our ACS patients, women have a worse risk profile and primary PCI in STEMI was less frequently done than in men. Women have a higher percentage of hospital complications, however, its long term outcome is similar to that of men.

Myocardial and pericardial diseases

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Clinical features and prognosis in Chinese patients with acute fulminant myocarditis

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Backgrounds: There is still lack of large scale studies focused on acute fulminant myocarditis (AFM), and knowledge of this disease is unimpressive. Methods: The retrospective observational study analyzed the data of 40 consecutive patients with a diagnosis of AFM admitted to our hospital between January 2003 and March 2010. Results: The mean age of patients was 28.5 ± 18.4 years and 70% patients were female. 90.0% of patients had a short viral prodrome (5.5 ± 2.7 days), 77.5% had cardiogenic shock and 35.0% had multiple organs dysfunction, especially hepatic dysfunction. 95% of patients had cardiac troponin T (cTNT) < 10 ng/ml, and 87.5 % had creatine Kinase MB (CK-MB) < five times the upper limit of normal. The most common manifestations in ECG were low voltage in the limb leads (87.5%) and sinus tachycardia (75%). Myocardial infarctions-like ECG changes were not uncommon. Left ventricular ejection fraction (LVEF) was significantly reduced (25.3 ± 7.5%), but the left cardiac size was normal. More than 90% patients were treated with glucocorticoids. 5.0% of patients needed intra-aortic balloon pump (IABP), and 35.0% were treated with bilevel positive airway pressure (BiPAP). In all, 39 (95.0%) patients were discharged alive and one man died from ventricular fibrillation. LVEF and left cardiac chambers at follow-up did not change as compared with discharge. No death, no new onset heart failure or arrhythmias occurred during the follow-up.

Conclusions: We described the clinical features of AFM in the study. The short-term and midterm prognosis of AFM is good. AFM patients may be benefited from glucocorticoids treatments.

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Takotsubo cardiomyopathy: stressing condition and outcome in a single center experience.

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Takotsubo cardiomyopathy is a cardiac syndrome characterized by reversible left ventricular dysfunction, ischemic changes on electrocardiogram, elevation of cardiac biomarkers, absence of obstructive coronary artery disease in the setting of various stressing conditions. To date, little is known on best clinical management of this syndrome in Intensive Cardiac Care Units (ICCU).

Aim: to evaluate clinical characteristics, treatment, hospital and long-term outcome and stressing condition in a real life Takotsubo population.

Methods: All patients with Takotsubo cardiomyopathy admitted to Maria Vittoria Hospital ICCU between October 2006 and February 2012 were considered. Patients where considered to have Takotsubo syndrome if they presented chest pain on admission, new elettrocardiographic changes suggestive of myocardial ischemia, evidence of apical ballooning with hyperkinesis of basal segments on echocardiography, rise in troponin I and normal coronary angiography. Clinical characteristics, treatment, outcome (death and recurrence of ischemic events) and the stressing conditions leading to clinical syndrome were evaluated.

Results: A total of 26 patients were included, 22 (85%) females, age 71+-13 years. After more than 1 year median follow-up the incidence of death was 7, 7% (2 deaths), with all deaths due to cardiogenic shock occurring in the first 10 days of hospitalization; no recurrence of ischemic events was observed. Leading cause of Takostubo was major depressive episode (16%), followed by mourning (12%), falling down with difficulties in standing up (12%), vomiting (8%) and pulmonary infection (8%). Major complications in the ICCU

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were acute hearth failure (62%), cardiogenic shock (27%), sepsis (31%), pulmonary oedema (27%) and anemia (12%). Two patients needed non-invasive ventilation support and one intra-aortic balloon counterpulsation. Cornerstone drug therapy was as follows: 96% of patients took aspirin, 58% beta blockers, 54% nitrates, 46% heparin, 27% dopamine.

Conclusions: Takotsubo cardiomyopathy is an important safety issue occurring predominantly in post-menopausal women undergoing specific stressing condition. Heart failure and cardiogenic shock are frequent and are the leading cause of death in the short period; good prognosis is seen thereafter.

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Value of orthostatic hypotension as a prognostic bed-side test in heart failure

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Aim Orthostatic hypotension (OH) has been linked to increased mortality and incidence of cardiovasculardisease in various risk groups. Our aim is to identify the determinants andconsequences of OH in the heart failure population as this was poorly studied

Methods: Sixty-Four patients with known history of heart failurewere collected. Grouping is based upon wither they have (OH) or not. Group-Afound to have normal Bp response to standing; they were 24 patients (18 maleand 6 female) of mean Age (45 ± 8 years). Group-B discovered to have significant (OH) and was 22 patients (16 males and 6 females) of mean Age (43 ± 4 years). The first Clinical and Echocardiographic examination was done and considered as abase-line characteristic. Then, a Call-back after 6 months for follow-up andsecond visit examination is recorded.

Results: In thefirst visit, comparison of data revealed no significant variations. In thesecond visit (6-month later), divergence of data is observed and wasstatistically significant. Group-B was found to have a lower EF% and FS% ($p = 0.01$), a lower Dp/Dt ($p = 0.01$) and a higher Tie-Index and MR-jet area ($p = 0.01$). Indeed, the questionnaire proved frequent times of hospital admissions, paroxysmal nocturnal dysnea, need for treatment modification, arrhythmias andlower limb edema in group-B.

Conclusion: Thepresent study conclude that, heart failure-patients having orthostatichypotension experienced a significant deterioration of clinical condition andcardiac functions along a period of six-months which represent failure in theirautonomic compensatory mechanisms and possible impact on their mortality.

Table 1. Echocardiographic Data between two group

Parameter	Group-A		Group-B		P-value
	Mean	SD	Mean	SD	
EF %	40.2	2.5	38.5	1.9	0.01
FS %	20.4	1.4	19.4	1.1	0.01
Dp/Dt	742.3	22.6	654.3	40.7	0.001
Tei-Index	0.54	0.12	0.62	0.14	0.001
MR-jet area	3.32	0.16	3.4	0.21	0.01

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Moderated Poster Session 2
Sunday, 21 October 2012 - 14:00 - 18:00

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High-dose statin therapy and the clinical effect of resistance to antiplatelet therapy in acute coronary syndrome

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Purpose: The aim of this study was to determine whether there is an association between antiplatelet therapy resistance and systemic inflammation in patients with acute coronary syndrome (ACS).

Methods: We included 122 patients with ACS hospitalized at Moscow City Hospital. We measured platelet function using simultaneous light transmittance aggregometry (spontaneous aggregation and ADP-induced), Thromboelastography Platelet Mapping (TEG-PM), and VerifyNow Aspirin and P2Y12 assays. The following markers of systemic inflammation were estimated: white blood cell count and plasma levels of hs-CRP, sCD40L, sP-selectin, fibrinogen. All patients received aspirin at 250–325 mg and a loading dose of clopidogrel (300–600 mg) on arrival, followed by 125 mg of aspirin and 75 mg of clopidogrel per day. For the following analysis, the patients were separated into two groups. Both groups received atorvastatin: one group at 20 mg per day (N = 18) and the second at 80 mg per day (N = 24) for at least 7 days.

Results: We found that high white blood cell counts were associated with increased levels of 5 or 10 μM ADP–induced platelet aggregation and elevated percentages of P2Y12-inhibition (VerifyNow) (p = 0.002, 0.004, and 0.017, respectively). High plasma levels of sP-selectin were associated with high levels of ADPtest (Multiplate) and high percentages of P2Y12-inhibition (VerifyNow) (p = 0.046 and 0.047, respectively). Patients with elevated levels of plasma von Willebrand factor had increased 5 μM ADP–induced platelet aggregation.

Kaplan-Meier survival analysis with a logrank significance test showed an association between a high risk of reinfarction during follow-up (1–22 months after ACS) and high levels both of 10 μM ADP–induced platelet aggregation and of HPR ADP (p = 0.014 and 0.006, respectively). We found that this association remains significant among patients with high levels of hs-CRP (p = 0.021), while in the group of patients with low levels of hs-CRP this relationship was not significant. Among patients receiving atorvastatin at 20 mg, the association between a high risk of reinfarction and high levels of platelet aggregation also remained significant (p = 0.003). In contrast, among patients receiving atorvastatin at 80 mg, this association disappeared.

Conclusions: In our study, we found that high on-treatment platelet reactivity is associated with several laboratory signs of systemic inflammation and predicts a poor prognosis in patients with ACS. High-dose statin therapy can overcome the association between high on-treatment platelet reactivity and poor prognosis in patients with ACS.

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Prevalence of microvascular obstruction after primary percutaneous coronary intervention is higher in male patients with hypogonadism

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Background: Testosterone deficiency afflicts approximately 30% of Men aged from 40-79 years. Recent studies claimed that androgen deficiency contributes to the onset and progression of cardiovascular disease. Microvascular obstruction (MO) is a common event associated with a worse prognosis and unfavorable left ventricular remodeling after primary percutaneous coronary intervention (P-PCI). However mechanisms involved in MO have not been fully elucidated yet. We evaluated the importance of gonadal function in the onset of MO.

Methods: 70 consecutives male patients (57 ± 7.8 years) presenting with ST-elevation myocardial infarction (STEMI), undergoing P-PCI within 12 h of symptoms onset and 30 control male patients (60 ± 8.5 years) with stable angina were enrolled. Angiographic MO was defined as a final TIMI flow 2 or final TIMI flow 3 with MBG ≤ 2.On admission, variables predicting angiographic MO were assessed among clinical, angiographic and laboratory data including Testosterone (T), Estradiol (E2), LH, FSH. Prevalence of male hypogonadism (T < 2.5 ng/ml) was calculated in STEMI and control patients.

Results: In STEMI patients T levels were significantly lower (2.15 ± 1.19 ng/ml) as compared with controls (3.06 ± 0.32 ng/ml p = 0.01). Consistently LH and FSH were significantly higher in patients with STEMI. Hypogonadism was present in 43 STEMI patients (61%) and in 10 control patients (33%) (p = 0.001). MO was documented in 13 subjects (18.6%) after P-PCI. Among patients affected by MO, 9 were hypogonadic (69.2%). This prevalence was significantly higher when compared to patients with normal myocardial reperfusion after P-PCI (59.6% p = 0.005).

Conclusions: Androgen deficiency is associate with an higher prevalence of MO in patients with STEMI undergoing P-PCI. Further studies are required to unveil the complete role of T in the pathogenesis of MO. T might be considered a novel diagnostic target to stratify patients with higher risk to develop MO after STEMI.

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Comparison between clinical significance of inflammatory cytokines and hyperglycaemia in patients with acute coronary syndrome

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Background: The clinical significance of inflammatory cytokines and hyperglycaemia as independent prognostic markers in patients with acute coronary syndrome (ACS) remains uncertain.

Aim: To determine the value of inflammatory biomarkers and hyperglycaemia indices as independent prognostic indicators for in-hospital, six-month and one-year survival in ACS patients.

Methods: The study included 255 consecutive patients with ACS, admitted to the Clinic of Cardiology, University Hospital "Aleksandrovska", Sofia, between March 2009 and December 2010.TNF-alpha, hsCRP and MMP-9 were defined 48 hours after admission and at the sixth month of follow-up. Indicators for acute (admission and fasting glycaemia), persistent (hyperglycaemic index - HGI, time average glucose - TAG, mean glucose, maximum glucose) and chronic hyperglycaemia (HbA1c, estimated average glucose – eAG) were calculated. Glucometabolic status was defined by an oral glucose tolerance test at admission, at the sixth month and at the first year of follow-up. A correlation analysis between inflammatory cytokines, hyperglycaemia indices and in-hospital, 6-month and one-year survival was performed.

Results: Acute hyperglycaemia (fasting glycaemia) showed correlation with in-hospital mortality (p = 0, 039). HGI and TAG were associated with six-month survival (HGI/TAG - p = 0, 024/0, 014). There was a trend for acute (fasting glycaemia - p = 0, 06) and persistent hyperglycaemia (mean and maximum - p = 0, 05) to be predictors for six-month survival. None of the hyperglycaemic indices correlated with one-year survival. From baseline inflammatory cytokines only hsCRP was related to in-hospital (p = 0, 016) and 6-month survival (p = 0, 027). The other inflammatory cytokines (TNF-α, MMP-9) at admission were not related to in-hospital, six-month and one-year prognosis. After a six-month follow- up inflammatory cytokines decreased and didn't show any correlation with clinical outcome.

Conclusion: Inflammatory cytokines (baseline hsCRP), acute hyperglycaemia (fasting glycaemia) and persistent hyperglycaemia (TAG and HGI) are prognostic markers regardless of the glucose metabolic status. hsCRP is a better predictor for in-hospital poor outcome than fasting glycaemia (p = 0, 016/0, 039). In contrast, HGI и TAG (p = 0, 024/0, 014) are stronger independent prognostic markers for six-month survival than hsCRP (p = 0, 027). TAG has the best predictive value for 6-month poor outcome.

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The initial experience of a high volume UK primary PCI centre beginning with an overnight 'big bang' approach

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Purpose: Our hospital is a high volume primary percutaneous coronary intervention (PPCI) centre covering an area of 1400 square miles and a population of 1.7 million. It is the only UK centre that moved over night from doing no PPCI procedures to providing a 24 hours a day, 7 days a week PPCI service for all patients in a 'big bang' approach. This process was coordinated by the local cardiac and stroke network. We present our first 24 months data.

Methods: We extracted data from our prospective cardiac database on all PPCI patients from the beginning of september 2009, when the service began, to the end of august 2011 (24 months). Summary care records were used to provide our mortality data.

Results: There were 1871 PPCI activations, out of which 1322 (70.7%) went on to have a PPCI procedure for ST elevation myocardial infarction (STEMI). Of these patients, 1025 (77.5%) were transferred directly to the cardiac centre, 288 (21.8%) came via another hospital and 9 (0.7%) were already inpatients. 881 (66.6%) of these procedures were done on weekends and out of hours. 958 (72.5%) were male, the mean age was 65.3 years (range 14-98), 340 (25.7%) were age 75 years or over, 151 (11.4%) were diabetic and 99 (7.5%) patients presented in cardiogenic shock. 360 (27.2%) procedures were done radially, there were 21 (1.6%) graft cases, 19 (1.4%) unprotected left main stem and 130 (9.8%) multi-vessel PCIs. 513 (38.8%) patients were administered with a glycoprotein IIbIIIa inhibitor and 462 (34.9%) received bivalirudin.

The median door-to-balloon (DTB) time was 31.5 minutes (interquartile range, IQR, 18 minutes). The median call-to-balloon (CTB) time was 111 minutes (IQR 44 minutes) and 82% were within 150 minutes (national target 75% within 150 minutes). In-hospital and 30-day all-cause mortality was 4.2% and 6.4% respectively and excluding cardiogenic shock, this was 1.9% and 3.9% respectively.

Conclusions: We have shown that by using the UK cardiac network system to coordinate all stakeholders, it is possible overnight to change the coronary revascularisation strategy of choice from thrombolysis to PPCI, even in a large population. Adopting this approach to initiate our 24/7 PPCI service, we have achieved CTB and DTB times, as well as mortality outcomes, comparable to established UK and european centres.

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Reduction of residual platelet reactivity in healthy volunteers and patients with NSTEMI with a novel RNA-aptamer parenteral anticoagulant targeting factor IXa.

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Background and Rationale: Residual platelet reactivity is a predictor of cardiovascular adverse events in patients with acute coronary syndromes (ACS) undergoing percutaneous coronary interventions (PCI). In addition to patient factors and antiplatelet therapy, the choice of anticoagulant determines the risk for periprocedural ischemic and bleeding events. The ideal anticoagulant would demonstrate a fast onset, effective anticoagulation, and controlable reversibility. REG1 consisting of pegnivacogin, a RNA-aptamer direct factor IXa inhibitor, and anivamersen, its specific, and titratable active control agent meets these requirements. We examined whether inhibition of factor IXa with pegnivacogin affects platelet reactivity in vitro and in vivo in healthy volunteers and in a subset of patients with ACS undergoing PCI from the phase IIb RADAR trial (NCT00932100).

Methods and Results: For the in vitro study, blood from healthy volunteers was spiked with pegnivacogin (50Eg/ml) and ADP-induced platelet activation was measured by flow cytometry (expression of CD62P and PAC-1 binding). Platelet aggregation was assessed by light transmission aggregometry (LTA). For the in vivo measurements, LTA was done with blood from patients with ACS enrolled in the RADAR trial. Blood samples were taken before and 20 minutes after the administration of pegnivacogin. All patients were loaded with clopidogrel (600mg) and aspirin (>325mg). In vitro pegnivacogin significantly reduced maximum ADP-induced CD62P-expression (100% vs 89.8+/- 12.1%, p = 0.0035) and PAC-1 binding (100% vs 83+/-18.5%, p = 0.0006). Furthermore maximum platelet aggregation was reduced by 26.3+/-16.4% (p = 0.0031). In patients with ACS residual platelet aggregation (1EM ADP) was reduced from 33.3+/-4% to 14.7+/-8.1% (n = 4, p = 0.005) 20 minutes after intravenous pegnivacogin (1mg/kg).

Conclusion: The novel IXa inhibitor pegnivacogin decreases ADP-induced platelet activation and aggregation in vitro and in vivo. In addition to its effect as an anticoagulant, REG1 may provide a means to overcome residual platelet reactivity in patients with ACS undergoing PCI, this may contribute to clinical outcomes and should be studied in appropriately sized phase 3 clinical trials.

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Management of ST-elevation myocardial infarction in octogenarian patients. Data from ORBI, a prospective registry of 5000 patients.

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Purpose: To determine the actual management of STEMI in octogenarian patients.

Table 1.

Initial management		Group 1 >80 years old n = 550	Group 2 ≤80 years old n = 4450	
	Fibrinolysis	38 (7%)	723 (16%)	<0.0001
	GP IIb/IIIa receptor inhibitors	223 (40%)	2674 (60%)	<0.0001
	Coronary angiography	493 (89%)	4402 (99%)	<0.0001
	Radial access*	140 (28%)	1511 (34%)	<0.0001
	Primary angioplasty*	386 (78%)	3197 (72%)	0.4
	Thrombo aspiration*	163 (33%)	1874 (42%)	<0.0001
Intra hospital outcome	High degree AV block	40 (7%)	140 (3%)	<0.0001
	Atrial fibrillation	59 (10%)	161 (3.6%)	<0.0001
	Left ventricular ejection fraction (%)	47.2 ± 12	50.6 ± 10	<0.0001
	Total length of stay (days)	8.2 ± 5	6.8 ± 4	<0.0001
Prescription at discharge	Aspirine	439 (95, 6%)	4167 (97, 7%)	0, 007
	Clopidogrel/ Prasugrel	413 (90, 0%)	4086 (95, 8%)	<0, 0001
	β blockers	394 (85, 8%)	3895 (91, 3%)	<0, 0001
	ACE inhibitor	290 (63, 2%)	2853 (66, 9%)	0, 1
	Statine	373 (81, 3%)	4057 (95, 1%)	<0, 0001
	Cardiovascular rehabilitation	22 (5, 3%)	1822 (46, 6%)	<0, 0001

*Percentages are calculated only in patients undergoing coronary angiography

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Methods: We analyzed data collected in "ORBI", a 6 years prospective registry of STEMI patients admitted within 24 h of symptoms onset to an interventional cardiology centre of Brittany (France). Main data about management and intra hospital outcome were compared between patients older (Group 1) and younger (Group 2) than 80.

Results: 550 of the 5000 patients (11%, mean age 84.6 ± 3) constituted group 1, with a larger female prevalence (51 vs 20% in group 2, $p < 0.0001$). Group 1 had a much longer median delay between onset of symptom and call for medical assistance (65 vs 45 min.), and between admission and reperfusion (53 vs 45 min.). Table 1 presents data about the management in the 2 groups. Last, intra hospital mortality is much higher in group 1 (16.5 vs 4.1%, $p < 0.0001$).

Conclusions: Octogenarian patients and more represent a large part of patient treated for STEMI, with significant differences in their presentation and management, and a high mortality.

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Primary coronary angioplasty in patients withSTt-elevation myocardial infarction in the Bucharest (Romania) area. over the stent for life initiative target one year after the network opening

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Background:

1. One of the recomendation of the "Stent for life" (SFL) initiative is to perform 600 primary percutaneous coronary intervention (PPCI) /million inhabitants/year in patients (pts) with ST-elevation myocardial infarction (STEMI).
2. A PPCI network was organised in 2010 in the Bucharest (Romania) area according to a national programme for interventional therapy in STEMI pts.

Objective: to present the impact of our national programme on the interventional treatment in STEMI patients in the Bucharest and surroundings area.

Methods: Our programme was opened in August 1st, 2010 in order to treat the STEMI patients by PPCI within the first two hours after the first medical contact. This programme is a cooperative effort between the Health Ministry and the Romanian Society of Cardiology. Ten experienced PPCI centres were organised in a 24/7 system in 5 regional networks; for centres located far away, a strategy of local thrombolysis followed by transfer to the closest PPCI centre was recommended. These centers are conected with an integrated pre-hospital emergency medical system including 900 ambulances, 4 helicopters and telemedicine facilites. Before transfer, all STEMI pts receive clopidogrel, aspirin and an i. v. bolus of unfractionated heparin. The Bucharest area network is the largest network in Romania, covering Bucharest, the capital, with about 2 million inhabitants, and its surroundings (1 million inhabitants more). This area is covered by four experienced PPCI centres according to a rotation schedule. Data provided by all PPCI centres are included in the central database of the Romanian national registry for ST-elevation myocardial infarction (RO-STEMI), opened in 1997.

Results: According to the RO-STEMI data, between January 1st, 2009 and and March 31st, 2012, a total of 2774 STEMI pts were treated in the four PPCI centers of the Bucharest area. From 24 PPCI/million inhabitants in 2009, we reached 129/million in 2010 and 640/ million in 2011. The global in-hospital mortality decreased from 13.5% in 2009 to 9.8% in 2011.In 2011 the in-hospital mortalities were 3, 92%, 12, 50% and 22, 4% for PPCI, thrombolysis and no-reperfusion, respectively.

Conclusion:

1. One year after organising the national STEMI programme a number of 640 PPCI procedures/million inhabitants/year was recorded in the Bucharest area, over the target of 600/million procedures aimed by the SFL initiative.
2. The STEMI programme had a major impact on mortality on the Bucharest area with a decrease from 13.5% in 2009 to 9.8% in 2011.

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Poster Session 2
Sunday, 21 October 2012 - 14:00 - 18:00

Acute coronary syndromes: STEMI

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Roles of matrix metalloproteinases in the assessment of the in-hospital prognosis in patients with ST-segment elevation myocardial infarction

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Nowadays, the role of matrix metalloproteinases (MMPs) as independent predictors of future cardiovascular events in patients with myocardial infarction (MI) is actively debated. However, the previous studies results are contradictory and presuppose further investigation of their prognostic significance in patients with MI.

Aims: To study the matrix metalloproteinases role in recurrent cardiovascular events in-hospital prognosis in ST-segment elevation myocardial infarction patients (STEMI).

Material and methods: 175 patients with diagnosed STEMI were consecutively enrolled in this prospective study. The average patients age in the total group was 61.3 (33, 89) years including 116 male patients (66.3%) and 59 - female (33.7%). Blood serum levels of MMP-1, 3, 9 (ng / ml) were detected by ELISA in all patients at the admission time (day 1) and dynamically at day 12 from the disease onset. All STEMI patients were divided into two groups according the in-hospital outcome: positive and adverse outcomes. The adverse included: death, recurrent myocardial infarction, acute cerebral blood flow or transient ischemic attack, life-threatening arrhythmias, early post-infarction angina. The reference values of MMP-1 were 0, 912-9, 34, MMP-3: 4, 8-82, 4; and MMP -9: 98-705 ng / ml.

Results: The patients group with positive outcomes was 74, 8% (n = 131), with adverse outcomes - 25, 2% (n = 44). A significant increase of blood serum levels of MMP- 1, 3, 9 dynamically at day 12 of STEMI progression was detected by the analysis of complex laboratory data of the general sample. Thus, the blood serum level of MMP - 1 on day 1 was 1.5 (0.3, 19.5) ng / ml, on day 12: 2.4 (0.2, 24.0) ng / ml, p = 0, 0001; MMP - 3 on day 1 - 15.0 (1.2, 86.9) ng / ml on day 12: 17.5 (3.8, 208.3) ng / ml, p = 0.0001; MMP - 9 on day 1: 109.0 (14.2, 1496.0) ng / ml on day 12:121.6 (1.8, 1868.0) ng / ml, p = 0.045.Higher concentrations of MMP-3, 9, were detected in the group of in-hospital adverse outcomes on day 1 as well as on 12 day of IM progression, however, significant differences between groups were obtained only for MMP - 9 (1 day: 119.0 (23.3, 1625, 0) vs 142, 1 (21, 4; 1868, 0), P = 0.04, 12 day: 105, 5 (26, 0 1496, 0) vs 157, 0 (14, 2; 1002, 0), p = 0.03).

Conclusion: High blood serum levels of MMP-9 in myocardial infarction patients with early adverse outcomes may not only be associated with more active occurrence of the atherosclerotic plaques destabilization processes, but also appears to be an independent predictor in the hospital prognosis assessment in STEMI patients.

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Decreased level of melatonin in serum predicts left ventricular remodelling after acute myocardial infarction

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Purpose: Melatonin has a diverse functional repertoire, with actions in essentially all organs including the heart and other portions of the cardiovascular system. As experimental studies suggest that melatonin is cardioprotective after myocardial infarction (MI), this study sought to investigate the relationships between circulating levels of melatonin and left ventricular (LV) remodelling in patients after acute MI.

Methods: This prospective study included 161 patients (age 61 ± 3 years; 78% male) undergoing primary percutaneous coronary intervention who were assessed echocardiographically at hospital discharge (day 3 to day 7) and at 12 months. LV remodelling was defined as>20% increase in LV end-diastole volume at 12 months of follow up compared to baseline. Serum melatonin concentrations were measured at admission, during the period light.

Results: Twenty four patients showed LV remodelling and 137 had no evidence of LV remodelling. Patients with LV remodelling had lower levels of melatonin at study entry (9.96 [8.28-11.03] vs 16.74 [13.77-19.59] pg/ml, respectively; p < 0.0001). Multivariate analysis showed that melatonin levels (OR = 2.10, CI 95% 1.547-2.870, p < 0.001) were an independent predictor of LV remodelling at 12 months follow up. ROC analysis showed an area under the curve of 0.959 (CI 95% 0.93-0.98; p < 0.0001). An optimized cutoff point of 6.96 pg/ml showed 98% sensitivity and 87% specificity (Figure).

Conclusions: This is the first study to show the relationship between melatonin and LV remodelling during the chronic phase of post-MI. These findings lead to the hypotheses that a combination of melatonin and secondary preventive treatments may have complementary protective effects on LV remodelling.

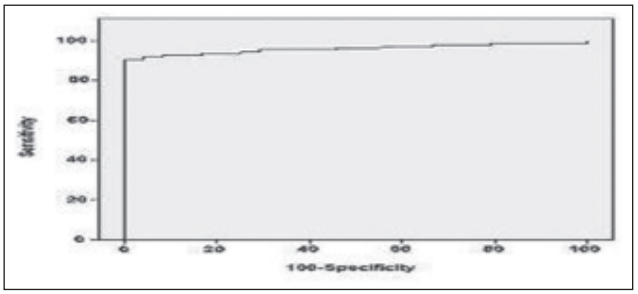


Figure. ROC Curve Melatonin

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Incidence of spontaneous coronary artery dissection in all comers patients referred for acute coronary syndrome.

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Background: Spontaneous coronary artery dissection (SCAD) is a rare cause of sudden death and acute coronary syndrome. The incidence of SCAD is extremely variable (from 0.07% to 1.1%), but the exact incidence, in patients with an acute coronary syndrome is lacking. We describe a group of patients performing a coronary angiography for a suspected acute coronary syndrome with a conclusive diagnosis of SCAD.

Method and results: in a period of 4 years (from January 2008 to December 2011), 2752 patients performed a coronary angiography because of suspected acute coronary syndrome (1315 STEMI, 1437 NSTEMI). We found 33 patients (1.19%) with a diagnosis of SCAD. The mean age at the presentation was 54, 90.1% were women. Among women 42.4% was less than 50 years old. According to De Maio classification, that includes 3 group, 2 patients (6.06 %) had an underlying coronary atherosclerosis (1st group), 1 patient (3, 03%) was woman in the third pregnancy quarter or in the immediate postpartum (2nd group) and 30 patient (90.9 %) belonged to the third group (non homogeneous; birth control pills, physical stress, autoimmune disease, idiopathic). The most involved vessel was the left anterior coronary artery (LAD): 48.17 %; RCA in 27, 2%; CX in 21, 8 % and LM in 3.03%. A simultaneous multi vessel involvement was observed in 1 patients (3.03%). According to clinical and angiographic features, we treated 21 pts (67.6%) medically and 9 pts (36, 6 %) with PCI. The medical treatment included heparin (UFH or LMWH) in 96.9%, aspirin in 93.9 %, clopidogrel 36.6 %, and 100 % anti-ischemic therapy (96.9% beta-blockers, 84.8% ACE inhibitors and 36.6% nitrates). The mean ejection fraction was 47.9 %. Emodinamic instability was present in 2 pts (6.06 %). At the follow up (the mean fup 256 days) we did not have any recurrent episodes. The rate of in-hospital mortality was 0%. At the follow up we found one patient dead (3.03%) for non cardiac causes.

Conclusions: the incidence of SCAD among all acute coronary syndrome is not so rare. Therefore, the diagnosis might be considered during evaluation of female under 50 years old with acute coronary syndrome. We might assume that the prognosis is good and medical treatment is the best choice.

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Pre-operative use of intraaortic balloon pump in patients with post infarction ventricular septal rupture and acute mitral regurgitation: 15 years single centre experience

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Purpose: Ventricular septal defect (VSD) and acute mitral regurgitation (aMiR) due to papillary muscle rupture or dysfunction are mechanical complications of acute myocardial infarction (AMI) associated with poor prognosis. Surgical intervention is indicated in most of these patients. Intraaortic balloon pump (IABP) is widely accepted method, which can stabilize patient between diagnosis and surgical repair. In this single centre retrospective study we review, how pre-operative use of IABP affect 30-day mortality in patients with mechanical complication of AMI.

Methods: We analyzed retrospectively the registry data of 77 patients admitted to our centre between 1997 and 2011 because of mechanical complication of AMI – 51 with VSD, 24 with aMiR and 2 patients with combination of post infarction VSD and aMiR. Both VSD and aMiR groups were divided into 3 subsets (A, B, C) according to hemodynamic condition - cardiogenic shock (A), hemodynamic unstable except cardiogenic shock (B) and hemodynamic stable (C). In subsets A and B we analyzed effect of pre-operative use of IABP on 30-day mortality.

Results: In subsets A and B of VSD and aMiR groups pre-operative use of IABP is associated with better 30-day prognosis (see table). In addition patients in cardiogenic shock without pre-operative use of IABP died before surgical intervention. Average periods between diagnosis and surgical repair of post infarction VSD were 13, 3 days in survivors and 6, 3 days in non-survivors. Same periods in patients with aMiR were 2, 9 days in survivors and 4, 7 days in non-survivors.

Table 1.

	30-day mortality with IABP	30-day mortality without IABP
VSD - A (n = 22)	14/20 (70%)	2/2 (100%)
VSD - B (n = 28)	3/16 (19%)	4/12 (33%)
aMiR - A (n = 20)	9/17 (53%)	3/3 (100%)
aMiR - B (n = 6)	0/2 (0%)	1/4 (25%)

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Conclusion: Surgical repair remains the basic treatment of post infarction VSD and aMiR. Based on our experiences pre-operative use of IABP should be applied in every hemodynamic unstable patient with VSD and aMiR complicating AMI – not only in patients in cardiogenic shock. The operation of VSD can be performed later – at least 2-3 weeks after diagnosis with the exception of cardiogenic shock. In opposite early operation of aMiR (in 48 hours) shows better prognosis.

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Spontaneous multivessel coronary artery dissection associated with cannabis use - Case Report

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Introduction: Cannabis is the most widely used illicit drug in the world. It is generally considered to be a drug with very low toxicity. However, evidence exists nowadays to support the cardiovascular effects of cannabis use.

Case presentation: We report the case of a 43-year old man admitted for an acute coronary syndrome with transient ST-elevation in anterior leads. His past medical history revealed no coronary risk factor. He was a regular cannabis smoker since his early teens but revealed that for the last month he had smoked cannabis daily and in large amounts. Coronary angiography revealed an intramural haematoma with extensive dissection of the left anterior descending artery and dissections of the circumflex and the right coronary artery. Based on the complexity of the coronary lesions, the patient was referred for coronary artery bypass graft. The clinical course after surgery was uneventful.

Conclusion: There are several case reports of myocardial infarction occurring in close proximity to cannabis use in otherwise low risk individuals. Nevertheless, the relationship is not completely understood and several mechanisms of action have been proposed. This is the first reported case of a cannabis user presenting with acute coronary syndrome related to multivessel coronary dissection.

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Renal insufficiency: prevalence and prognostic impact on in-hospital mortality among male and female STEMI patients undergoing primary PCI

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Background: Mortality in female STEMI patients treated with primary PCI (pPCI) is higher as compared to men. Renal insufficiency (RI: eGFR < 60ml/min/1.73m2) on admission is associated with unfavorable outcome in pPCI treated STEMI patients. Little is known on gender differences in prevalence of RI and the prognostic performance of this condition in this settingI.

Methods: We performed a subanalysis of the Belgian STEMI registry, including data from 1, 638 consecutive patients (79.3% males, 20.7% females), admitted in 8 tertiary care hospitals and treated with pPCI in the period June 2007-February 2011.Admission values for creatinine were retrospectively obtained in 88.1% of the patients and glomerular filtration rates were calculated using the CKD-EPI formula. TIMI risk scores for STEMI were calculated for all patients. Multivariable logistic regression analyses were used to define the independent correlates of admission RI, to evaluate a possible interaction between gender and RI regarding in-hospital mortality and to assess the prognostic impact, on top of the TIMI risk score, of admission RI regarding in-hospital mortality in women and men. Data are presented as proportions, odds ratios (OR) and 95% confidence intervals (CI).

Results: More women then men suffered from RI (42.3% vs. 25.3%, $p < 0.001$) on admission. Crude in-hospital mortality was 9.5% in women vs. 4.7% in men ($p < 0.001$). In-hospital mortality for men and women with RI (10.7% and 15.3%) was much higher as compared to men and women without RI (2.3% and 2.4%), $p < 0.001$.After correction for possible confounders (age, hypertension, diabetes and a history of coronary or peripheral artery disease) female gender remained associated with a higher prevalence of RI on admission (OR (95%CI) 1.65 (1.20-2.25), $p = 0.002$). The interaction test demonstrated that the impact of RI on in-hospital mortality was comparable for men and women ($p = 0.69$). On top of the TIMI risk score, RI was an independent predictor of in-hospital mortality in both men (OR (95%CI) = 2.39 (1.27-4.51), $p = 0.007$ and women (OR (95%CI) = 4.03 (1.26-12.92), $p = 0.002$).

Conclusions: In a substudy of Belgian STEMI registry patients treated with pPCI, female gender was independently associated with admission renal insufficiency. Renal insufficiency, independent of the TIMI risk score, is associated with higher in-hospital mortality rates in both men and women. Renal insufficiency should therefore be accounted for when evaluating gender differences in outcome after STEMI.

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Long-term outcome in patients with ST-elevation myocardial infarction and infarct-related coronary artery ectasia treated with primary PCI

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Purpose: The clinical outcome of patients presenting coronary artery ectasia and acute myocardial infarction is poorly defined. The aim of this study was to analyze the mid-long term clinical outcome of patients treated by primary angioplasty, in whom the culprit lesion was localized in an ectatic vessel.

Materials And Methods: A systematic review of the databases of 8 Italian centers identified 101 patients with coronary artery ectasia who were treated by primary PCI. The end points of the study were the incidence of cardiac death, need of any new revascularization, recurrence of acute myocardial infarction and the combined end point of cardiac death and/or recurrence of acute myocardial infarction, during a follow-up mean time of 15.4 months.

Results: Cardiac mortality rate was 5.9% (95% CI: 1.3-10.5) in hospital, 7.1% (95% CI: 3.4-14.3) at 1 year, and 12.8% (95% CI: 6.2-25.7) at 2 years. The variables associated with survival/mortality in the Cox proportional-hazards model of cardiac death were: male gender (HR: 0.17, 95% CI: 0.03-0.87, p = 0.03), age > 63.5 years (HR: 4.54, 95% CI: 0.96-21.4, p = 0.056), Killip class > 1 (HR: 6.51, 95% CI: 1.80-23.56, p = 0.004), single lesion PCI (HR: 0.25, 95% CI: 0.07-0.96, p = 0.04), TIMI = 3 (HR: 0.27, 95% CI 0.08-0.98, p = 0.047), successful PCI (HR: 0.19, 95% CI 0.05-0.67, p = 0.01), complicated PCI (HR: 4.75, 95% CI 1.18-19.1, p = 0.03).

Conclusions: Based on our observations, the clinical outcome at mid-long term of patients with coronary artery ectasia treated by primary angioplasty in the setting of acute myocardial infarction seems to be in line with that reported in the Italian epidemiological registries for acute coronary syndromes. No association between different types of ectasia and major adverse cardiac events was found.

Table 1. Results of Cox analysis of cardiac death

Variables	N	HR	95% CI	p-value
Male gender	8	0.17	0.03-0.87	0.03
Mean age (years) > 63.5	8	4.54	0.96-21.40	0.056
Killip Class > 1	6	6.51	1.80-23.56	0.004
Single lesion PCI	6	0.25	0.07-0.96	0.04
TIMI = 3	4	0.27	0.08-0.98	0.047
Successful PCI	5	0.19	0.05-0.67	0.01
Complicated PCI	3	4.75	1.18-19.1	0.03

HR: hazard ratio; CI: confidence interval

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Effect of ramipril and enalapril initial doses on 24 hour blood pressure profile in patients with acute myocardial infarction

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Objectives: First-dose hypotension is well known side effect of angiotensine converting enzyme inhibitors (ACEI), especially in patients with compromised hemodynamics. Up to 20% of patients (pts) with acute myocardial infarction (AMI) experience significant transient blood pressure (BP) reduction. Theoretically ACEI with longer action may have less risk of hypotension. On the other hand, pts with AMI and hypertension need prompt BP reduction.

Methods: To compare effects of initial doses of ramipril and enalapril on 24 hours BP profile 56 ACEI naive patients (44 men and 12 women, mean age (62.2 ± 11.3 years) within first 3 days of AMI and stable hemodynamics were included into the study. Pts with BP higher 160/100 mm Hg and systolic BP lower than 100 mm Hg were excluded. Ambulatory blood pressure monitoring started 60 min before first dose administration. 28 patients received ramipril in first dose 1, 25-5 mg, 24 patients received enalapril in first dose 1, 25-7, 5 mg depending on initial BP level. Doses of drugs were repeated if needed based on clinical judgment. Mean daily dose for ramipril was 4.38 ± 2.6 mg, enalapril 9.69 ± 4.7 mg.

Results: No difference was found between drugs in mean values of main 24 hours monitoring parameters. BP dynamics did not depend on gender, age, AMI type and localization. Main predictor of hypotensive effect was higher initial BP level. BP reduction was more prominent in patient with hypertension. In hypertensive group ramipril reduced blood pressure more significantly comparing to enalapril. Excessive prolonged blood pressure reduction (20 % or less than 100 mm Hg systolic at least 30 min) was detected in 10.7 % patients in ramipril and 12.5 % in enalapril group (NS). In most cases hypotension was asymptomatic, no patients needed intervention.

Conclusions: Thus, initiation of therapy with ramipril or enalapril in acute myocardial infarction is generally safe and blood pressure reduction depends mainly on the initial blood pressure level.

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Prevalence and causes of failure of receiving thrombolytic therapy in egyptian patients with acute ST-segment elevation myocardial infarction

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Background: Missing thrombolytic therapy in patients with acute ST-elevation myocardial infarction (STEMI)

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can have dire consequences. We studied the prevalence and causes of failure of receiving thrombolytic therapy in patients with STEMI and its impact on the clinical outcome during hospitalization.

Patients & Methods: This was an observational, analytic, cross sectional study carried out in the CCU and emergency departments of three public hospitals in Port Said, Egypt. We interrogated all patients admitted within 72 hours of possible acute coronary syndrome and only patients proved to have STEMI as defined by the updated ACC criteria were analysed for receiving thrombolytic therapy or not. All STEMI patients were subjected to: medical history taking, thorough clinical examination, 12-leads surface electrocardiography, cardiac biomarkers (troponin I), and predischarge trans-thoracic echocardiography.

Results: Of 6522 patients screened, only 288 patients had STEMI. The prevalence of missed thrombolysis in these patients was 45%. Delayed presentation after the onset of symptoms represented the most common cause for failure to receive thrombolysis (54% of the cases), while misdiagnosis at the emergency department represented 35% of the cases. Female gender, diabetes mellitus and inferior location of myocardial infarction were independent predictors of missed thrombolytic therapy. Cardiac death, clinical heart failure and significant cardiac dysrrhythmias were higher in patients who missed thrombolysis than in those who received it.

Conclusion: In this study, up to 45% of patients with STEMI missed the opportunity to receive thrombolysis, most likely due to delayed presentation or misdiagnosis at the emergency department. Patients with missed thrombolysis were at higher risk of cardiac death, clinical heart failure, and hemodynamically significant cardiac dysrrhythmias.

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Primary PCI for Stemi patients: time is muscle

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Purpose: The benefit of primary PCI in patients with ST-elevation myocardial infarction (STEMI) is critically dependent on the time past between onset of symptoms and patient admission to the catheterization laboratory as well as on door to balloon time.

Methods: From June 2007 to January 2012 405 STEMI patients admitted during first 12hrs after onset of symptoms underwent primary PCI in our hospital. We divided these patients into two groups: 1st group - 261 patients (64%) admitted during first 6 hrs and 2nd group - 144 patients (36%) admitted from 6 to 12hrs after onset of symptoms. There were no relevant differences in cardiac risk factors between the groups.

Results: Mean door-to-balloon time was less than 90 minutes for both groups. Angiographic success was 95.8% in the 1st group vs. 89.6% in the second group. Periprocedural and in-hospital mortality was 3 patients (1.1%) and 5 patients (1.9%) in the first group vs. 4 patients (4.3%) and 7 patients (4.8%) in the 2nd group, respectively. Resolution of ST segment elevation ≥70% during 1st hour after PCI and mean left ventricular ejection fraction improvement between patient admission and discharge was 70, 5% and 12.4 ± 5.1% in the 1st group vs. 31.9% and 6.5 ± 3.7% in the 2nd group, respectively. Mean hospital stay was 3.9 ± 1.8 days for the 1st group vs. 5.2 ± 2.4 days for the 2nd group.

Conclusions: Primary PCI is especially effective when performed during first few hours after onset of AMI. PCI performed after more than 6hrs after onset of symptoms may be related with more periprocedural or postprocedural complications and poorer prognosis but is still effective.

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Reduction of severity of mitral regurgitation after primary angioplasty in acute inferior myocardial infarction and relation to changes in QRS duration

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Primary coronary angioplasty (PPCI) is the treatment of choice in the setting of acute myocardial infarction with ST-segment elevation (STEMI). Mitral regurgitation (MR) worsens prognosis in acute STEMI. Fibrinolytic therapies reduced MR in patients with acute STEMI. MR is related to ventricular dyssynchrony assessed by QRS duration.

Aim: Compare PPCI with fibrinolytic therapy in patients with acute inferior STEMI in reducing MR severity and evaluate the relation with changes in duration of QRS complexes.

Methods: Two hundred and twenty five patients with acute inferior STEMI, one third treated by PPCI, another third treated with fibrinolytic therapy and the remainder without reperfusion therapy, were evaluated by echocardiography for MR at admission and pre-discharge. A subgroup of 65 patients, 29 of them had PPCI and 36 fibrinolytic treatment, had, in addition to echocardiography, evaluation of QRS duration in all 12 leads of the surface electrocardiogram, at admission, 3 days later and pre-discharge.

Results: In the whole group of 225 patients, PPCI was superior to fibrinolytic therapy in reducing MR compared to patients without reperfusion treatment. In the subgroup of 65 patients, 9 of 11 patients who had reduction in severity of MR were treated by PPCI and none of the PPCI

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patients had significant MR at discharge while 3 of the fibrinolysis group had MR grade 3. QRS duration in the inferolateral leads decreased pre-discharge, more significantly in patients treated with PPCI. In the non-infarction electrocardiographic leads, QRS duration did not change. Patients with reduction in MR grade had a decrease in QRS duration at discharge.

Conclusions: PPCI was superior to fibrinolysis in reducing MR severity in patients with acute inferior STEMI. QRS duration decreased pre-discharge in infero-lateral infarction electrocardiographic leads. In the non-infarction leads, QRS duration did not change. Reduction of MR severity was associated with reduction in QRS duration, implying improvement in synchronicity of left ventricular contraction.

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Upstream Clopidogrel and patency of the infarct related vessel in STEMI patients undergoing primary PCI

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Background: Pre-procedural TIMI flow grade 3 is an independent predictor of survival in patients with ST-Elevation Myocardial Infarction (STEMI) undergoing primary Percutaneous Coronary Intervention (pPCI). ESC/AHA/ACC guidelines recommend pre-treatment with aspirin and a P2Y12 inhibitor to maximize the patency of infarct related artery at first angiogram. In routine clinical practice Clopidogrel 600 mg is widely used in unselected STEMI patients.

Methods and results: We assessed the efficacy of 600 mg of upstream Clopidogrel administered at time of diagnosis by emergency personnel, in 320 consecutive STEMI patients admitted to our hospital between September 2009 and November 2011 for pPCI. Treatment consisted of Clopidogrel 600 mg orally, chewable Aspirin 250 mg and unfractionated heparin (UFH) 4000 U bolus. Diagnosis was made by the ambulance emergency system in 36.2% of cases; by Accident and Emergency of the hub center in 37.8% and by the spoke hospital in 26%. STEMI was anterior in 48% of cases, inferior in 38% and lateral in 14%. Mean door-to-balloon (D2B) time was 101.2 ± 87 minutes with a 63% of cases revascularized within 90 minutes. Mean symptom-onset-to-balloon time was 279 ± 120 minutes. Pre-procedural TIMI grade 2/3 flow was present in 38% of cases, whereas a TIMI flow ≥1 was present in 49% of cases. Median age was 65 years (range 35-94); female were 26%; mean BMI was 27.5 ± 4. Risk Factors consisted of: hypertension 60%; cigarette smoking 39%; hypercholesterolemia 64%; diabetes 17%. Past cardiovascular history included: previous MI 3%; previous PCI 4%; previous CABG 1%; previous TIA/Stroke 1%. Cardiogenic shock requiring IABP occurred in 7% of patients and an EF < 35% was present in 5%. Creatinine was 1.3 ± 0.3 mg/dl, LDL-C was 134 ± 43 mg/dl, glicemia 129 ± 37 mg/dl. Primary PCI was performed off hours in 57% of cases. The following culprit vessels were treated: LAD 47%; LCX 11.5%; RCA 40%; Ramus 0.6%; Venous Graft 0.6%; Left Main 0.3%. DES were implanted in 52% of cases. Coronary thromboaspiration was performed in 31% of cases. TIMI major and minor bleeding were both around 1%. Median follow up was 13.7 months (min 0.03; max 27.3). Survival at 12 months was 0.9638 and 0.9573 at 24 months. At multivariate analysis pre-procedural TIMI flow grade 2-3 was an independent predictor of one-year survival ($p < 0.05$)

Conclusions: Our experience shows that an antegrade suboptimal TIMI flow is obtainable in approximately 50% of cases in unselected STEMI patients, with a simple and inexpensive protocol that allows to minimize bleeding and reduce mortality.

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Acute anemia in patients with ST-segment elevation myocardial infarction treated with glicoprotein IIb/IIIa inhibitors: prognostic value.

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Background: Glycoprotein (GP) IIb/IIIa inhibitors are often used during primary angioplasty in ST-segment elevation myocardial infarction (STEMI). However, the occurrence of acute anemia in this setting may mitigate its therapeutic benefit.

Aim: To assess the prognostic impact of anemia in patients (pts) with STEMI treated with GP IIb/IIIa inhibitors.

Methods: In consecutive pts with STEMI that underwent primary angioplasty, blood count was evaluated in serial samples taken during the first 72 hours after coronary catheterization (T0, T8, T16, T24, T48 and T72) and the decrease in hemoglobin (Hg) levels was determined. Prognostic was assessed by the following endpoints: 1) worsening of Killip-Kimball (KK) class during hospitalization and 2) progression to cardiogenic shock or in-hospital death.

Results: We studied 171 pts (75% male, 62 ± 12 years). KK class on admission was I, II, III and IV in 94%, 2.6%, 0.9% and 2.6% of pts, respectively. Eighteen pts (11%) showed worsening of KK class during hospitalization and 19 (11.4%) had progression to cardiogenic shock or death. The initial mean Hg level was 13.4 ± 1.7 g/dL, decreasing

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to a minimum of 11.8 ± 1.8 g/dL in 72 hours. Pts with a greater fall in Hg (3rd tertile>1.96 g/dL) were three times more likely to worsening of KK class (OR: 2.87, 95% CI 1.06-7.76, p = 0.032) and evolution for cardiogenic shock or in-hospital death (OR: 2.60, 95% CI 1.0-6.84, p = 0.05). Seventy-nine pts were treated with GP IIb/IIIa inhibitors and in 41.9% (n = 33) there was a significant fall in Hg (3rd tertile). In those pts we find a three-fold increased risk of unfavorable outcome (OR: 3.09, 95% CI 1.36-7.01, p = 0.006). Pts undergoing GP IIb/IIIa inhibitors had more frequently worsening of KK class (15.2% vs. 5.7%) and progression to shock or in-hospital death (12.7% vs. 7.5%). However, in multivariate logistic regression model only a significant fall in Hg levels was an independent predictor of adverse prognosis (OR: 2.60, 1.0- 9.79, p = 0.046).

Conclusion: The use of GP IIb/IIIa inhibitors in STEMI, when associated with an acute hemoglobin decrease, result in a higher risk of adverse prognosis. Thus it should always be taken into account the potential risk of bleeding.

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Endothelial progenitor cells and endothelial activation markers. Correlation and kinetics in acute myocardial infartion

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Purpose: Endothelial inflammation and thrombosis are keystone processes after an acute myocardial infarction. After an AMI, endothelial progenitor cells (EPC) are released into the circulation. Characterization of EPC is a complex procedure and straightforward markers could be useful.

Methods: From March 2009 to September 2011 we prospectively included patients younger than 75 years-old, with a first acute myocardial infarction (AMI) not previously treated with statins. EPC were defined as CD 45-, CD34+, KDR+ by flow cytometry and VCAM-1 was measure by immunoassay at 0, 7, 30 and 180 days. Controls were also studied to compare baseline measures.

Results: 100 patients (mean age 53.7-years, 15% women) and 104 Controls (mean age 57.5-years; 18.3% women) were included. EPC were higher than controls at day 0 and VCAM-1 showed less variability (Table 1). EPC and VCAM-1 progressively increased with a peak at day 30 (Figure 1). VCAM-1 and EPC values showed similar kinetics overt time (p-value 0.8) in a mixed model test.

Conclusions: In this selected AMI population, there is a correlation in the kinetics of EPC and VCAM-1 after an AMI. EPC release follows closely the inflammations insult and the severity of inflammation may trigger its release.

Table 1.

	Control	AMI Day 0	AMI Day 7	AMI Day 30	AMIDay 180	p Value Control vs AMI
EPC (ml)	42 (1-97)	186 (61-388)	174 (78-342)	370 (155-739)	201 (102-397)	<0.001
VCAM-1 (ng/mL)	500 (348-717)	605 (438-881)	610 (505-921)	734 (581-936)	585 (376-811)	<0.001

EPC (mL) and VCAM-1 (ng/mL) [mean (SD)] in controls and AMI patients at day 0, 7, 30 and 180 days.

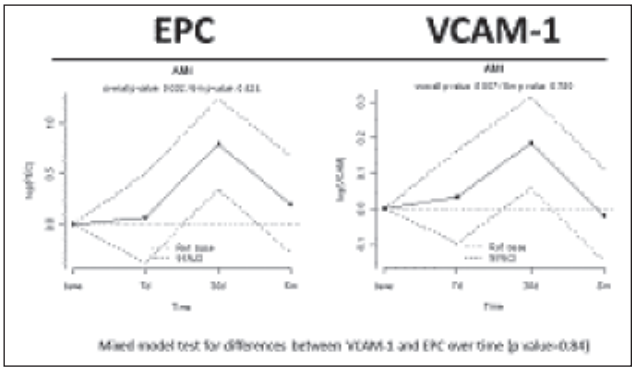


Figure 1.

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Elective Percutaneous Coronary Intervention after Fibrinolysis: REMAT Data (Madre Teresa Registry)

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Background: Acute myocardial infarction (AMI) has a high morbidity and mortality and represents a public health problem. We analyzed the results and predictors of in-hospital adverse events in patients undergoing elective percutaneous coronaty intervention (PCI) after fibrinolysis.

Methods: Three hundred and three patients with diagnosis of AMI undergoing pharmacological reperfusion and transferred to a tertiary center for elective PCI were selected.

Results: The population included mostly men (76, 6%) with mean age of 59.4 ± 11.1 years, 18.1% were diabetic and 86.8% were in Killip class I. Streptokinase was used in 91.7%, teh mean time to perform elective PCI was 5.6 ± 3.7 days after fibrinolysis and TIMI 3 flow was achieved in

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74.2% of the patientes. stens were implanted in 97.7% and angiographic success was obtained in 95.3% of the cases. Mortalty was observed in 3.3%, reinfarction in 3.6%, target lesion revascularization in 1.3%, and major bleedings in 2% of the patientes. Multivariate analysis indicated female gender, age >65 years, TIMI 1 flow, thrombus in te treated vessel, Killip > 1 and severe left ventricular dysfunction were independent predictors of in-hospital adverse events.

Conclusions: The pharmacological reperfusion strategy followed by transfer to perform elective PCI hak low in-hospital adverse event rates and is an interesting alternative to primary PCI in Brazil. However, public policies are required to improve the logistics to better handle these patientes and have them available to all low and medium complexity national hospitals.

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Predictors of mortality in patients with ST-segment elevation acute myocardial infarction and age over 65 years

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Purpose: Age has a high prognostic value in acute myocardial infarction (AMI). The aim of this study was to determine predictors of in-hospital mortality and after discharge in patients (P) over 65 years, admitted to a Cardiology Department (CD) for ST segment elevation AMI (STEMI).

Methods: We conducted a retrospective, descriptive and correlational study, based on a prospective registry, encompassing 475 P with STEMI and age over 65 years (STEMI > 65Y) admitted in a CD since January/2006 to October/2010.We evaluated baseline characteristics, admission data, mortality and therapeutic strategies. Mid-term follow-up (FU) (39 ± 15 months) was made by a cardiologist. We performed a univariate and multivariate analysis of the in-hospital mortality (IHM) and cardiovascular (CVM) and global mortality (GM) after discharge. Statistical analysis was performed using SPSS 13.0.

Results: The IHM rate was 4.4%. Hypertension (HT) (p = 0, 044), left ventricle ejection fraction (LVEF) < 30% (p = 0, 005) and not performing coronary angiography

(CAT) (p = 0, 003) were associated with increased IHM. The IHM independent predictors were HT (p = 0, 009), smoking (p = 0, 039), LVEF < 30% (p = 0, 008) and not performing CAT (p = 0, 023).

The CVM rate at FU was 12.7%. The female gender (p = 0, 001), LVEF < 30% (p < 0, 001), no reperfusion therapy (p = 0, 002), not performing CAT (p = 0, 002) or PCI (p = 0, 004) were associated with increased CVM. The CVM independent predictors were female gender (p = 0, 006), previous stroke (p = 0, 006) and LVEF < 30% (p < 0, 001).

During FU, the rate of GM was 19.2%. Factors associated with increased GM were female gender (p = 0, 008), previous stroke (p = 0, 024), LVEF < 30% (p < 0, 001), no reperfusion therapy (p = 0, 004), not performing CAT (p = 0, 001) and not performing PCI (p = 0, 004). The GM independent predictors were female gender (p = 0, 020), previous stroke (p = 0, 004), history of peripheral arterial disease (PAD) (p = 0, 044) and LVEF < 30% (p = 0, 001).

Conclusions:

1 - Left ventricular dysfunction was a strong predictor of IHM, and CVM and GM at follow up.

2 - Other predictors of IHM were HT, smoking and not performing CAT.

3 - During follow-up, the female gender and previous stroke were also predictors of MCV.

4 - Predictors of GM after hospital discharge, include the female gender, previous stroke and PAD.

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The usefulness of myeloperoxidase in prediction of impaired left ventricle function in patients with ST-segment elevation myocardial infarction treated with primary percutaneous coronary intervention

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Introduction: Inflammation plays an important role on every stage of atherosclerotic process, from its initiation to thrombotic complications. Myeloperoxidase (MPO), a leukocyte-derived enzyme that catalyzes the formation of oxidative reactants, according to the recent studies, is related with unfavorable outcome after acute coronary syndrome (ACS). A part of this negative impact may be due to adverse ventricular remodeling after myocardial infarction.

The aim of the study was to assess if elevated plasma MPO level is a predictor of impaired left ventricle (LV) systolic function in patients with acute myocardial infarction (AMI) treated with primary percutaneous coronary intervention (pPCI).

Material and methods: We evaluated data of 79 consecutive patients (21 women) aged 60 (54-64) years, admitted due to the first AMI with ST elevation treated with successful pPCI, with neither additional acute nor chronic inflammatory disorders. Plasma levels of MPO and other inflammatory markers (C-reactive protein (CRP), white blood cell count (WBC) and peripheral blood smear) were determined on admission and

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on the 4th day of hospitalization. LV function was assessed by echocardiography using the wall motion score index (WMSI) and ejection fraction (EF).

Results: The median (1st; 3rd quartiles) MPO level on admission was 276 (135-1181) ng/ml whereas 170, 4 (112-444) ng/ml on the 4th day (p = 0, 012). Killip class, age, sex and the presence of CAD risk factors didn't affect MPO levels. There was no significant correlation between MPO and CRP and WBC. We only found relationship between MPO and percentage of neutrophiles on admission (R = 0, 35, p = 0, 002).

WMSI was assessed at 1, 4 (1, 1–1, 9), whereas EF at 52 (48-57) %. There was no significant correlation between MPO levels (assessed on admission and before discharge) and the LV systolic function. We found statistically significant relationship between LV systolic function and CRP assessed on 4th day (R = –0, 52, p < 0, 001; R = 0, 46, p < 0, 001 for EF and WMSI respectively).

Conclusions: The above results suggest that the levels of myeloperoxidase could not be considered as a predictor of left ventricular dysfunction in our cohort of patients with AMI treated with successful pPCI.

Acute coronary syndromes: Non STEMI

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Acute coronary syndrome has worse prognosis in patients on digoxin treatment

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Purpose: Although digoxin is still a drug commonly used for rate control in atrial fibrillation, it is little known the effect of previous digoxin treatment on patients admitted because of myocardial infarction. We analyzed this influence based on the data coming from a large register of acute coronary syndrome (ACS).

Methods: We analyzed the data of patients included in the register ARIAM-Andalucia, which involves 40 hospitals in Andalucia, Spain, from 2001 to 2011.Patients on digoxin treatment previously to their admission because of ACS constituted the digoxin group (DG), and were compared with the group of patients not on digoxin (NDG).

Results: We included 37353 patients, of whom 243 (0.7%) were DG and 37110 were NDG. DG were older (73 ± 12 vs 65 ± 9, p < 0.001), and more often female (40 vs 27%, p < 0.001), or had diabetes (51 vs 33%, p < 0.001), hypertension (77 vs 52%, p < 0.001), previous arrhythmia (69 vs 6%), Heart Failure (HF, 28 vs 5%, p < 0.001), stroke (14 vs 6%, p < 0.001), vasculopathy (9 vs 5%, p < 0.01), or renal failure (10 vs 2%, p < 0.001). They were less often smokers (12 vs 34%, p < 0.001). DG were Non-ST Segment elevation ACS more often than NDG (64% vs 40%, p < 0.001). There were no significant differences in the frequency of atrio-ventricular blockade (DG 7.4%, NDG 6.2%), nor ventricular fibrillation or tachycardia (DG 5.3%, NDG 8.9%): DG had significantly higher incidence of shock (12 vs 6%, p < 0.001) and in-hospital mortality (11 vs 4.1%, p < 0.001). Logistic multivariate analysis found that previous treatment with digoxin was a significant predictor of mortality.

Conclusions: previous treatment with digoxin was predictor of mortality among patients admitted because of ACS. Although this difference is explained in part by worse clinical condition, it remains significant after multivariate adjustment. That brings a word of caution in the introduction of digoxin in patients with coronary disease.

Table 1.

	Odds Ratio	95% Confidence Interval	p
DG	1.50	1.00-2.25	0.049
Age (per year)	1.07	1.06-1.08	<0.001
Diabetes	1.42	1.29-1.56	<0.001
Previous HF	1.90	1.62-2.22	<0.001
Previous stroke	1.46	1.25-1.70	<0.001

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Creation of acute chest pain assessment unit leads to significant reduction in time to angiography and length of stay of patients presenting to a hospital with coronary angioplasty facilities

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Background: The timely diagnosis and management of patients diagnosed with Acute Coronary Syndrome (ACS) remains a challenge. The European Societyof Cardiology (ESC) recommends early coronary angiography (CA), within 72hours, for medium to high-risk ACS patients. We sought to see whether the creation of a fast-track chest pain assessment unit (CPAU) would lead to a faster diagnosis and management of patients presenting with ACS.

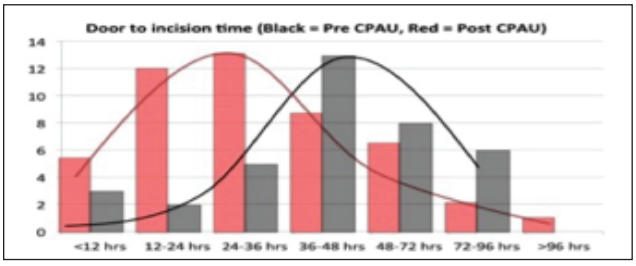
Methods: We performed an initial audit of patients presenting with chest pain of cardiac origin over a two-month period. Time intervals from A+E presentation to admission to the Medical Assessment Unit (MAU), MAU to cardiology ward admission, Coronary angiography and to discharge

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were measured as well as the time taken from first presentation to cardiology review. After the creation of a 6-bedded CPAU, patients with presumed ACS were fast-tracked directly from A+E, after being seen by a cardiologist.

Results: Data were collected on 57 patients in the first audit period (77% Male, Mean Age 62 ± 15) and 75 in the second audit period (64% Male, Mean Age 62 ± 13). The average time from A+E arrival to admission to the cardiology ward and cardiology review improved from 21.05 hours (16 hours was spent in MAU under the care of a general physician) to 6.28 hours ($p < 0.01$). The average time from presentation to CA improved from 67.94 to 34.93 hours ($p < 0.01$). The overall mean length of stay (LOS) decreased from 4.11 to 2.88 days ($p < 0.01$).

Conclusion: The result show a significant reduction in all the parameters mentioned above. This enables us to exceed ESC recommendations whilst reducing pressure on other hospital services. Furthermore, an average reduction in LOS of 1 day per patient will result in significant cost savings whilst delivering more streamlined patient care.



Time to angiography - Pre Vs Post CPAU

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Acute myocardial infarction without angiographically without significant coronary injuries - better prognosis?

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Purpose: Despite acute myocardial infarction (AMI) is usually associated with obstructive coronary artery disease, 8-12% of patients (P) does not presents coronary disease angiographically significant. The aim of this study was to determine if there are differences in hospital and follow-up (FU) events among P admitted for AMI with angiographic coronary (CAT) without significant lesions (CsL) and P with significant coronary disease (CcL). We also sought to determine the predictors of the absence of coronary lesions.

Methods: We conducted a retrospective, descriptive and correlational study, based on a prospective registry, involving P admitted with AMI in a Cardiology Department between January 2006 and October 2010.We evaluated the baseline characteristics, admission data, in-hospital events - ventricular fibrillation (VF), complete atrioventricular block (BAVC), re-AMI (RE-MI), major bleeding (MB), stroke and mortality-and FU events –RE-MI, stroke, hemorrhagic stroke (HS), readmission for heart disease (RHD) and mortality. The monitoring was performed by a cardiologist, with a FU average of 39 ± 15 months, with a rate of 84% FU. We also performed a univariate and multivariate analysis for predictors of the absence of coronary lesions. Statistical analysis was performed using SPSS 13.0.

Results: Of the 1683 P admitted with AMI, 121 (7.2%) had CsL. Compared to CcL P, they were more often women (36, 4% vs 27, 1%, p = 0, 028), with more hypertension (69, 4% vs 60, 1%, p = 0, 042) and less history of AMI (89, 3% vs 81, 7%, p = 0, 036).

Regarding in-hospital events, the CsL D showed less VF occurrence (0% vs 3, 6%, p = 0, 034) and less BAVC (0% vs 3, 5%, p = 0, 038). There were no differences concerning the rates of RE-MI, MB, stroke and in-hospital mortality.

During FU, there were no differences between the two groups regarding RE-MI, stroke, HS, RHD and mortality.

The only independent predictor of absence of coronary lesions was diabetes mellitus (DM) absence (p = 0, 016). The factors that have a tendency to be predictors are female gender (p = 0, 093), hypertension (p = 0, 097) and admission for non-ST segment elevation AMI (p = 0, 081).

Conclusions:

1- Of P admitted for AMI, 7.2% had angiographic coronary without significant lesions and were more often women.

2–During hospitalization, the P with CsL presented less VF and BAVC, but presented the same rate of RE-MI, MB, stroke and mortality that P with CcL.

3-In this population, although CsL P had no significant injuries in CAT, they presented the same prognosis in FU regarding complications and mortality.

4-The only independent predictor of the absence of coronary lesions in AMI patients, was the absence of diabetes mellitus.

Acute heart failure

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RICA SCORE: a new multi-marker strategy in the prediction of outcomes in patients with acute heart failure.

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Introduction: The Heart Failure (HF) represents a growing cause of death and re-hospitalization (D/rH). Several independent biomarkers have been associated with adverse outcomes, being its enhancement together undervalued.

Purpose: Establish a predictive multi-marker score of hospital morbidity and D/rH for acute HF at 3, 6 and 12 months (M) after initial hospitalization for acute HF.

Methods: Study started in April of 2009 in the ambit of RICA (acute HF registry). Included 600 patients (Female-51.5%) admitted in a Cardiology department for HF of different etiologies. Follow-up was made at 3, 6 and 12 M with endpoints: D/rH. We identified independent predictors of clinical, analytical (on admission) and echocardiographic of D/rH at 3M and attributed 1 or 2 points (p.) according to the OR obtained ($p < 0.05$): BUN>60mg/dl (2p.), Na+ < 135mg/dl (2p.), BNP>400pg/ml (1p.), PASP>40 mmHg (2 p.), E/em>15 (1p.) and absence of ACEI/ARB at discharge (1p.). Constituted 3 groups (G) (A < 2.5, B-2.5-5 and C>5p.) and compared those with the clinical characteristics, intrahospitalar outcomes and endpoint (D/rH) at 3, 6 and 12M. Statistical analysis using SPSS.

Results: The distribution by G was: GA-48.2;GB-39.8;GC-12%. The overall mean age was 77.1 years, being higher in GC. Personal history of hypertension, dyslipidemia, smoking and AMI prevailed in GA while DM and stroke prevailed in GC.

At the medication on admission there were differences in the use of loop diuretics, spironolactone, digitalis (>GC) and ß-blockers (>GA) with no differences in the use of ACEI/ARB.

At the ECG, the % of AF was similar between G, being the prevalence of QRS>120 ms and LVH higher at GC. On admission, GC had lower blood pressure profiles and BMI. Analytically, the values of Hb, CrClMDRD and % of differential BNP were lower in GC (with higher CRP;$p < 0.01$).

At the ecocardiography, the LVDD and IVS values do not shown any differences. The LVEF had proved to be lower at GC being the LA diameter and the PCWP values ($p < 0.001$) higher. The length of hospital stay was higher in GC ($p < 0.001$), being the overall hospital mortality rate of 6.7% (without relationship between G). Evaluating the endpoints at 3, 6 and 12 M, a RICA score>4 proved to be an independent predictor of D/rH at 3M (OR-2.2, [CI 1.4-3.4], $p < 0.001$), 6M (OR-2.2, [CI 1.4-3.4], $p < 0.001$) and 12M (OR-1.8, [CI 1.14-2.9], p-0, 008), translated on the survival curves (Kaplan-Meier log rank: $p < 0.006$)

Conclusion: The RICA score proved to be an independent predictor of morbidity/mortality across the time, enhancing the link between clinical, analytical and echo. factors, which had individually an important prognostic value.

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Effect of ivabradine and beta blocker treatments on dobutamine-induced increase in heart rate in patients with acute decompensated heart failure

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Purpose: Elevated heart rate (HR) shortens diastole, increases oxygen consumption, impairs ventricular loading. Dobutamine (DOB) has been known to increase HR, myocardial contractility and energy expenditure, and so, may have some detrimental effects. HR reduction with ivabradine, a specific inhibitor of the If current, has been shown to improve clinical outcomes in chronic HF. The aim of this study was to evaluate the effect of ivabradine and β blocker treatments on DOB-induced increase in HR.

Methods: Forty four decompensated HF patients requiring inotropic support and LVEF < 35% were included in this study. All patients underwent holter recording for 6 h before the initiation of 18-h DOB infusion. Following baseline recording, DOB was administered at incremental doses of 5, 10 and 15 μgr/kg/min, with 6-h steps. Holter monitoring was continued during 18 h of DOB infusion. Ivabradine 7.5 mg was given at the time of the initiation of DOB and readministered at 12 h of DOB infusion in 29 patients who were not on β blocker therapy (Ivabradine group). 15 patients taking maximum tolerated dose of β blocker did not receive ivabradine during DOB infusion (β blocker group).

Results: Baseline mean HR was similar in both groups. In β blocker group, mean HR gradually and significantly increased at each step of DOB infusion (table). However, in ivabradine group, no significant increase in mean HR was observed with incremental doses of DOB infusion. Two-way ANOVA analysis also showed a significant change in mean HR in β blocker group ($p < 0.001$) and no significant increase in HR in ivabradine group ($p = 0.439$).

Conclusions: This study suggests that ivabradine treatment prevents the increase in HR during DOB infusion, which may be very important in reducing deleterious effects of DOB, however, DOB-induced increase in HR is not blunted effectively by tolerated dose of β blocker therapy.

Table 1. Heart rate change during DOB infusion

	β Blocker Mean HR, bpm	Ivabradine Mean HR, bpm	p
Baseline	75.6 ± 13.4	82.1 ± 17.3	0.225
DOB 5 μg/kg/min	82.3 ± 13.9*	82.4 ± 15.7	0.573
DOB 10 μg/kg/min	86.1 ± 14.1†	85.1 ± 14.9	0.890
DOB 15 μg/kg/min	88.7 ± 13.5†#	83.5 ± 12.4	0.483
p (Two-way ANOVA)	0.001	0.439	

*p = 0.009 and †p = 0.0001 compared with baseline. #p = 0.013 compared with DOB 5 μg/kg/min.

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The application of extracorporeal membrane oxygenation in intensive cardiac care unit to improve survival in patients with refractory cardiogenic shock complicating acute myocardial infarction

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Purpose: Cardiogenic shock (CS) complicates about 7% of patients with acute myocardial infarction (AMI), and remains associated with a high mortality rate especially when becomes refractory to optimal medical therapy and intra-aortic balloon pump (IABP). In this setting, the use of Extra Corporeal Membrane Oxygenation (ECMO) may improve the hemodynamic impairment and survival in these patients. The aim of this study was to evaluate the clinical impact of ECMO system to improve treatment and survival of patients with refractory CS due to AMI.

Methods: From January 2009 to October 2011 we enrolled 16 consecutive patients with AMI complicated by refractory CS. All patients were treated with primary percutaneous coronary intervention and were on maximal medical therapy and IABP. Veno-arterial ECMO has been implanted either in our department or in referring hospital either at bedside or in operating room. Data on in-hospital survival and on 6-months follow-up were collected.

Results: The mean age of the population (14 male and 2 female) was 58 ± 8 years. Out of 16 patients, 81% had an anterior AMI. Four patients (25%) were stabilized with veno-arterial ECMO in the referring hospitals and transported to our department: in all cases ECMO was instituted in the catheterization laboratory under local anesthesia. Evaluating the ECMO systems positioned in our hospital, in 7 (58.3%) awake patients were applied at bedside (either in cath lab or in intensive care unit) and in the operating room in the remaining 5 (41.7%). Average duration of ECMO support was 13 ± 12 days (range 1-46). ECMO was used as bridge to transplantation in 2 patients (12.5%), bridge to recovery in 5 patients (41.7%) and bridge to ventricular assist device in 6 patients (50%) (2 left ventricular assistance device and 4 biventricular assistance support). Three patients (18.8%) died during ECMO support secondary to multi-organ failure. Thirty-day overall survival after ECMO removal was 68.8% (11/16 pts). Eight patients (50%) were discharged from the hospital, with a 100% survival at 6-months follow-up.

Conclusion: In our experience the use of ECMO as bridge to decision, significantly improved the outcome of refractory cardiogenic shock patients, greatly reducing the expected mortality both in-hospital and on 6-months follow-up, compared with current data available by the Literature.

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Troponin level and outcome in acute heart failure

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Cardiac troponin provides diagnostic and prognostic information in acute coronary syndromes, but its role in acute decompensate heart failure is unclear.

The purpose of our study was to describe the association between elevated cardiac troponin levels and adverse events in hospitalized patients with acute decompensate heart failure.

Methods: We examined 242 consecutive patients with acute decompensate heart failure, hospitalized in our clinic between 01.01.2010 - 01.07.2010.Entry criteria included a troponin level that was obtained at the time of hospitalization in patients with a serum creatinine level of less than 2, 0 mg/dl (177 μmol per liter). A positive troponin test was defined as a cardiac troponin T level of 0.1 ng/ml or higher. Were used to compare Student t test and chi square and P values < 0.05 were considered significant.

Results: Troponin T was measured at the time of admission in all of 242 patients who were hospitalized for acute decompensate heart failure. Of these patients, 206 (85, 12%) had a creatinine level of less than 2, 0 mg/dl. From these (with serum creatinine bellow 2, 0 mg/dl), 47 patients (22, 81%) were positive for troponin. Patients who were positive for troponin had higher 30 days mortality (10, 63% vs. 3, 14%, $P < 0.001$) than those who were negative for troponin. Also, these patients (with elevated troponin) had lower systolic blood pressure on admission and a lower ejection fraction than those with normal troponin.

Conclusions: In patients with acute decompensate heart failure, a positive cardiac troponin test at admission is associated with higher short term mortality and worse outcome. Thus, a parameter easily determinable (troponin T) can be used in the initial evaluation of severity of acute heart failure and to select the best management for this.

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Predictors of in-hospital mortality among patients with acute myocardial infarction complicated by cardiogenic shock and treated invasively.

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Background: Cardiogenic shock is the most significant predictor of in-hospital mortality among patients with acute myocardial infarction. However, little data exist

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determining predictors deteriorating prognosis of patients suffering from acute myocardial infarction complicated by cardiogenic shock. Although using of invasive revascularization, especially percutaneous coronary interventions permitted to reduce in-hospital mortality in this group of patients, it still stays continuosly on high level of 50%.

Methods: We retrospectively reviewed medical records of 298 consecutive patients with acute myocardial infarction complicated by cardiogenic shock and treated invasively in 1st Department of Cardiology in Silesian Center for Heart Diseases in Zabrze in years 2000-2007.This group was devided into two subgroups: AMI-CS-nS with 137 patients who died during hospitalization and AMI-CS-S with 161 patients who survived and were discharged from hospital. The patients who died (subgroup AMI-CS-nS) were significantly older, more often suffered from diabetes mellitus, impaired renal function, myocardial infarction in the past, unsuccessful PCI procedure in infarct related artery and lower LVEF assessed usually on 5th day after admission.

Results: The in-hospital mortality in the whole group of patients with acute myocardial infarction complicated by cardiogenic shock and treated invasively was 46.0%. Multivariate Cox regression model was used and five predictors of in-hospital death were determined. Results are shown in table.

Conclusions: Predictors of in-hospital mortality among patients with acute myocardial infarction complicated by cardiogenic shock are: low left ventricle ejection fraction (LVEF), impaired renal function (IRF) at admission, unsuccessful PCI procedure in infarct related artery (IRA), incomplete revascularization (ICRV) of myocardium and Cx as infarct related artery.

Table 1.

	HR (95% CI)	p
LVEF < 35%	2, 14 (1, 93-2, 35)	< 0, 001
IRF przy przyjęciu	2, 12 (1, 91-2, 33)	< 0, 001
Nieskuteczna PCI w IRA	2, 04 (1, 84-2, 24)	< 0, 001
Cx-IRA	1, 75 (1, 50-2, 00)	< 0, 05
Niepełna rewaskularyzacja	1, 69 (1, 46-1, 92)	< 0, 05

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Routine upfront abciximab versus standard periprocedural therapy in mechanically ventilated cardiogenic shock patients undergoing primary PCI: retrospective subanalysis of PRAGUE -7 study.

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Purpose: The clinical outcome of myocardial infarction (MI) patients complicated by cardiogenic shock (CS) and requiring mechanical ventilation (MV) is poor. The aim of this study was to analyse the impact of abciximab administration in this high risk population of MI patients.

Methods: This study is the retrospective subanalysis of multicentre randomized PRAGUE-7 study, which included 80 MI patients in CS undergoing primary PCI. Patients were randomized into group A (routine upfront preprocedural abciximab bolus followed by 12-h abciximab infusion) and group B (standard therapy including heparin, aspirin and clopidogrel) Our subanalysis included 37 patients requiring MV. Seventeen of them were in group A (age 63 ± 15 years) and 20 in group B (age 67 ± 9 years). We assessed primary endpoint (death/stroke/reinfarction/new severe renal failure) at 30 days, procedural success (TIMI flow) and frequency of (1) major and (2) minor and minimal bleeding in both groups. Chi-Square test was used for statistical analysis. $P < 0.05$ was considered as statistically significant.

Results: The primary endpoint occurred in 9 (53%) patients in group A and 12 (60 %) patients in group B ($p = 0.66$). TIMI flow after primary PCI was higher in group A (2.75 vs. 2.31; $p < 0.05$) Major bleeding occurred in 12% (A) versus 10% (B), $p = 0.86$. Minor and minimal bleeding was more frequent in group A (29% vs. 5%, $p < 0.05$).

Conclusion: Our results suggest that routine upfront abciximab administration before primary PCI in mechanically ventilated patients with cardiogenic shock may be associated with better angiographic results but also with higher incidence of bleeding.

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Cystatine C in patients with acute heart failure: a morbi-mortality predictor.

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Introduction: The prognosis of heart failure patients has improved considerably over the last decade. Nevertheless, heart failure still carries a high risk of mortality which can beas high as 10% per year according to recent clinical trials. Earlyidentification of high risk patients may facilitate the timely planning ofadvanced treatment choices.

Although severalindependent prognostic variables have been identified, the prognosticperformance of single variables is weak as heart failure is a veryheterogeneous disease.

Aim: We sought toevaluate cystatin C as a predictor of mortality and/ or readmission in personswith acute heart failure (AHF) and to compare it with other biomarkers.

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Methods: Cystatin C, urea nitrogen, creatinine, and N-terminal proBNP-type natriuretic peptide levels were measured on admission in 64 consecutive patients with AHF. The primary end point was all-cause mortalityand/or readmission at 4 months.

Results: The averageage was 62 years. The median of cystatin C concentration was 1.42 mg/L (IQR 0.85-2.68). A positive correlation was foundbetween cystatin C and age > 50 years (1.49 ± 0.37 vs 1.15 ± 0.26; $p = 0.003$), BMI ($p = 0.047$), hypertension (1.52 ± 0.39 vs 1.29 ± 0.32;$p = 0.018$), the Log of NT-proBNP ($p = 0.005$-$r = 0.423$) and the conventional measures of kidneyfunction (urea nitrogen and serum level of creatinine with respectively $r = 0.710$and $r = 0.727$). Cystatine C seems to be more sensitive and specific than serumlevel of creatinine in the detection ofmild renal impairment with an area under the curve respectively 0.75 and 0.61.

During thefollow-up time, 10 patients (15, 62%) died and 30 patients (46, 87%) requiredre-hospitalization.

Cystatine C and creatinineappear to be the most predictive factors of mortality ($p < 0.0001$) and heart failure readmission (respectively $p < 0.0001$ and $p = 0.013$).

We dividedall the population study by tertiles according to the serum level of cystatineC and NT-proBNP, we found that the prevalence of mortality and heart failurereadmission has grown by 3.35 passing from the first tertile to the third.

Conclusion: Cystatine Cappears to be one of the strongest prognostic aids to predict mortality andheart failure readmission, this biomarker value becomes even more importantwhen combined with the others (creatinine, NT-proBNP, troponine. . .).

Therefore amulti-biomarker approach seems to be a reasonable method to intensify thesensivity of a single biomarker used alone.

Arrhythmias

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Left atrium assessment in the evaluation of thromboembolic risk, what is the best method?

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Purpose: Left atrium (LA) enlargement seems to be a predictor of thromboembolic risk (TR) in atrial fibrillation (AF). Most of the available data is derived from studies using outdated and inadequate methods for LA measurement and the best parameter to assess it is not fully established. Surrogate markers of TR assessed by transesophageal echocardiography (TEE) have been known for long. This study aims to evaluate the best LA measuring method for prediction of TR.

Methods: Cross sectional study of 533 consecutive patients (P) with non-valvular AF (67.3% men, 68 ± 10 years, CHADS2 2.2 ± 1.2, CHA2DS2-VASC 3.7 ± 1.7) who underwent transthoracic echocardiography (TTE) and TEE. The following LA measurements were assessed by TTE, indexed to the body surface area: LA area by planimetry from the apical 4-chamber view (A4C) and apical 2-chamber view (A2C), LA volumes obtained from the single plane area-length (V1P), the biplane area-length (V2P) and the ellipsoid method (Vel). ROC curve analysis was performed to evaluate the acuity of the different LA measurements in predicting the following TR markers identified by TEE: thrombus in the left atrial appendage (LAA), grade of spontaneous echo contrast (SEC) ≥ 3 and LAA blood flow emptying velocity < 20 cm/s (EV < 20).

Results: The diagnostic accuracy of different LA measures for predicting TEE changes are presented in Table 1.The two best methods were A4C and V1P, and no significant differences were found between them (LAA thrombus: 0.021, pns; SEC ≥ 3: 0.015, pns; EV < 20: 0.046, pns).

Conclusions: LA measurements performed by TTE were good predictors of the TEE changes, with a better diagnostic performance for A4C and V1P. Cut-off values with $\geq$ 95% specificity for TEE changes may be an easier and more comfortable way to identify AF patients with high TR.

LA measure	LAA thrombus (AUC; 95%CI; p) (≥95% specificity value)	SEC≥3 (AUC; 95%CI; p) (≥95% specificity value)	EV<20 (AUC; 95%CI; p) (≥95% specificity value)
A4C	0.719; 0.65-0.78; <0.001 ≥22.9cm²/m²	0.692; 0.64-0.75; <0.001 ≥21.3cm²/m²	0.733; 0.66-0.81; <0.001 ≥20.3cm²/m²
A2C	0.688; 0.58-0.8; 0.001 ≥22.1cm²/m²	0.606; 0.52-0.69; 0.013 ≥21.1cm²/m²	0.706; 0.61-0.8; <0.001 ≥19.7cm²/m²
V2P	0.698; 0.61-0.79; 0.001 ≥103.5cm²/m²	0.645; 0.57-0.72; 0.001 ≥97.2cm²/m²	0.716; 0.62-0.81; <0.001 ≥85.5cm²/m²
V1P	0.716; 0.64-0.79; <0.001 ≥114.2cm²/m²	0.683; 0.62-0.75; <0.001 ≥106.7cm²/m²	0.717; 0.64-0.8; <0.001 ≥98.1cm²/m²
Vel	0.653; 0.56-0.74; 0.004 ≥68.2cm²/m²	0.634; 0.56-0.71; 0.001 ≥68.2cm²/m²	0.690; 0.61-0.77; <0.001 ≥66.1cm²/m²

Table 1: Results from ROC curve evaluation of LA measures in predicting TEE changes.

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Ventricular tachycardia in the coronary care unit. Epidemiology and results of catheter ablation program

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Purpose: ablation of ventricular tachycardia (VT) has become more frequent in parallel to increasing number of Coronary Care Units (CCU), the implantable cardioverter defibrillators (ICDs) and advances in the treatment of heart failure. The effectiveness of the technique varies greatly depending on the different VT substrates and the group experience. Our objective was to analyze our experience with VT ablation.

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Methods: prospective analysis of 25 patients admitted to CCU and underwent VT ablation. We collected existente of structural heart disease (SHD) and ICD and treatment of patients. All studies were performed using non-fluoroscopic navigation system. We analyzed the mean time of fluoroscopy and the effectiveness of the procedure and complications. Patients were divided into two groups depending on whether the TV was associated or not with SHD.

Results: the mean age was 53 ± 17.6 years, with a median of 57 years and a percentage of men 68%. VT ablation accounted for 17% of total annual ablation. VT was induced in 88% and the remaining 12% was ablated substrate. 52% of patients had non SHD VT (13 cases). The other 48% had SHD TV, specially scar/chronic infarction VT (10 cases -84% -). The overall success rate was 68% and there were no fatal complications related to the procedure. Along the follow up we registred a death from unknown cause. The results are shown in the table.

Conclusions: VT ablation procedure showed efficacy and complication rates quite acceptable, with the exception of the group of VT associated with chronic infarction (50% efficacy). The experience is essential to improve the effectiveness of this technique.

Table 1. VT ablation and SHD

	Non SHD VT			SHD VT		
Etiology	RVOT-LVOT	Fascicular	Perimitral	ARVD	Prior MI	NICM
Incidence	77% -10-	15% -2-	8% -1-	8% -1-	84% -10-	8% -1-
ICD	10% -1-	0%	0%	100% -1-	50% -5-	0%
Several VTs	0%	0%	0%	0%	30% -3-	0%
Fluoroscopy	86 min.	43 min.	65 min.	142 min.	117 min.	42 min.
Efficacy	90%	100%	100%	100%	50%	100%
Complications	0%	0%	0%	0%	17% -2-	0%

RVOT: Right Ventricular Output Tachycardia; LVOT: Left Ventricular Output Tachycardia; ARVD: Arrhythmogenic Right Ventricular Dysplasia; MI: Myocardial Infarction; NICM: Non-Ischaemic Cardiomiopathy.

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Effect of acute allergic reaction on corrected QT dispersion and P wave dispersion

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Introduction: Acute allergy patient has been noted that histaminesand leukotriens could affects coronary vessels associated with mast cell activation in allergic reactions. Therefore, we think that they can also impact heart functions and causeelectrocardiographic changes. These, in turn, bring about an increase in QTcD corrected after inappropriate diffusion of ventricularrepolarization caused by various physiopathological changes in the myocardium, aswell as an increase in PWD resulting from electricalheterogeneity and instability in atrial conduction. The aim of the presentstudy is to examine whether there is a correlation between QTcD and PWD in the caseof acute allergy which is thought to have negative effects on ischemic andventricular functions.

Methods: The study registered a total of 80 type 1 allergic reaction patiens, (n = 50; F = 26, M = 24) and control group (n = 30; F = 15, M = 15). ECGof both groups were recorded during the disease and (5 days) after recovery to calculate PWD and QTcD.

Results: Pmax and PWD were found significantly elevated in the patient group, relative to thecontrol group. Similarly, QTc max and QTcD weresignificantly higher in the patient group than in the control group (Table 1).

Conclusion: Acute allergic cases are known to be at risk for atrial and ventricular arrhythmias. However, it is not possible to anticipatewhich patients are at greater risk. Still, elevated PWD as anon-invasive marker of electrical heterogeneity and instability in atrialconduction and increased QTcD which is closely related with malignantventricular arrhythmias and cardiac death can help to predict those patients. The increase in PWD and QTcD in our study has shown that they present a usefull method to anticipate those acute allergic patients who are at risk for arrhythmia.

Table.

	Patients group	Controls group	P value
P max (ms)	104,87±14,8	96,3±18,6	p=0.028
P min (ms)	64,4±12,1	64,6±11,6	p=0.92
PWD (msn)	40,4±13,5	31,6±12,3	p=0.005
QTc max (ms)	441,2±35,8	414±31,3	p=0.001
QTc min (ms)	387,8±31,3	376±30,6	p=0.10
QTc D (ms)	53,4±19,8	38±15,1	p<0.001

Biomarkers

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Early diagnosis of acute myocardial infarction in women: diagnostic and prognostic performance of cardiac troponin, copeptin, alone and in combination

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Background: Concerns have been raised about possible gender disparities in cardiac investigations and/or outcome. This study sought to examine and compare the diagnostic and prognostic performance of selected cardiac biomarkers in women versus men.

Methods: In a prospective, multicenter cohort of patient with acute chest pain, conventional troponin (cTnT, 4th generation) and copeptin were measured at presentation.

Results: Out of 1247 patients, 420 were women and 827 were men. The adjudicated final diagnosis was acute myocardial infarction (AMI) in 198 (15.9%) patients (14.5% in women versus 16.6% in men, $p = 0.351$), unstable angina in 174 (14.0%) patients, cardiac but non-coronary cause in 162 patients (13.0%), non-cardiac cause of chest pain in 603 patients (48.4%) and remained of unknown origin in 110 patients (8.8%). Among the total cohort, there was no significant difference in cTnT concentrations (0.01 ug/l [0.01-0.01] versus 0.01 ug/l [0.01-0.01], $p = 0.245$) whereas copeptin levels were lower in women versus men (5.1 [2.9-15.8] pmol/L versus 7.7 pmol/L [4.1-16.0] pmol/L, $p = 0.001$). Area under the ROC curve (AUC) for the diagnosis of AMI in women was 0.90 (95% confidence interval [CI], 0.84-0.96) for cTnT alone and 0.96 (95% CI [0.94-0.98]) when combined with copetin ($p < 0.001$); no difference in AUC exists between women and men. AUCs for 1-year mortality was 0.69 (0.56-0.82) for cTnT, and 0.88 (0.82-0.93) for copeptin in women, which did not statistically differ from what observed in men.

Conclusion: CTnT and copeptin perfomed at least as well in women as in men. The combination of cTnT and copeptin outperformed the diagnostic and prognostic performances of cTnT alone, both in women and men.

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Troponin I as a marker of minimal myocardial damage after pacemaker implantation.

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Introduction: The aim of our investigation was to determine the correlation between pacemaker implantation and minimal myocardial damage.

Aim: To determine the elevation of troponin I after the implantation of pacemaker with active lead in the correlation with dual or single chamber stimulation. We have also estimated the impact of renal insufficiency on troponin I levels.

Method: A defined group of 232 patients were indicated for the pacemaker implantation.

The values of troponin I (normal range 0-0, 06 ug/l), were stated before the implantation and repeated 6 (18) hours later. Monitored factors were fluoroscopic time, the number of attempts of pacemaker implantation (attachment to myocardium), single chamber versus dual chamber pacemaker implant and other clinical data.

Results: The mean patient age was 77, 6 ± 8, 1 years (median 79 years). Females formed 38% of the group. A total of 138 double chamber and 94 single chamber pacemakers were implanted. The average time of fluoroscopy was 40, 3 ± 25, 5 seconds (median 33, 9 s). In the whole group of patients troponin I increased from the initial 0, 03 ± 0, 07 ug/l to 0, 18 ± 0, 16 (6 hours later), $p < 0, 05$ (t-test). Higher elevation of troponin I was in the subgroup of patients with dual chamber pacemaker, $p < 0, 05$ (t-test). There were abnormal initial levels of troponin I in 18 patients from the whole group. There was also a difference in initial troponin I levels between patients without and with renal failure in the whole group of implanted patients 0, 02 vs 0, 06 ug/l, $p < 0, 05$ (t-test), but there were no differences in troponin I levels 6 hours later. Active leads were successfully attached at first attempt in the majority of cases, the correlation between serum levels of troponin after the implantation of pacemaker and fluoroscopic time in the whole group of 232 patients were not proven. (Correlation Coefficient = 0, 34).

Conclusion: Signs of myocardial damage after the pacemaker implantation is well known, the values of troponin I depends on many factors, renal insufficiency beeing one of them. This fact can be important in patients with chest pain early after implantation for a better diagnose of acute coronary syndrome, since troponin I levels can be influenced and ECG is non-diagnostic.

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High sensitive troponin assay, helpful or misleading?

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Background: Cardiac Troponin is considered a specific and sensitive marker for the diagnosis of acute coronary syndrome (ACS). In the last years, a high sensitive Troponin-T kit (HSTT) allows detection of very low levels of troponin, thus increasing test sensitivity. Nevertheless this test might detect elevated troponin in patients without ACS.

Aim: To evaluate the effect of the utilization of HSTT on the diagnostic accuracy of ACS.

Methods: We assessed all consecutive patients with low positive HSTT levels (0.03-0.1ng/ml) during one month (8/9/2010-8/10/2010). Demographic and clinical data were collected and death at 1-year follow up was recorded. The main complaints on admission and final diagnoses on discharge for each patient were re-evaluated from computerized

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medical records. Positive predictive value (PPV) for ACS diagnosis was calculated.

Results: During the study period 302 low positive HSTT results were found in 179 patients. Mean age was 75.6 years, 102 (57%) were males, 47% had history of CAD and 66.6% had renal failure. Only 43 (24%) patients were admitted because of chest pain and no more than 24 had a final diagnosis of ACS, making the PPV of HSTT for the diagnosis of ACS only 0.13.In patients with chest pain the PPV of HSTT was 0.4 while in patients without chest pain the PPV was as low as 0.05! One year mortality in the study group was relatively high (35.5%), with no significant difference between patients with or without ACS.

Conclusion: The implementation of the high sensitive troponin assay results in high rate of positive troponin without evidence of ACS. The predictive value of low positive HSTT for the diagnosis of ACS is very low, particularly in patients who do not complain of chest pain. Low positive HSTT (< 0.1ng/ml) might be misleading and clinicians should avoid using it as a screening tool when clinical presentation is not suggestive of ACS.

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Hemodynamic cardiac stress induced myocardial ischemia as detected by the release of cardiac biomarkers; Cardiac troponin T, CK-MB and myoglobin.

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Background: It is unknown whether hemodynamic cardiac stress leads to a differential release of the markers of cardiomyocyte injury commonly used in the diagnosis of acute myocardial infarction.

Methods: In an observational international multicenter study, we enrolled 831 unselected acute chest pain patients presenting to the emergency department. The final diagnosis was adjudicated by two independent cardiologists. Hemodynamic cardiac stress was quantified by measuring levels of B-type natriuretic peptides (BNP). Spearman's rho correlation was used to analyze the correlations between BNP and high-sensitive cardiac troponin T, cTnI-ultra, CK-MB and Myoglobin. Patients were categorized according to BNP tertiles (1st tertile ≤ 38 pg/ml, 2nd tertile 38.01 – 132 pg/ml, 3rd tertile ≥ 132.01 pg/ml).

Results: 136 (16%) patients had acute myocardial Infarction (AMI). There was a significant positive pair-wise correlation between BNP and the four markers of cardiomyocyte injury among all patients ($p < 0.001$ for each). However among patients diagnosed with non-cardiac cause of chest pain patients (n = 385) or when adjusting according to final diagnosis, hs-cTnT, cTnI-ultra and Myoglobin had significant positive correlations with BNP ($p < 0.05$), but CK-MB did not. A similar pattern of stronger correlation between BNP and a) hs-cTnT, cTnI-ultra and b) Myoglobin as compared to that with CK-MB was also observed within the higher BNP tertile range. There was no significant correlation with any cardiac biomarker and BNP within the 1st BNP tertile group.

Conclusion: Hemodynamic cardiac stress, as quantified by BNP, is a common cause of myocardial injury, which is more closely reflected by concentrations of hs-cTnT, cTnI-ultra and Myoglobin than CK-MB.

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The influence of different types of reperfusion strategy on the activity of the proteolysis in patients with acute coronary syndrome

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Purpose: to assess the activity of matrix metaloproteinases and it's inhibitor TIMP1 content in ACS pts with ST elevation in dependence of type of reperfusion strategy.

Methods: We investigated the serial changes of intracoronary and venous serum MMP-9, MMP-2 activity (gelatin-zymography; referent value—100% from normal subjects plasma pool) and TIMP1 (Millipore TIMP-1 immunoassay kit) levels in 358 samples from 122 ACS pts, 35pts treated with primary PCI and 87 TL pts. Samples were taken before and after procedure and at 7thday after key event. Statistic data are presented like: median (M) (25%; 75% percentiles).

Results: The MMP-9 activity was greatly increased in all ACS pts M = 237 (147; 420) both intracoronary and in systemic blood before and abruptly decreased after PCI and nearly normalized at discharge M = 140 (84; 286), p = 0, 028 (for intracoronary p = 0, 007; systemic blood p = 0, 021), the same but mild changes MMP-9 activity were observed after TLT, M = 159 (134; 278), p = 0, 045.TIMP1 levels were moderately increased in all pts (M1 = 92, 5, M2 = 84, 0; normal value = 68 ± 13 ng/ml) without concomitant MMP-2 activity changes (M1 = 189, 5%, M2 = 178, 5; p = 0, 097) and high decrease of MMP-9/MMP-2 activity interrelation (M1 = 1, 84, M2 = 0, 6; p = 0, 007). Negative correlation of TIMP1 blood content in Spearman test (-0, 56; p = 0, 002) with MMP-9 activity was revealed. Conclusions: increase of the activity of proteolysis is observed because of local and systemic matrix degradation with high level of MMP 9, 2 activity despite simultaneously high levels of TIMP1 content in the serum in all ACS pts. Uncomplicated PCI immediately decreases MMP-9 activity after procedure unlike TLT leading to

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lower risk of further pathologic ventricular and vascular remodelling.

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High-sensitivity cardiac troponin T and N-terminal pro-brain natriuretic peptide in the assessment of patients with high clinical probability of non-ST segment elevation acute coronary syndrome

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Purpose: To analyze the utility of multimarker diagnosis of non-ST-segment-elevation myocardial infarction (NSTEMI) by concomitant cardiac high-sensitivity troponin T (hs-cTnT) and N-terminal pro-brain natriuretic peptide (NT-proBNP) testing, in patients with high clinical probability of non-ST-segment-elevation acute coronary syndrome (NSTE-ACS) initially negative for the standard fourth-generation assay of cardiac troponin T (cTnT).

Methods: Prospective study of 67 patients, 34 (50.74%) men, mean age 60.73 ± 16.06, with high-risk symptoms of NSTE-ACS and initial cTnT levels < 0.01 ng/mL, hospitalized in a time-interval < 4 hours after the symptoms onset. Plasma cTnT, hs-cTnT and NT-proBNP were measured by electrochemiluminescence on admission, then 3 and 6 hours afterwards. NSTEMI was considered at plasma hs-cTnT levels ≥ the the 99th-percentile cut-off (0.014 ng/mL), and a ≥ 20% dynamic variation within 6 hours. Clinical, echocardiographic and biological data excluded aortic dissection, pulmonary embolism, left ventricular hypertrophy, myocarditis, renal dysfunction and obesity. Study protocol was approved by the local Ethics Committee and each patient enrolled signed an informed consent. Statistics: MedCalc 12.2.1.0.

Results: NSTEMI was diagnosed within the cTnT "blind interval" in 18 (34.61%) additional patients with high-risk symptoms of NSTE-ACS using a combination of hs-cTnT plasma levels ≥ 0.014 ng/mL and a ≥ 20% 6-hours hs-cTnT dynamic plasmatic variation testing. The aria under the receiver operating characteristic (AUC) for NT-proBNP in diagnosing NSTEMI was 0.65 (95% Confidence Interval C. I. = 0.52-0.76), P = 0.0329. The optimal cut-off NT-proBNP plasma level for the diagnosis of NSTEMI on the ROC curve was 206.20 pg/mL, with a sensitivity of 70.37 (95% C. I. : 49.80-86.20) and a specificity of 62.50 (95% C. I. : 45.80-77.30), a positive predictive value of 55.90 (95% C. I. : 37.90-72.80) and a negative predictive value of 75.8 (95% C. I. : 57.70-88.90).

Conclusion: A multimarker strategy using hs-cTnT and NT-proBNP testing on admission in the early diagnosis of NSTEMI in patients with high clinical probability of acute coronary syndrome showed only an additional value of NT-proBNP testing.

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Interactions of Apolipoprotein B, Apolipoprotein B/Apolipoprotein A1 ratio, hs -C-reactive protein and some components of metabolic syndrome - Prospective study

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The aim of this study is to evaluate the interactions between apolipoprotein B /apoB/, apolipoprotein B/apolipoprotein A1 /apoB/apoA1/, high `sensitivity C-reactive protein /hs-CRP/ and some of the components of the metabolic syndrome, as well as the risk of its appearance in healthy people. The research was conducted among 500 clinical healthy people (201 men and 299 women) from Pleven region. The frequency of the MetS in our study is 32, 6% in men and 26, 7% in women. The levels of ApoB [hazard ratio (HR 0, 48, 95% CI 0, 27-0, 85) and Total Cholesterol (HR 1, 17; 95% CI 1, 02-1, 34) are significantly related to components of MetS, whereas the relation of HDL-C (HR 0, 68, 95% CI 0, 45-1, 05) with the metabolic factors is borderline significant. The associations between the ratios: apoB/apoA1 and TC/HDL-C are: apoB/apoA1- HR 2, 14; 95% CI 1, 11-4, 10 and TC/HDL-C - HR 2, 09, 95% CI 1, 04-4, 19 respectively. ApoB, apoB/apoA1 and hs-CRP are independent risk factors of MetS. In this study we evaluate the mechanisms, which are basic for the interaction between apoB, apoB/apoA1, hs-CRP and some components of the MetS.

Table 1. Parameters of subjects with MetS

Parameters	Total mean ± SE	Men (n = 66) mean ± SE	Women (n = 80) mean ± SE	p
Age mean	46 ± 19	45 ± 19	47 ± 19	< 0, 001
Waist circumference (cm)	92 ± 13	94 ± 12	91 ± 14	< 0, 01
Body mass index (kg/m^2)	26 ± 5	26 ± 5	26 ± 5	< 0, 001
Systolic blood pressure (mmHg)	123 ± 20	125 ± 19	122 ± 22	< 0, 001
Diastolic blood pressure (mmHg)	76 ± 12	77 ± 12	74 ± 12	< 0, 005
hsCRP (mg/l)	0, 39 ± 0, 7	0, 36 ± 0, 7	0, 43 ± 0, 7	< 0, 001
Total Cholesterol (mmol/l)	5, 4 ± 1	5, 4 ± 1	5, 4 ± 1	< 0, 02
LDL-C (mmol/l)	3, 3 ± 1	3, 4 ± 1	3, 3 ± 1	< 0, 001
HDL-C (mmol/l)	1, 4 ± 0, 4	1, 3 ± 0, 4	1, 5 ± 0, 4	< 0, 001
Triglycerides (mmol/l)	1, 7 ± 1	1, 8 ± 1	1, 5 ± 1	< 0, 001
Glucose (mmol/l)	4, 82 ± 1, 31	5, 32 ± 1, 62	5, 54 ± 1, 87	< 0, 001
TC/ HDL-C	4, 3 ± 2	4, 6 ± 2	3, 8 ± 2	< 0, 045
Apo B (g/l)	1, 03 ± 0, 3	1, 05 ± 0, 3	1, 01 ± 0, 3	< 0, 001
Apo A1 (g/l)	1, 42 ± 0, 3	1, 35 ± 0, 3	1, 50 ± 0, 3	< 0, 001
Ratio apoB/apoA1	0, 75 ± 0, 3	0, 80 ± 0, 3	0, 70 ± 0, 2	< 0, 001

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Cardiovascular disease prevention - Risk assessment and management

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Predictors of in-hospital mortality among women and men hospitalized with atrial fibrillation in Qatar: analysis from a 20-year registry (1991-2010)

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Objectives: Although predictors of mortality have been identified in major atrial fibrillation (AF) clinical trials, most of that data was limited to studies in the developed world and included mainly Caucasian patients. The aim of this study was to identify predictors of mortality in women and men hospitalized with AF in a real-world population in a Middle-Eastern Country. Methods: Retrospective analysis of prospective registry of all patients hospitalized with AF in Qatar from 1991 through 2010 was made. Gender and clinical characteristics and co-morbidities were analyzed in relation to mortality. Results: During the 20-years period; 1417 women and 2432 men were hospitalized for AF. There were 63 deaths among women and 97 among men (4.4% versus 4% P = 0.49). Age, diabetes mellitus, chronic renal impairment and cardiogenic shock are independent predictors of poor outcome among patients hospitalized with AF whereas gender was not. Conclusions: In our area, risk of in-hospital mortality for patients hospitalized with AF remains is increased in patients who are older, have chronic renal impairment, diabetes mellitus or develop cardiogenic shock irrespective of gender. These patients at high risk might benefit from aggressive monitoring and intervention in order to reduce mortality.

Table 1. Mortality Multivariate analysis

Variable	Adjusted OR	95% C. I.	P value
Patients characteristics			
Gender male	1.12	0.77 – 1.65	0.55
Age	1.04	1.02 – 1.05	0.001
Diabetes mellitus	1.52	1.03 – 2.26	0.04
Hypertension	0.86	0.58 – 1.29	0.46
Chronic renal impairment	2.09	1.18 – 3.68	0.001
Cardiogenic Shock	285	84 – 970	0.001

OR = odd ratio; C. I. = confident interval

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High level of multifocal atherosclerosis in patients with coronary artery disease: analysis of association with polymorphism of several candidate genes

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Purpose: Atherosclerosis is a multifactorial disease often affecting different territories – coronary, cerebral and arteries of lower extremities. The objective of this study was to evaluate if a polymorphism of several candidate genes were associated with the presence of carotid and peripheral atherosclerosis in 200 patients with angiographically proven coronary artery disease.

Methods: Several duplex ultrasonography (DUS) measures were used to assess the atherosclerotic process – intima-media thickening (IMT) or presence of plaques in common carotid (CCA) and femoral artery (CFA), screening for abdominal aneurysm and ankle-brachial index. PCR based genotyping was applied for angiotensin converting enzyme (ACE I/D), eNOS G894T, endothelin -1 138A I/D and matrix mettaloproteinase 3 5A/6A. In all patients (125 pts with ACS and 75 pts with stable angina pectoris) the presence and localization of coronary atherosclerosis was documented by QCA.

Results: The prevalence of multifocal atherosclerosis defined by presence of atherosclerotic plaques of carotid and peripheral arteries in DUS examination was 29.5%. The carotid and femoral IMT did not differ in relation to variations of the studied genotype (p = 0, 34 for ACE, 0, 89 for eNOS, 0, 12 for ET-1 and 0, 74 MMP3 polymorphisms). Multofocal atherosclerosis assessed by the presence of plaques was not associated with the eNOS G684T polymorphism (p = 0, 18). In opposite, the odds of MFA were 2, 57 (1, 3-4, 8, p = 0, 005) in ACE DD carriers, 1, 22 (0, 6-2, 3, p = 0, 05) in MMP3 5A5A and 2, 27 (1, 3-3, 9, p = 0, 03) in ET1 138 II carriers. In a multivariate logistic regression analysis including cardiovascular risk factors and SNPs, the combination of 2 variables ACE DD and ET-1 138 II remain significantly associated with the presence of MFA – OR 4, 47 (1, 1-7, 3, p = 0, 03).

Conclusions: Our study demonstrates a high level of multifocal atherosclerosis in patients with coronary artery disease and found associations of MFA with DD genotype of ACE and II genotype of ET-1.

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Predictors of acute cardiac mortality in older adults

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Introduction: Determination of risk factors for acute cardiac mortality is essential to develop preventive strategies. Aim of this study was to examine the risk factors in older adults living in the most populated city of Turkey.

Methods: Starting from April 2002, 1609 consecutive older patients who applied to Istanbul metropolitan municipality's

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health services were included. Acute cardiac death (ACD) was defined as "death from cardiac causes in the first hour following the onset of the symptoms". Comparison of continuous and categorical variables between the groups were done with student t and chi square tests respectively. Cox regressions followed.

Results: Mean age was 72.18.61% were female. Sole continuous variable that was related to ACD was ejection fraction, which was lower in the ACD group (40 ± 10.49 vs 56.75 ± 11.03; p = 0.014). Categorical variables which were associated with ACD are shown in Table 1.Exclusively angiotensin converting enzyme inhibitors were associated with reduced risk for ACD. Controlled by Cox regressions, none of these variables were independently associated with ACD.

Conclusion: ACD was found to be associated with serious cardiac diseases along with alcohol use. Current alcohol consumption was not associated with ACD. Previous alcohol intake may interact with different parameters than current intake does. Multicenter studies with larger sample size are needed to explore the independent risk factors for ACD.

Table 1. Variables related to ACD in x2

	p	OR	CI lower	CI upper
Heart failure	< 0.0001	4.25	2.05	8.82
Valvular heart diseases	0.018	3.25	1.16	9.11
Atrial fibrillation	0.008	3.66	1.31	10.22
Cardiomegaly	0.001	4.35	1.63	11.6
History of alcohol intake	0.001	3.92	1.7	9.05
Coronary heart diseases	0.002	3.06	1.47	6.4
Angiotensin receptor blockers	0.044	0.164	0.022	1.22

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Long-term prognosis estimation after acute coronary syndrome: Is there a role for angiographic scores?

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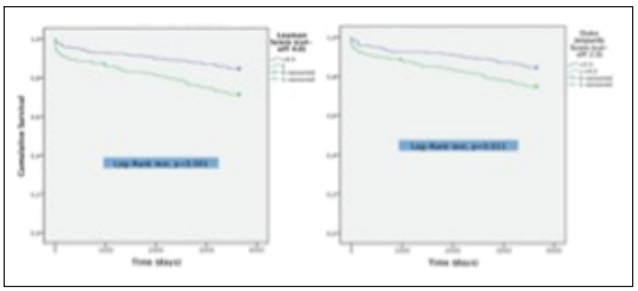
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Background: Angiographic scores are useful tools to assess the severity of coronary lesions and can provide prognostic information. We aimed to explore the association of Leaman Score (LS) and Duke Jeopardy Score (DJS) with 10-year all-cause mortality in patients (Pts) with acute coronary syndrome (ACS).

Methods: Retrospective analysis of consecutive Pts with ACS submitted to coronary angiography. Extension of coronary disease was calculated using LS and DJS. ROC curves were performed to test sensitivity and specificity of the scores for the prediction of 10-year mortality. The area under the curve (AUC) and the better discriminatory value for the occurrence of this endpoint were determined for both scores, and Kaplan-Meier analysis was used to compare Pts with LS and DJS under and above the cut-off. A multivariable Cox regression analysis was performed to test the independent association of scores with mortality.

Results: Of the 662 Pts included (mean age 62 ± 11 years, 80% male), 151 (22.8%) died. The mean values were 3.9 ± 3.0 for LS and 2.6 ± 2.0 for DJS. The AUC for LS was 0.61 (IC) and for DJS 0.58 (IC) with cut-off points of 2.0 and 4.0, respectively. Pts with LS and DJS over the cut-off presented significant increase in 10-year mortality, compared with Pts under the cut-off (Figure). Multivariable analysis revealed an independent association of LS with 10-year mortality (HR 1.06, 95% CI 1.01-1.12; p = 0.018), not shown by the DJS (HR 1.03, 95%CI 0.92-1.14; p = 0.65).

Conclusions: In this population of patients with ACS submitted to coronary angiography, both scores were associated with 10-year mortality in univariate analysis but only the Leaman score was an independent predictor of long-term mortality.



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Comparison between serum levels of retinol binding protein-4 and total thiols in generalized obesity and abdominal obesity regarding cardiovascular risks.

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Purpose: Retinol-binding protein 4 (RBP4) is an adipocyte-secreted hormone planned to link obesity with cardiovascular complications. Given that the oxidative stress, which distinguish by the overproduction of reactive oxygen species (ROS), has been concerned in the pathophysiology of obesity. We evaluated serum levels of RBP-4 and Total thiols in generalized obesity and abdominal obesity on the topic of cardiovascular risk factors.

Method: Sixty obese patients were recruited [30 generalized obese (GO) patients (22 male; mean (SD); 42.5 (8) years) measured by Body mass index (BMI). [BMI ≥ 30-34.9 kg/m2, with normal waist circumference (WC)]; and 30 abdominally obese (AO) patients [(15 male; mean

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(SD); 49.5 (5.5) years) were measured by W. C > 102 cm for men or > 88 cm for women and the WC divided by that of the hips of >0.9 for men and >0.85 for women)] compared to 20 healthy controls (HC) (14 male; mean (SD) 36.5 (6) years), serum levels of RBP-4 were measured by enzyme linked immunosorbant assay (ELISA), serum levels of total thiols (TT) were measured by colorimetric methods, plasma Glycated hemoglobin (HbA1c) were measured by high performance liquid chromatography (HPLC), fasting blood glucose (FBS), two-hour postprandial blood sugar test (2-h PPBS) and lipid biomarkers were determined as cardiovascular risk factors.

Results: Abdominal obesity had significantly higher circulating RBP4 levels in AO compared to GO and HC ($p < 0.0001$), AO patients had significantly elevated serum levels of RBP-4 [(380.4 (142.3) ng/ml] compared GO [35.9 (29.7) ng/ml; $p < 0.00.1$]. Total thiols levels had significantly lower in AO patients (56 (0.21) mmol/L) compared to GO and HC [1.16 (0.29) and 1.08 (0.24) mmol/L, $p < 0.0001$] respectively. CRP significantly elevated in AO compared to other groups ($p < 0.003$). No Significant difference between serum levels of TT in GO compared to HC (p = NS). Total serum cholesterol, triglycerides and 2PPBG increased with BMI, WC and waist hip ratio (WHR). Significant positive correlations (Spearman's rho) were evident between RBP-4 and plasma levels of HbA1c ($r = 065$; $p < 0.0001$) in AO. Significant negative correlations (Spearman's rho) were evident between RBP-4 and serum levels of TT ($r = –0.8$; $p < 0.0001$) in AO.

Conclusions: The study reveals that RBP-4 and TT are autonomously related to visceral fat accumulations and might contribute to the pathogenesis of abdominal obesity with CVD.

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CHADS2, a predictor of cardiovascular events in asymptomatic diabetic patients without atrial fibrillation

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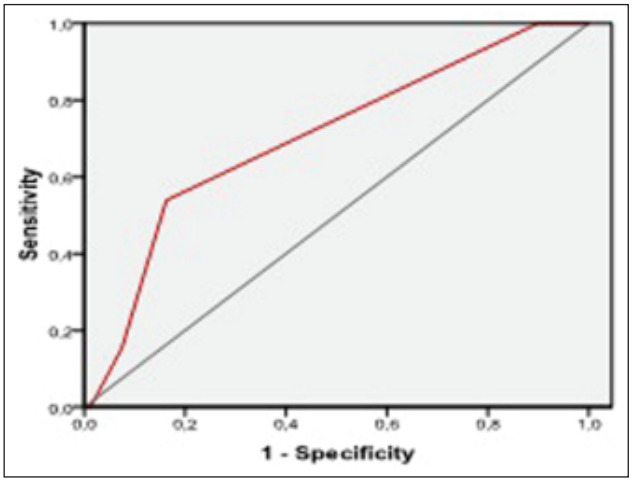
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Purpose: The CHADS2 score has an important prognostic value in atrial fibrillation (AF), and is widely used as a predictor of thromboembolic events. This study aims to evaluate the CHADS2 as a predictor of fatal and nonfatal cardiovascular events (CVev) in asymptomatic diabetics (Db) without AF.

Methods: Retrospective study of 105 consecutive asymptomatic Db (without dyspnea or chest pain) with no history of AF from our diabetes clinic: 48.6% men, 60 ± 10 years, 94.3% hypertensive, mean diabetes duration of 13 ± 9 years and hemoglobin A1c 8.2 ± 1.8%. The CHADS2 score was assessed and patients (P) were followed for 45 ± 13 months to identify CVev (CV death, acute coronary syndrome and stroke/TIA). A ROC curve analysis was performed to evaluate the CHADS2 as a CVev predictor.

Results: In this sample there was a mean CHADS2 of 2.2 ± 0.8. The prevalence of CVev during follow-up was 14.3%. On the ROC curve analysis (Figure 1) there was a clear association between CHADS2 and CVev: AUC 0.702, 95%CI 0.548 – 0.857, p = 0.020.The best threshold to predict CVev was a CHADS2 ≥2.5 with 54% sensitivity and 84% specificity. A CHADS2 ≥4.5 showed a 99% specificity for predicting CVev.

Conclusions: According to these data, the CHADS2 has high specificity for predicting CVev in asymptomatic Db without AF, suggesting its ability to identify those at higher risk, who may benefit from a closer monitoring and and an aggressive therapeutic approach.



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An IMT assessment in young persons with the burdened cerebrovascular heredity.

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Objective: The aim of the study was to compare carotid intima-media thickness (IMT) in young persons with or without burdened cerebrovascular inheritance.

Methods and Design: 84 young patients were studied. The investigated group consisted of 44 persons (22 male, 22 female, mean age 23, 3 ± 1, 8 years) whose close relatives had a stroke until 55 (for men) and 65 (for women). The comparison group consisted of 40 healthy persons (20 male, 20 female, mean age 23, 7 ± 2, 3 years) without burdened heredity. IMT was quantitatively evaluated in every

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person by ultrasonic automated border recognition technique (QIMT, MyLab Esaote) in both common carotid arteries. Distal wall thickness at a distance of 10 mm from bulb was measured.

Results: We didn't find any statistical difference in carotid artery IMT between the left and the right side in persons of investigated group (465, 4 ± 64, 3 μm and 456, 0 ± 58, 1 μm respectively, p>0, 05). Left-right side relations were the same in the comparison group (363, 9 ± 33, 0 μm and 367, 0 ± 40, 0 μmm, p>0, 05). At the same time IMT in both carotid arteries in persons with unfavorable cerebrovascular inheritance was significantly above the IMT in control group (p < 0, 0001 for left and right carotid arteries).

Conclusion: IMT in both common carotid arteries in healthy young persons with burdened cerebrovascular inheritance is more than in persons without unfavorable heredity.

Diabetic heart disease

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Admission glycosylated hemoglobin A1C test (DCCT) is better than an early oral glucose tolerance test for type 2 diabetes diagnosis in patients with first acute ST elevation myocardial infarction

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Backgroud: The diagnosis of newly diagnosed type 2 diabetes mellitus (T2D) must be confirmed no earlier than 5 days after the acute phase of ST elevation myocardial infarction (STEMI) index event by a single measurement of plasma glucose ≥11.1 mmol/L at 2 hours in an oral glucose tolerance test (OGTT). Glycosylated hemoglobin A1C is a widely used marker of chronic glycemia, reflecting average blood glucose levels over a 3-month period of time and it is recommended the use of the A1C test (DCCT) to diagnose T2D, with a threshold of ≥6.5%. The A1C has several advantages to the OGTT, including greater convenience, since fasting is not required, evidence to suggest greater preanalytical stability, and less perturbations during periods of acute stress and illness. The accurate of diagnosis and timing of new T2D especially in patient population with their first STEMI are an unmet clinical need.

Aim: Comparison of two T2D diagnostic strategies (admission A1C test vs. OGTT performed in clinically stable status no earlier than 5 days after ACS index event) in patients with first STEMI.

Patients Population and Methods: A total of 120 consecutive patients admitted to intesive cardiac care unit for first STEMI (59 anterior, 54 inferior and 7 lateral MI, admission LVEF 48 ± 8%) without any previously known glucometabolic perturbation and admission blood glucose < 11.1 mmol/L was assessed using A1C on admission and OGTT performed no earlier than 5 days after the acute phase of the ACS index event to identify patient with new T2D diagnosis.

Results: The diagnostic A1C cut point of 6.5% was present in 19% patient. 2-h plasma glucose≥11.1 mmol/L during an OGTT performed 5th day after ACS index event was present in 29% patients (p < 0.0001 for diference between A1C and OGTT). Correlation was found between OGTT 2-hour plasma glucose and hs-CRP resp. hs-cTnT (r = 0.19, p = 0.04 resp. r = 0.21, p = 0.025). No significant correlation was found between A1C and hs-CRP resp. hs-cTnT. Predictions were made with univariate models based on logistic regression first, then multivariate models were used. During multivariable regression analysis, CRP and hs-cTnT remained significant and independent predictors of T2D diagnostic OGTT test (2h plasma glucose OGTT = 7.924 + 1.079LogCRP + 0.1894hs-cTnT, p = 0.0163).

Conclusions: Patients with ACS should be investigated and informed about their glucose regulation. It is possible by means of A1C admission test, rather than OGTT within the first week after a myocardial infarction, because glucose perturbations during periods of acute stress and influence of myocardial necrosis extent.

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Acute hyperglycemia is not a predictor of contrast induced acute kidney injury

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Purpose: Acutehyperglycemia (AH) has been linked to contrast induced acute kidney injury (CI-AKI) in patients with myocardial infarction. We aimed to evaluate thepredictive value of AHG for the occurrence of CI-AKI as well as death (all-cause) during a follow-up period of 19 ± 13 (mean ± SEM) months.

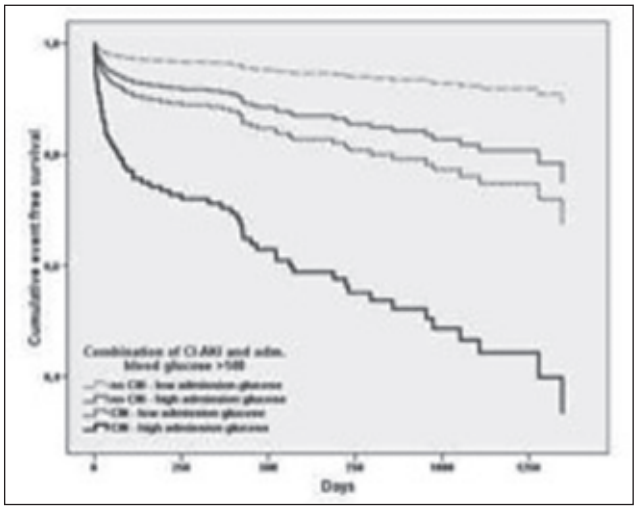
Methods: 543 consecutive patients with ACS who underwent coronary intervention wereinvestigated. AHG was defined as glucose levels>140mg/dl at admission and CI-AKI according to acute kidney injury network. Patients were dividedaccording to their admission glucose into those with normal admission glucose (NAG), acute hyperglycemia (AHG), and pre-existing diabetes (DM) groups.

Results: AHG patients were significantly older than NAG and had the lowest glomerularfiltration rate (GFR)

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(p < 0.05). AH was not a predictor for CI-AKIdevelopment in an univariate model (HR 0.89 (CI 0.49-1.61, p = 0.7). CI-AKI aswell as AH were significant predictors of all-cause mortality (HR 3.56 (CI1.98-6.38), 2.53 (1.48-4.33) respectively, p < 0.001) (Figure).

Conclusion: AH is not a predictor for development of CI-AKI. Both AH aswell as CI-AKI are predictive for all-cause mortality inpatients with ACS.



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Acute myocardial infarction in patients with diabetes mellitus: age-related differences

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Aim: To evaluate age-related differences in clinical characteristics, in-hospital outcomes and long-term prognosis of acute myocardial infarction (AMI) in type 2 diabetes mellitus (DM) patients.

Material and methods: Of 461 consecutive patients admitted to our hospital with AMI 114 DM subjects were enrolled in the study, mean age 64, 1 ± 0, 9 years, 56%men, DM duration 8, 6 ± 0, 8 years. Patients were stratified into 4 age groups (AG): I gr. (n = 6) < 50 years, II gr. (n = 49) 50 to 64 years, III gr. (n = 47) 65 to 75 years, IV gr. (n = 12) over 75 years. Risk factors profile, clinical characteristics on presentation, in-hospital outcomes and mortality during 2, 5 years follow-up were studied in relation to AG.

Results: Mean DM duration rose with increasing age (6, 8 ± 3, 7, 2 ± 1, 9, 8 ± 1, 4, 10, 8 ± 3, 4 years, respectively p < 0, 05). Distribution by sex was different in subjects below and over age 65: the proportion of women was significantly higher in older compared to younger AG (p < 0, 01). Mean BMI was >30, 0 kg/m2 irrespective of the AG. Young diabetics (< 50 years) were more often smokers (p < 0, 05), had higher cholesterol (6, 5 ± 0, 4 vs 5, 4 ± 0, 1 vs 5, 9 ± 0, 2 vs 4, 8 ± 0, 4 mmol/l, respectively p < 0, 01) and triglycerides (2, 7 ± 0, 6 vs 2, 0 ± 0, 1 vs2, 0 ± 0, 1 vs 1, 8 ± 0, 1 mmol/l, respectively p < 0, 05) levels compared to other AG. No differences in the previous myocardial infarction was found between AG, hypertension (p < 0, 05) and heart failure (p < 0, 01) prevalence increased with age. Young patients developed more frequently Q-wave AMI (p < 0, 05) compared to other AG with no differences in AMI location. Patients over 65 years were more likely to be in Killip class>2, in atrial fibrillation on admission and to develop in-hospital heart failure compared to young subjects (p < 0, 05). EF% was reduced (mean 43 ± 0, 8) with no relation to AG. Glycaemia on admission was significantly higher in patients < 50 years compared to other AG (p < 0, 01). In-hospital mortality was 16, 7%, 4, 1%, 27, 7%, 16, 7%, respectively among AG. Diabetics aged below 50 had a higher mortality compared to their nondiabetic counterparts (p < 0, 05). Long-term mortality rate showed age-related differences (0%, 23, 4%, 23, 5%, 60%, respectively p < 0, 05).

Conclusions: Diabetic patients aged below 50 with AMI were more often men, obese, smokers, hypertensive, had high cholesterol and triglycerides levels, hyperglycaemia on admission, developed Q-wave AMI, reduced EF% and had an increased risk of in-hospital death. Diabetics aged over 65 years were more likely to be women, had a severe burden of comorbidities, developed heart failure during AMI and had a poor in-hospital and long-term prognosis.

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NT-proBNP vs. HbA1c (glycosylated haemoglobin) as independent prognostic factors in diabetic patients with acute STEMI. Our experience from a 2year prospective study in Constanta County, Romania

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Background: Recent data suggest that even though diabetic patients with STEMI are at high risk, we need to further refine the risk stratification for these patients.

Aim: To search whether NT-proBNP or HbA1c is a better independent predictor for the outcome of diabetic patients with acute STEMI.

Method: NT-proBNP and HbA1c were measured within the first 24 hours of evolution in 370 consecutive diabetic

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patients admitted with acute STEMI in Constanța County Intensive Cardiac Care Unit. Patients were followed-up for 2 years. After adjusting variables (age and co-morbidities), Kaplan-Meyer survival curves were compared according to the presence of high NT-proBNP (≥120pg/ml) or high HbA1c (≥6.5%), respectively.

Results: 29.1% of studied patients (n = 108) had HbA1c≥6.5%, and 21.9% (n = 81) had NT-proBNP≥120pg/ml. High NT-proBNP level was a stronger predictor of death at 2 years (OR = 0.2336, 95%CI 0.1626-0.3355, P < 0.0001) than high HbA1c level (OR = 0.2803, 95%CI 0.088-0.8926, P = 0.0334). In patients with high NT-proBNP levels, HbA1c didn't influence survival at 2 years. In patients with NT-proBNP < 120pg/ml, Kaplan-Meyer curves shown a worse prognosis for those with HbA1c≥6.5%.

Conclusion: In our study, high NT-proBNP within the first 24 hours of STEMI evolution was a stronger independent predictor of long-term mortality than high HbA1c in diabetic patients, but intensive metabolic control is also needed to improve survival in these high-risk patients.

Invasive imaging - Cardiac catherisation and angiography

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Long-term clinical outcome of patients with acute myocardial infarction and normal coronary angiography

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Background: Despite the progress in imaging modalites coronary angiography remains gold standard for diagnosis of coronary artery disease (CAD) and acute coronary syndrome (ACS). Among patients referred to cath-lab with diagnosis of ACS exists a grup presenting symptoms of myocardial ischaemia and no criticial coronary lesions in angiography.

Aim: To assess long-term clinical outcome in patients (pts) with ACS and no significant coronary lesions.

Methods: We collected data of consecutive pts admitted to cath-lab between 2004 and 2011 with diagnosis of ACS and coronary angiography considered as normal or near-normal (lesions under 50% of stenosis assessed visually). We included the patients with final daignosis of ST-segment elevation (STEMI) and Non-ST-segment elevation acute myocardial infarction (NSTEMI), after exclusion of other morbidities causing chest pain, ST-segment deviation or troponin elevation. We analyzed demographic data including CAD risk factors, angiographic, electrocardiographic and laboratory tests results. During long-term follow-up all-cause mortality rate and hospitalization for cardiovascular reasons were assessed.

Results: In the period 2004-2011, 8233 coronary patients were admitted to cath-lab with diagnosis of acute myocardial infarction. Among them, 265 (3.2%) had normal or near normal coronary angiography. One hundred forty three patients were females, mean age 61.4 ± 10.5 years. Mean left ventricular ejection fraction was 51.6 ± 9.4%. Prevalence of CAD risk factors was: former or present smokers 70.9%, hypertension 62.2%, hypercholesterolemia 46.0%, diabetes mellitus 13.4%. Absolutely normal coronary arteries was found in 54.4% of patients. During mean follow-up of 4.5 years (range 6 months - 7 years) all-cause mortality rate was 8.3%, cardiovascular mortality rate was 6.0%, repeat hospitalization for cardiovascular reasons 24.9%. During follow-up period 40% of patients were withdrawn acetylsalicylic acid, 69.8% - ACE-I or statins.

Conclusions: During the long-term follow-up patients with AMI and no significant coronary lesions have relatively high rate of adverse events. They are often rehospitalized for cardiovascular reasons and are not receiving therapy directed at antiplatelet and anti-atherosclerotic agents.

Non invasive imaging - Echocardiography, CMR, CT and nuclear techniques

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Intraoperative high-frequency epicardial ultrasound in off-pump coronary bypass surgery

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Objectives: We evaluated the usefulness of intraoperative high-frequency epicardial ultrasound (ECUS) in off-pump coronary bypass surgery.

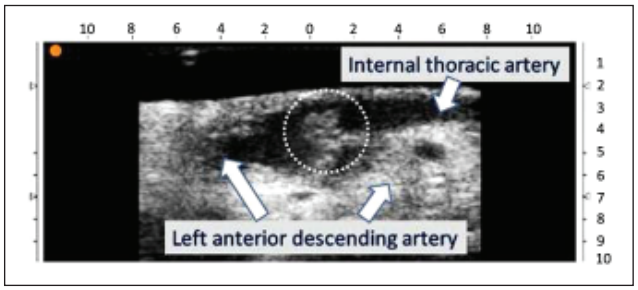
Methods: In 89 consecutive patients undergoing isolated coronary bypass surgery between June 2010 and June 2011, ECUS was used to locate the target vessels, to select the optimal anastomotic sites, and to assess the quality of the distal anastomoses. These patients consisted of 72 males and 17 females with a mean age of 67.9 ± 10.9 years, and emergent operations were performed in 24 patients (including 15 patients with intra-aortic balloon pumping preoperatively).

Results: Complete revascularization was achieved in all patients using the off-pump technique without emergent conversion to cardiopulmonary bypass during operation. In 14 patients (15.7%), ECUS successfully located a coronary artery which was deeply embedded in the epicardial and/or myocardial tissue. For quality assessment of 314

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distal anastomoses, ECUS detected an abnormality requiring revision in one anastomosis. In this case, a mobile mass was identified in the lumen of the internal thoracic artery grafted to the left anterior descending artery despite excellent graft flow and low pulsatile index measured by a transit-time flow meter (Figure). No graft occlusion was detected by coronary CT angiography on postoperative day 7 to 14.There was no perioperative myocardial infarction and no 30-day mortality.

Conclusion: ECUS is an easy and noninvasive tool to provide important information intraoperatively in off-pump coronary bypass surgery.



Mobile Mass Detected by ECUS

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Determinants of poor left ventricular function in patients with acute myocardial infarction referred for primary percutaneous coronary intervention

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Background: low left ventricular ejection fraction (LVEF) during acute ST- segment elevation myocardial infarction (STEMI) is one of the strongest predictor of poor outcome after primary percutaneous coronary interventions (PCI), but determinants of LVEF before PCI still remained unclear.

Objective: to assess the relationship of different clinical, echocardiographic and angiographic variables with LVEF in pts with STEMI scheduled for primary PCI

Methods: we evaluated 233 (173 male, mean age 58 ± 10 years) patients presented with STEMI who all underwent clinical and echocardiographic examination before primary PCI. We investigated the relationship of clinical, echocardiographic and angiographic variables with LVEF before

Results: among pts with STEMI severely depressed LVEF (< 35%) was present 15 (6%) of pts before PCI. Echocardiographic examination showed that this group of pts had increased LV end systolic dimensions ($p = 0.019$), LV end-diastolic and end-systolic volume indexes ($p = 0.029$, $p = 0.001$), increased WMSI ($p < 0.0001$), increased myocardial performance index ($p < 0.0001$) and lower mitral E wave deceleration time ($p < 0.0001$). However, strong correlation with LVEF before PCI showed: ischemic chest pain duration before PCI ($p = 0.001$), history of previous angina pectoris ($p = 0.031$), previous AMI ($p = 0.036$), localization of index STEMI ($p < 0.0001$), infarct related coronary artery ($p < 0.0001$) and WMSI before PCI ($p < 0.0001$).

Conclusion: LVEF in pts with STEMI is strongly influenced by duration of chest pain before PCI, presence of previous coronary artery disease (angina or MI), and amount of dysfunctional myocardium defined by WMSI, infarct related artery and localization of STEMI.

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Evaluation of CT angiography service in a district general hospital in the United Kingdom.

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Introduction: CT Coronary angiography (CTA) is non-invasive diagnostic tool which can be available even in the DGH with minimal additional expertise and manpower. CTA is recommended by ESC in the work up of CAD in low-intermediate risk group. This is a retrospective study of pts undergoing CTA to assess the diagnostic accuracy, referral pattern and safety.

Methods: All CTAs between June-2010 and Mar-2011 were analysed. Data was collected from the radiology reporting system, invasive coronary angiography (ICA) database and medical notes. CTA were reported either by Radiologist or dually by a Cardiologist and radiologist. Information was collected on age, sex, BMI, HR and rhythm at clinic assessment and at the time of CTA, medication used to control HR, total radiation dose, radiographic findings at CTA and outcome of any additional cardiac investigations (Ix) that was recommended as a result of CTA (MPS, DSE or ICA).

Results: 63 pts underwent CTA in the study period of 10 months. This is a significant increase from the previous study (51 pts over 20 months). Pt characteristics: Mean age - 58 ± 13 yrs, and F:M - 68%:32%, mean BMI - 28 ± 6, HR at assessment - 70 ± 12 and HR at CTA - 60 ± 10, and 93% pts were in SR. 64% pts were on B-blockers, 13% on Ivabradine, 4% on CCB, 8% on no drugs and no documentation in 13%. 76% pts had CTA that showed either normal coronary arteries (NCA) or minor CAD. The mean

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Agatston score (AS) was 30 ± 93 and mode '0'. 16 pts with abnormal CTA i. e. more than mild CAD with mean AS 336 ± 350.12.5% had prior MPS and 71% had further ICA. Of these, 25% had NCA and CTA findings correlated with the remaining. Overall, 48% had an AS of '0'.

Calcium scoring (CS): 10% pts with CS '0', 31% pts with CS 1-400 and 40% pts with CS >400 had ICA. Interestingly 40% pts with CS >400 were managed medically. Functional imaging was used in a handful of pts. Only 8% CTAs were reported by the radiologist alone and the rest dually. Radiation doses have fallen (4.52 ± 2.29mSv vs. 6.64 ± 3.22 mSv during Oct 2008–May 2010).

Conclusion: CTA service has made an excellent progress and is likely to expand. 75% pts referred for CTA were successfully reassured without having further ICA i. e. the diagnostic accuracy and the belief in the system has enhanced leading to a fall in inappropriate referrals for further testing.

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Long term predictive value of preoperative dipiridamol stress echo in severe vascular disease

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Perioperative cardiovascular complications are an important cause of post-surgical morbilityandmortality in patients undergoing major vascular surgery. Dipiridamolstress echo is considered one of the methods of choice in the detection of coronary artery disease in this subgroup of patients, for preoperative risk assessment.

From 2008 to 2010 we performed low dose dipiridamol stress studies as a part of the preoperative management of vascular patients with an indication for open surgery of abdominal aorta aneurism.

We followed up 50 survivors, with a mean follow up time of 420 days (30-730).

44 patients had a negative result in the dipiridamol stress echo, 4 of whom suffering an acute coronary syndrome (9%) 1 patient had an acute coronary syndrome in the group of 6 patients with a positive stress echo (16%).

Negative predictive value for a stress echo in this high risk population is 90%, wile positive predictive value is 16%.

Conclusion: Although a negative result in a low dose dipiridamol stress echo can accurately discard coronary artery disease in vascular disease patients, a positive result cannot predict acute coronary syndromes in the long term follow up in this high risk population.

Miscellaneous

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Trends of mortality and re-hospitalizations from acute myocardial infarction: an analysis over 8 years on 800, 000 Italian patients

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Purpose: In the last decades a worldwide constant reduction in acute myocardial infarction (AMI) mortality has been shown. The aim of this study is to analyse trends of different indicators of in-hospital mortality from AMI in the Italian population and to describe survivors prognosis in terms of post-discharge mortality and re-hospitalizations.

Methods: This study included all patients recorded in the Italian National Hospital Discharge Records between 1st January 2001 and 31 December 2009 with a primary or secondary diagnosis of AMI. In-hospital mortality, re-hospitalizations for all causes and for heart failure (HF) at 60 days from the AMI index admission were considered as the adverse outcomes. Three different in-hospital mortality rates were computed: index in-hospital mortality rate (I-MR), post-discharge in-hospital mortality rate (PD-MR) and total in-hospital mortality rate (I-MR + PD-MR = T-MR). Mortality average annual changes (AC) and their corresponding 95% confidence intervals (CI) were calculated. The considered outcomes were also evaluated for patients with AMI "complicated" (c-AMI) or "not complicated" (nc-AMI) by HF during the index admission.

Results: A cohort of 814, 942 AMI patients was selected. From 2001 to 2008, I-MR decreased from 12.28 to 9.88% (AC: -0.34%; CI: -0.41 to -0.27). T-MR at 60 days decreased as well from 14.06 to 11.87% (AC: -0.32%; CI: -0.39 to -0.25). On the contrary, PD-MR passed from 1.49 to 1.70% (AC: 0.02%; CI: 0.002 to 0.040). In all years, PD-MR for c-AMI is nearly twice PD-MR for nc-AMI (about 2.5% and 1.3%, respectively). Over 40000 AMI patients had at least one re-hospitalization for all causes within 60 days from the index admission. The percentage of AMI patients with at least one re-hospitalization for HF within 60 days is stable over time, being around 9% and 2.5% for c-AMI and nc-AMI respectively.

Conclusion: The analysis of AMI mortality rates from 2001 to 2008 in Italy highlights the reduction of the I-MR but the increase of the PD-MR. Probably, the AMI patients previously destined to short-term mortality survive to the index hospitalization but have an increased probability to face re-hospitalization or death itself in the post-discharge period.

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This is particularly true for c-AMI patients. HF confirms to be one of the most frequent causes of re-hospitalization that can hardly mark AMI patients prognosis.

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Italian interventional tutoring team for the development of percutaneous coronary intervention in the region of Yambol within the Bulgarian Cardiac Institute

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Objectives: From 2009 in accordance with the Bulgarian Cardiac Institute - an international team of leading interventional cardiologists from Italy continuously is present for tutoring and supervision on interventional coronary procedures. The objective of this presentation is to demonstrate the feasibility and the benefits of such international cooperation in the field of interventional cardiology.

Methods: From remote health care facilities, an ambulance service is able to transport patients from a maximum distance of 280 km for urgent coronary angiography. Medical staff requiring adequate training for coronary intervention is working under supervision and/or direct hands-on take over of a Italian tutor

Results: From the beginning (June 2009) and December -2011, 13683 coronary angiographies were performed; of these 1866 were STEMI (mean age 59 yrs, range 37-93; 72% males). Time from contact to balloon was 198 ± 45min for patients transferred by ambulance from surrounding hospitals and door-to-balloon time was less than 30 min. Stent implantation was implanted in 95% of cases, with a procedural success rate (final TIMI 2-3 and residual stenoses < 30%) in 89%. Intra aortic balloon pump was used in 123 pts. In-hospital mortality was 7, 5% (during 2009), 6, 1% (during 2010) and 5, 6% (during 2011) for transferred patients and 4, 1%, 3, 5%, 3, 1% for local patients respectively. Attending Bulgarian physicians required direct help from the tutor in more than 70% of diagnostic procedures in the first year, almost zero in the second half, and accomplished intervention as principal operator in 22% of pPCI in the first 12 months; 70% during the second 12 months, and almost zero during the second half of 2010.

Conclusions: A program of coronary intervention supported by an international tutoring system can be safely and effectively implemented in Bulgaria, allowing in a very short period sufficient autonomy of the Bulgarian stuff to treat the emergencies and thus to reduce the overall mortality during acute myocardial infarction to the levels of the rest of Europe.

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Isolated coronary artery ectasia debate: inflammation versus atherosclerosis

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Background: The underlying pathogenesis of isolated coronary artery ectasia (CAE) is still unknown. The aim of this study was to shed light on the potential mechanisms underlying the development of isolated CAE and its relation to carotid intima media thickness (IMT) and certain inflammatory markers especially adhesion molecules and uric acid.

Methods: The study included 16 patients with isolated CAE, 16 patients with obstructive coronary artery disease (CAD) without CAE, and 10 gender and age matched subjects with normal coronary arteries as control group. All patients underwent diagnostic coronary angiography, B-mode ultrasonography to measure carotid IMT, and serum levels of Soluble intercellular adhesion molecule (ICAM-1), E-selectin and uric acid.

Results: Serum ICAM-1 were found to be significantly higher in patients with isolated CAE compared to CAD and control subjects ($p = 0.0001$). E-selectin levels showed no difference between the three groups, while serum uric acid was significantly higher in patients with isolated CAE and patients with obstructive CAD compared to control group ($p = 0.004$). Their were no difference in carotid IMT between isolated CAE and CAD. Univariate analysis showed that the carotid IMT, ICAM-1, E-selectin, and uric acid were related with CAE. ICAM-1 was the independent variable most strongly associated with CAE by Multiple linear regression analysis ($P = 0.0001$).

Conclusion: Isolated CAE reflects atherosclerosis associated with high grade vascular inflammation out of proportion of atherosclerotic involvement with ICAM-1 is the most independent predictor of vascular inflammation.

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Barthel index is independently associated with length of hospitalisation of elderly patients with heart failure and acute coronary syndrome

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Purpose: Patients age is one of many factors that influence the length of staying (LOS). The Barthel Index (BI) score has proved being very useful in patients with stroke

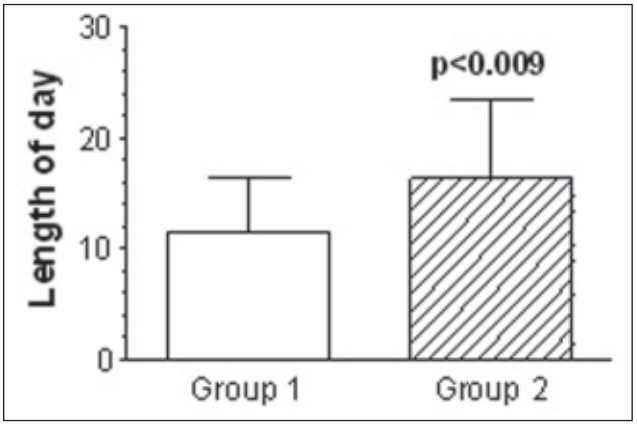
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and it is also recommended in assessing functional status in elderly patients. The aim of this study was to evaluate the influence of functional status prior to admission on the LOS in patients admitted with heart failure (HF) and acute coronary syndrome (ACS) in a tertiary hospital.

Methods: A prospective study was carried out in patients over age 65 years with the diagnosis of HF and ACS, who were admitted into cardiology department in a tertiary hospital. The BI was used to assess the patient's functional capacity prior to admission. The BI rates of degree of independence in activities of daily living use a scale of 0-100, where 0 is total dependence and 100 is total independence. The patients were divided into two groups. Group 1 included patients with light to no impairment (BI 76-100), and Group 2 included patients with moderate to severe disability (BI 0-75).

Results: During the study period, 64 patients were included: 48 in Group 1 and 16 in Group 2.There were no significant differences between both groups regarding age, gender, body mass index and conventional coronary risk factors for coronary artery disease. The median LOS was significantly lower in Group 1 than in Group 2 (10 [8-13] vs. 14.5 [12.5-17] days, respectively; P = 0.004) (Figure). Age was not correlated with LOS. Multivariate analysis showed that BI (OR = 1.15, CI 95% 1.030-1.295, P = 0.01) was an independent predictor of LOS.

Conclusions: The BI is an independent predictor of LOS in patients admitted with HF and ACS.



Barthel index and length of stay

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One stage coronary angioplasty with stent implantation in the both coronary arteries for contemporary ostial stenosis

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Background: Contemporary isolated ostial stenosis of the both coronary arteries is an extremely rare situation. The first choice strategy should be operative revascularization, but in case of emergencies an acceptable alternative solution can be the percutaneous treatment

Methods: From the period 2009-2011 in the cardiological centre of Yambol, our team performed 13683 coronary angiographies and only in 4 patients - less than 0, 03% (mean age 70 ± 5 years, 3 women) we found isolated critical ostial lesions of the both coronary arteries - 2 patients with anterior STEMI and the other 2 with non-STEMI infarction from which one with electric and haemodynamic instability. As the Yambol hospital is distant from the nearest cardiac surgery centre about 200 km and due the critical clinical status we decided to treat all the patients with acute infarction and the one with unstable haemodynamic by percutaneous method. The same approach was chosen for the patient with non-STEMI but stable clinics, as the coronary anatomy was very favourable. In both patients with acute anterior infarction and in the one with unstable haemodynamic prior to the procedure we placed IABP. In all patients we performed one stage angioplasty procedure with placement of drug eluting stent first on the right coronary artery and immidiately after that on the left main. All stents were post dilated with non compliant balloon at high presures. In all four patient the procedure was successful and the angiography follow-up at 6 months demonstrated good result.

Conclusion: We confirmed the rarity of isolated ostial stenosis of both coronary arteries (0, 03%), and also we demonstrated that in the experienced hands and within the centres even without cardiac surgery, bur with high volume and especially in acute and critical settings the percutaneous procedure is justified and with low risk. It's highly recommended to perform the procedure with the support of intra aortic balloon pump.

Nursing

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The hypothermia treated patient. A qualitative study of the experiences of spouses of intensive care hypothermia treated patients

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Background: It remains unclear how spouses experience the two first days of admission of their relative to intensive care during hypothermia treatment subsequent to cardiac arrest.

Aim: To increase the understanding of the spouses experience during hypothermia treatment focusing on the first days in order to meet their needs.

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Hypothesis: The first two days during hypothermia treatment may be difficult to endure for spouses as the patient is cold, sedated and unable to communicate.

Methods: A qualitative research review based on phenomenological-hermeneutic framework. The results are discussed in relation to stress and coping. Four spouses were interviewed by use of a semi-quantitative interview guide. Analyses were done using the qualitive descriptive method.

Results: Analysis of the transcribed material revealed three key themes: waiting time, experiences related to being a relative and the perception of the cold patient. A significant finding was that the two first issues were more important than experiences related to patients being cold. Thus, our hypothesis that patients were pale and cold did not affect the spouses experience. However, it remains essential to maintain hope for cerebral restoration.

Furthermore, the observation that waiting time until clarification of patient's cerebral status is a key issue for the spouse. Moreover, the spouses request honest, precise and correct information on the state of the patient. And they express the need of being physically close to the patient. Conclusion: A prerequisite for the nurse to provide the proper care to the hypothermia treated patient's spouse must be that she has knowledge of how it felt to be in that particular situation. It is necessary that the nurse sees and interprets the signals or the individual's spouse.

In order for the spouse to be able to handle the stress in an unreal and shocking situation, caring of the spouse is an essential pre-requisite.

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Assessment of ankle-brachial blood pressure index in acute coronary syndromes

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Purpose: Ankle-brachial blood pressure index (ABI) is a predictor for cardiovascular and total mortality. In patients with a previous myocardial infarction (MI) or stroke it has been shown to refine the risk, increasing it further. Little is known about it measurement in the setting of acute coronary syndromes (ACS)

Mehods and Results: We assessed the ABI, in 256 consecutive high risk patients admitted with an acute coronary syndrome (ACS) to our Coronary Care Unit (CCU) between January and December 2011. Ankle blood pressures were assessed according to the method suggested by the Heart Outcomes Prevention Evaluation (HOPE) study which consisted in inflating a cuff around the ankle, detecting either the posterior tibial or the dorsalis-pedis artery during deflation with the ankle cuff pressure read at appearance of the foot pulse. ACS were identified as STEMI 51.5%; NSTEMI 37.9%; Unstable Angina 10.6%. Median age was 69 years (range 36-94); female were 32, 8%. Systolic blood pressure was 135.4 ± 13.3 mmHg; diastolic blood pressure was 87.6 ± 6.8 mmHg. Risk Factors consisted of hypertension or hypertensive treatment 91.4%; active smoker 35, 5%; hypercholesterolemia or statin treatment 93.3%; diabetes 36.7%. Past cardiovascular history included: previous MI 20.7%; previous angina 21.8%; previous CABG 18.7%; previous PCI 1.5%; previous heart failure 9.3%; previous TIA/stroke 5.1%. GRACE risk score was 173.4 ± 23.4; Creatinine was 1.3 ± 1.1 mg/dl, LDL-C was 142 ± 29.7 mg/dl, Glicemia 132 ± 46 mg/dl. Revascularization was performed by PCI in 90.6% of cases and by CABG in 6.2%. Primary PCI was performed in all STEMI cases. ABI was ≥ 1 at both sides. TIMI major and minor bleeding were both around 1%. Mortality at 30 days follow up was 4.26%.

Conclusions: Our experience shows that measurement of ABI in the setting of ACS is a simple and inexpensive method that allows to assess peripheral circulation and diagnose peripheral arterial disease. ABI gives complementary information to the GRACE risk score for predicting early and late mortality.

Risk stratification

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Impact of the "NICE guideline for stable chest pain" on cardiac investigations: our experience from the rapid access chest pain clinic service

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Background: National Institute for Clinical Excellence (NICE) published 'chest pain of recent onset' guidelines in March 2010.This guidance was designed to aid the clinician assessing patients with stable chest pain by using risk stratification and choosing an appropriate next best investigation. As a centre with a large volume of cardiac patients, we thought it would be useful to evaluate how our practice compared with the guidance and how this may affect future service delivery.

Methods: We retrospectively analysed all patients attending Rapid Access Chest Pain Clinics (RACPC) over three sites across the trust from May to July 2011.Data was extracted from electronic patient records to calculate a clinical risk profile which then determined the next best test based on NICE guidance. This was compared to the clinician's assessment and choice of investigation.

Results: 424 patients attended RACPC in this period. 52.4% were male. (Mean age 56 years, range 22-88 years). 154 (36.3%) had risk factors for Coronary Artery Disease (diabetes, smoking or hyperlipidaemia).

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Interestingly, less than 12% patients attending RACPC had 'typical anginal' chest pain. 248 (58.5%) patients had 'non-anginal' pain and 126 (29.7%) 'atypical' chest pain. A range of different diagnostic investigations were selected, however, the largest group of patients had no diagnostic test at all. This likely reflects the large volume of non cardiac chest pain patients that are assessed at these clinics.

At extremes of NICE estimated CAD risk, decision making is more concordant with the guidelines. This can be seen in patients with a low risk of CAD, of which 78% had no further diagnostic test. For those with high risk of CAD, NICE support coronary angiography, this was the investigation of choice in 50% of cases.

Those patients with an intermediate risk (NICE risk score 10-29% and 30-60%) had a much more varied choice of cardiac investigation and this reflects the diagnostic difficulty with this group of patients.

Conclusion: A large proportion of individuals being assessed in the RACPC have a very low risk of CAD and many have no further cardiac investigation. With the NICE suggested shift towards non invasive functional imaging techniques it is crucial that our RACPC correctly select out patients who would derive the greatest benefit. Our study demonstrates that this is not yet happening for the group at intermediate risk. These investigations are costly in large volumes of patients and they must be correctly selected in order that CAD can be effectively ruled in or ruled out.

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Short and long-term mortality associated with hypoglycemia and hyperglycemia in patients with acute coronary syndrome

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Background: Abnormal glucose metabolism is associated with increased mortality after acute myocardial infarction. In patients with acute coronary syndrome (ACS), hyperglycemia predicts death, but the prognostic significance of hypoglycemia is controversial. This study aimed to evaluate the impact of abnormal glucose metabolism (hypo- and hyperglycemia) on in-hospital and follow-up mortality of patients with ACS.

Methods: We evaluated the prognostic significance of hypoglycemia (< or = 70 mg/dL) and hyperglycemia (> or = 140 mg/dL) in 4, 497 consecutive patients with ACS (32.1% STEMI, 19.2% unstable angina) from our hospital (2003-2010), basing on glucose levels on admission. We analyzed their incidence and associated both with in-hospital and follow-up (median: 3.1 years, RIQ: 1.6-5.0 years) mortality. In multivariable Cox models, we compared the prognostic value of hypo- and hyperglycemia with normoglycemia (>70 and < 140 mg/dL) regardless of the GRACE risk score and presence of diabetes mellitus (DM).

Results: 265 patient died during in-hospital phase (5.9%) and 760 during the follow up (18.0%). Hyperglycemia predicted both in-hospital (OR 4.609, 95%CI: 3.475-6.113, $p < 0.001$) and follow-up death (HR 1.844, 95%CI 1.598-2.127, $p < 0.001$) compared with normoglycemia. In contrast, hypoglycemia only predicted in-hospital death (OR 4.397, 95%CI 1.163-16.627, $p = 0.011$). After multivariate analysis, both hypoglycaemia (OR 4.928, 95%CI: 1.445-16.808, $p = 0.029$) and hyperglycemia (OR 2.828, 95%CI 2.113-3.785, $p < 0.001$) remained as strong predictors of in-hospital death, independently of GRACE risk score and the presence of DM. However, hyperglycemia loss its predictor value in follow-up mortality after adjusting by DM and GRACE risk score ($p = 0.776$).

Conclusions: Both admission hypo- and hyperglycemia predict in-hospital death in ACS patients, independently of the GRACE risk score and the presence of DM, but not follow-up mortality.

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The CHADS2 score as predictor of mortality and reinfarction at 24 months after acute myocardial infarction

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Purpose: The CHADS2 and CHA2DS2-VASC scores are widely used for risk assessment in atrial fibrillation (AF). They include risk factors for coronary artery disease but its applicability in the prognosis of patients (P) with acute myocardial infarction (AMI) is not yet established. This study aims to evaluate the ability of CHADS2 and CHA2DS2-VASC scores in predicting overall mortality (Mo) and reinfarction (rAMI) after AMI in comparison with GRACE score.

Methods: Cross sectional study of 609 P (64.2% men, 69 ± 14 years) admitted in our Cardiology Department due to AMI (45.9% with STEMI) and followed for 24 months (M). The scores CHADS2, CHA2DS2-VASC and GRACE-6M were evaluated and compared by ROC curves for predicting Mo and rAMI after discharge. Cumulative risk curves were plotted according to CHADS2 for P with and without AF.

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Results: CHADS2 and CHA2DS2-VASC scores showed good performance for Mo prediction (CHADS2: AUC 0.732, 95%CI, $p < 0.001$; CHA2DS2-VASC: AUC 0.772, 95%CI, $p < 0.001$), and it did not differ significantly from GRACE (AUC 0.781, 95%CI, $p < 0.001$). CHADS2 score was the only one able to identify rAMI (AUC 0.710, 95%CI, $p = 0.019$; CHA2DS2-VASC: AUC 0.702, 95%CI, $p = 0.06$; GRACE: AUC 0.653, 95% CI, pns). In multivariate analysis GRACE was the only independent predictor of Mo (OR 1.03, 95%CI 1.02-1.04, $p < 0.001$), and CHADS2 was the only one of rAMI (OR 1.03, 95%CI 1.16-2.87, $p = 0.009$). Mo in the first 24M after AMI increased along with CHADS2, even for P in sinus rhythm (Figure 1).

Conclusions: CHADS2 score seems to be a valid method for assessing prognosis after AMI. It was not significantly different from GRACE in Mo prediction, with the added benefit of predicting rAMI. It is also easier and faster to compute, resembling a reasonable option for risk stratification in AMI.

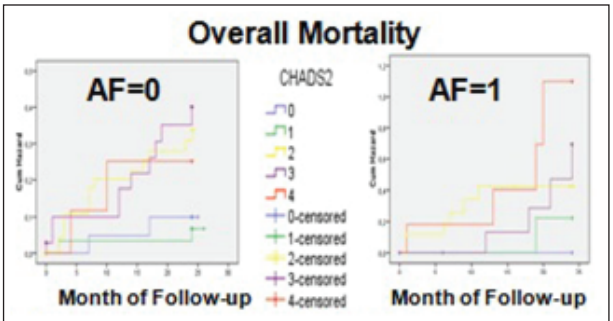


Figure 1: Overall Mortality cumulative risk according to $CHADS_2$ in patients with (AF=1) and without (AF=0) atrial fibrillation.

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Prognostic impact of chronic obstructive pulmonary disease in in-hospital and follow-up mortality of patients with acute coronary syndrome

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Introduction: Patients with chronic obstructive pulmonary disease (COPD) are at risk for cardiovascular events. This is attributed to increased systemic inflammation. This study aimed to evaluate the impact of COPD on in-hospital and follow-up mortality of patients with acute coronary syndrome (ACS).

Methods: Using data from 4, 497 consecutive patients with ACS (32.1% STEMI, 19.2% unstable angina) from our hospital (2003-2010), we analyzed the incidence of COPD and associated it with in-hospital and follow-up (median: 3.1 years, RIQ: 1.6-5.0 years) mortality. Futher a multivariate analysis was performed to show the prognostic value of COPD regardless of the GRACE risk score.

Results: 492 patients were identified as having coexistent COPD (10.9%). 265 patient died during in-hospital phase (5.9%) and 760 during follow up (18.0%). Patients with COPD were older ($p < 0.001$), more often men ($p < 0.001$), and smokers ($p = 0.007$). They had higher prevalence of chronic renal insufficiency ($p < 0.001$), hypertension ($p = 0.030$), and diabetes mellitus ($p < 0.001$). In COPD patients, the percentage of STEMI was higher ($p < 0.001$) with more advanced Killip class ($p < 0.001$). In addition, the prescription of B-blocker at discharge was less in COPD patients ($p < 0.001$). Patients with COPD had higher rates of in-hospital and follow-up death ($p < 0.001$). After multivariate analysis, COPD remained a strong predictor of in-hospital death (OR 1.036, 95%CI: 1.033-1.040, $p < 0.001$) independently of GRACE risk score. COPD also predicted follow-up mortality (HR 1.692, 95%CI: 1.411-2.029, $p < 0.001$), regardless of GRACE risk score and B-blocker therapy.

Conclusions: COPD is frequently associated to ACS increasing the risk of in-hospital and follow-up mortality independently of GRACE risk score. This observation suggests that COPD decrease the capacity of the circulatory system to adjust to the effects of ACS due to its hemodynamic and pulmonary consequences.

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Prognostic value of infections during an acute coronary syndrome

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Introduction: A growing amount of clinical and experimental evidence suggests a link between infection and atherosclerotic diseases. On the one hand it is known that during the acute phase of myocardial infarction there is a proinflammatory state. On the other hand several studies have demonstrated that infection causes a hypercoagulable state which increases the risk of thrombosis. The aim of our research is to evaluate the incidence of infections during the admission by acute coronary syndromes (ACS) and its influence in the risk of in-hospital mortality.

Methods: Using data from 4, 497 consecutive patients with ACS (32.1% STEMI, 19.2% unstable angina) from our hospital (2003-2010), we analyzed the incidence of bacterial and viral acute infections and associated it with inhospital

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mortality. Futher a multivariate analysis was performed to show the prognostic value of infections during ACS regardless of the GRACE risk score.

Results: There were 534 infections during ACS hospitalization (11.9%) and 265 in-hospital deaths (5.9%). The mortality in the group with infections was 17.6%, increasing in-hospital mortality 3.8-fold in comparison with not-infection group (mortality 4.6%, $p < 0.001$). In multivariate analysis, infections during ACS resulted as a predictor of in-hospital death independently of GRACE risk score (OR: 1.584, 95% CI: 1.141-2.198, $p = 0.006$ for acute infections; OR: 1.035, 95% CI: 1.032-1.039, $p < 0.001$ for GRACE RS).

Conclusions: Infections are a frequent complication during the ACS hospitalization increasing the risk of in-hospital mortality independently of GRACE risk score.

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Clinical predictors of intensive care unit admission in patients hospitalized for acute decompensated heart failure: Data from Romanian acute heart failure syndromes (RO-AHFS) registry

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Background: Acute decompensated heart failure (ADHF) is the most frequent manifestation of Acute Heart Failure Syndromes (AHFS). Patients hospitalized for ADHF often clinically decompensate and require life-saving therapies only available in an intensive care unit (ICU). Application of a risk-prediction algorithm at presentation may identify patients more likely to derive a robust benefit from direct ICU admission and aggressive monitoring and intervention.

Objective: To identify baseline clinical variables predictive of ICU admission during index hospitalization for ADHF

Methods: Over a 12 month period, the Romanian Acute Heart Failure Syndromes (RO-AHFS) registry enrolled 3224 consecutive patients admitted with a primary diagnosis of AHFS, at 13 medical centers. Patients were classified into five clinical profiles at admission: acute decompensated heart failure (ADHF), cardiogenic shock (CS), pulmonary edema (PE), right heart failure (RHF), and hypertensive heart failure (HT HF). A multivariate logistic regression model was developed to identify baseline clinical variables predictive of ICU admission during hospitalization for ADHF.

Results: At the time of admission, 57% (n = 1840) of RO-AHFS patients were classified as ADHF. During hospitalization, 7.3% (n = 134) of ADHF patients were transferred to the ICU. For 45% of ADHF patients admitted in ICU, transfer occurred in the first day of hospitalization. Necessity of circulatory assistance, either pharmacological or mechanical, was primary reason for ICU admission in 64% of cases in this clinical setting.

Independent clinical predictors of ICU admission include SBP < 110 mmHg (HR = 2.52, 95% CI 1.83-3.12), BUN at admission (HR = 1.14, 95% CI 1.03-1.37), serum sodium at admission (HR = 1.09, 95% CI 1.006-1.17), and age (HR = 1.04, 95% CI 1.02-1.14).

Conclusions: Clinical variables available at admission predict need of ICU care in patients hospitalized for ADHF. Triaging patients to the appropriate level of care at presentation will likely require an approach combining demography, clinical setting and basic laboratory findings

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Ventricular repolarization prolongation and risk of torsade de pointes in acquired long QT syndrome

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Purpose: There is a strong but not causal association between ventricular repolarization prolongation and torsade de pointes (Tdp) in acquired long QT syndrome (LQTS). We sought to determine the optimal method of ventricular repolarization assessment in predicting Tdp in LQTS within the context of the recommended cutoff levels of concern for QT/QTc interval prolongation.

Methods: For LQTS definition, the QT interval prolongation had to be attributed secondary to a specific extraneous contributing cause such as use of drugs with known potential to prolong ventricular repolarization, bradycardia or electrolyte abnormality. Twenty-nine patients with LQTS and Tdp (age 66 ± 11 years) and matched controls were studied. The control patients were matched to the Tdp exhibiting cases on a 1-to-1 basis with regard to the underlying QT-prolonging factor, gender and presence of underlying heart disease. Standard 12-lead electrocardiograms were utilized to evaluate ventricular repolarization by using six different QT/JT heart rate correction methods. We compared the distribution of QT/QTc and JT/JTc intervals of patients who experienced Tdp against (a) the corresponding intervals in the matched controls and (b) the recommended cutoff levels for QT/JT interval prolongation.

Results: Patients with Tdp (n = 23, narrow QRS; n = 6, wide QRS) had longer ventricular repolarization intervals than controls ($p < 0.001$). Five patients (17%) required DC defibrillation for arrhythmia termination, and 4 patients

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(14%) required urgent temporary pacing with programming at fast rates to prevent recurrent Tdp. For patients with narrow QRS, the QTc interval as determined by the methods of first Hodges (t = 7.56, c = 0.933, p < 0.001), followed by Nomogram and Fridericia, best discriminated Tdp patients from controls, and provided optimal balance between sensitivity and specificity at all three cutoff levels. For patients with wide QRS, the JT interval, or alternatively, the Hodges method, seemed most useful.

Conclusions: Assessment of ventricular repolarization with the use of the Hodges formula, followed by the Fridericia and the Nomogram methods, best identifies imminent Tdp. The uncorrected JT interval seems to be useful in patients with wide QRS complex.

Sudden death - Ressuscitation

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Hemodynamic assessment after cardiac arrest: what happens during therapeutic hypothermia

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Purpose: Post resuscitation syndrome is characterized by hemodynamic instability due to multiple factors such as cardiovascular dysfunction, systemic inflammation, and persistence of the precipitating disease. Therapeutic Hypothermia (TH) has been shown to improve neurological outcome in these patients, however the concomitant cardiovascular hemodynamic effects have not been well studied. The aim of this study was to evaluate hemodynamic changes during TH after cardiac arrest (CA), and their prognostic value regarding in-hospital outcome.

Methods: Twenty-seven consecutive comatose patients after CA, treated with TH, were enrolled between November 2010 and March 2012.A central venous catheter and Pulsion PiCCO® arterial catheter, connected to the PiCCO® monitoring system, were placed. The indexes collected during TH and after rewarming were the following: mean heart rate (HRm), arterial blood pressure (systolic/mean/diastolic), cardiac index (CI) and systemic vascular resistance (SVR). Stroke volume (SV) values were calculated by transthoracic echocardiogram performed during TH and after rewarming.

Results: The mean age of the population (23 males and 4 female) was 60 ± 16 years. During TH, HRm significantly reduced (median 56 bpm during TH vs 92 bpm after rewarming, p = 0.0001) and consequently rate-pressure product (6300 vs 11845, p = 0.0001). Increased SVR was recorded (median 2878 dyn·sec·cm-5·m2 vs 1708 dyn·sec·cm-5·m2, p = 0.007) while CI decreased (median 1.72 L/min/m2 vs 3.36 L/min/m2, p = 0.007) not only for the reduction HRm but also for lowering of SV (median 30 mL/m2 vs 36 mL/m2, p = 0.02). Mean arterial blood pressure did not change significantly during TH (84 mmHg vs 89 mmHg, p = 0.08). The only hemodynamic index related to in-hospital mortality resulted the mean value of artery blood pressure at 24 hours (p = 0.01).

Conclusion: Our data demonstrate that the reduction of CI during TH in survivors after CA is due to reduction of both HRm, as previously recognized, and also SV. On this basis TH may be implemented by using a goal-directed hemodynamic optimization by invasive monitoring. Finally, our experience highlights the importance to maintain an effective mean arterial blood pressure, during TH, since it seems to be the only hemodynamic index strongly correlated with in-hospital mortality rate.

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Cardiopulmonary resuscitation by type of hospital care in patients hospitalized for acute heart failure syndromes-Data from Romanian acute heart failure syndrome (RO-AHFS) registry

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Purpose: Prognosis after in-hospital cardiac arrest is influenced by promptness and quality of cardiopulmonary resuscitation (CPR). We sought to investigate the characteristics and outcome of CPR in patients admitted with acute heart failure syndromes (AHFS) by type of hospital care.

Methods: Over a 12 month period, the Romanian Acute Heart Failure Syndromes (RO-AHFS) registry enrolled 3224 consecutive patients admitted with a primary diagnosis of AHFS at 13 medical centers, including 6 academic and 7 community hospitals. All hospitals had an intensive care unit (ICU). CPR has been considered as event on course of hospitalization and all the data were prospectively collected.

Results: During hospitalization for AHFS, 8.5% (n = 274) of total cohort underwent CPR and incidence of CPR differed by type of hospital care. Differences in characteristics of CPR based on type of hospital care are shown in Table 1.

Before CPR, the primary arrest mode (PAM) was considered cardiac in etiology in 91% of cases and respiratory in 9% of cases, and no differences were found as respect to hospital care.

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The most common primary arrhythmia was pulseless electrical activity (PEA) in both academic and community hospitals. Patients admitted in community hospitals experienced a higher in-hospital mortality after CPR (88.7% vs 83.9%; $p < 0.05$) even after multivariate adjustments.

Conclusions: In patients hospitalized with AHFS, prognosis after CPR varied substantially between academic and community hospitals, suggesting that CPR quality may be variable in actual practice. Regardless of type of care, only half of patients successfully resuscitated are discharged alive.

Table 1. Characteristics of CPR by hospital care

	Academic (n = 1272)	Community (n = 1952)	p value
CPR (%)	10.3	7.4	0.006
CPR in ICU (%)	61	57	0.4
PAM-Cardiac (%)	93	90	0.8
First detected pulseless rhythm:			
-VT (%)	19.3	17.8	0.4
-Asystole (%)	26	38.4	0.03
-PEA (%)	54.7	43.8	0.01
Immediate succesfull CPR (%)	30.2	23.4	0.005
Discharged alive after CPR (%)	16.1	11.3	0.02

Valvular heart disease

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Characterization of pericardial effusion in infective endocarditis: impact in one-year mortality

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Purpose: There is scarce information about the incidence, associated factors and prognosis of pericardial effusion (PE) in patients with infective endocarditis (IE).

Methods: From 1990 to 2007, all patients with a diagnosis of IE in our center, were prospectively follow-up. A logistic regression analysis was performed to identify independent variables associated to PE and one-year mortality.

Results: 697 episodes of IE in 670 patients were included (70% men, mean age 58 years). Slight-moderate PE was observed in 118 episodes (175) and severe in 11 (2%). Regression logistic analysis found that history of intravenous drug abuse (OR 1.9, 95% Confidence interval (CI), 1.04-3.4), periannular abscess (OR 2.1, 95%CI, 1.0-4.1) and renal failure (OR 2.0, 95%CI, 1.3-3.1) were associated with a higher risk for PE, while age (OR 0.98, 95%CI, 0.97-0.99), presence of a prosthetic valve (OR 0.2, 95%CI, 0.1-0.4) and intracardiac device (OR 0.3, 95%CI, 0.1-0.8) were associated with a lower risk for PE. Mortality of IE with large or very large PE was higher than that for slight-moderate or absence PE (64%, 20% and 24% respectively, $p = 0.006$). Large or very large PE was more frequent in left-sided IE (82%, 36% aortic and 46% mitral valves), by S. aureus (46%) and 18% were complicated with periannular abscess. After controlling for confounders, small-moderate PE did not increase the one-year mortality of IE (OR 0.9, 95%CI, 0.5-1.6) while large-very large PE did so (OR 5.4, 95%CI, 1.1-25.6).

Conclusions: Small-moderate PE was more frequent in right-sided IE in intravenous drug abusers, while large-very large PE appeared in complicated left-sided IE. Small-moderate PE in the setting of IE did not modify its prognosis, but large-very large PE was associated with a five-fold increase in one-year mortality.

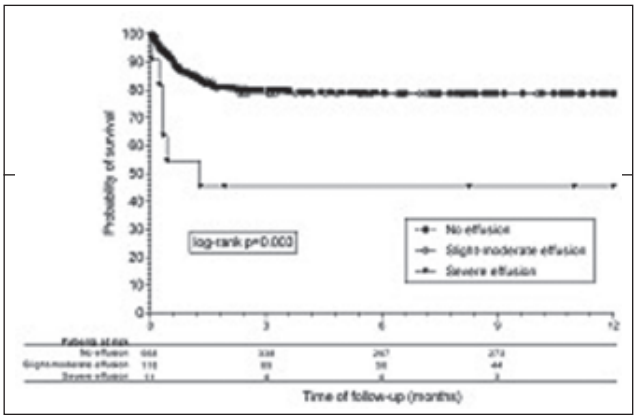


Figure 1.

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A mini-invasive device as alternative to more conventional monitoring thus reducing the need for intensive care admission, and allowing rapid mobilisation in trans-aortic valve implantation patients

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Purposes: ASA IV patients selected for TAVI benefit from having the shortest hospital stay to reduce problems associated with their removal from their home environment. We

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sought the simplest method of hemodynamic monitoring that would also allow for optimalisation of patient hemodynamic status without impeding fast track mobilisation. The Lithium dilution method uses a standard radial arterial catheter and a standard peripheral or central line. Using this method we were able to track changes in Continuous Cardiac output (CCO) Stroke volume (SV), Intra-thoracic blood volume (ITBV) and systemic vascular resistance (SVR). Because the monitoring is not invasive, the majority of our patients could be nursed in the recovery room as an alternative to intensive care admission. Patients returned to the ward on day 1.

Methods: 66 ASA IV patients (average age 86, Euroscore 24) were admitted for TAVI. On the day of the procedure a calibrated cardiac output was obtained using the Lithium dilution method. Patients were sedated with micro doses of Propofol /Remifentanyl. Post-procedure dilution curves were again obtained immediately on admission to the recovery room and on J1.

Results: Satisfactory dilution curves were obtained in all patients. Tracking CO, SV, ITBV and SVR permitted delicate optimalisation of fluid status in these sensitive patients. CO., SV increased post implantation whereas SVR and ITBV were slightly deceased. Patients were hemodynamically stable enough to return to the ward on day 1 and commence more rigorous mobilisation protocols.

Conclusions: Elderly patients who undergo TAVI, require optimal monitoring during the procedure allowing the cardiologist and anesthetic team to maximalize hemodynamic status. However, these patients also benefit from the simplest monitoring method that allows for fast-track mobilisation.

Table 1. Hemodynamic parameters pre+post TAVI

N = 66	Pre-TAVI	Post-TAVI	J1
CI	2.2	2.9	3
ITBVi	998	809	943
SVi	28	37	37
SVR	1994	1379	1299
HR	74	75	73
MAP	98	61	78

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Transcatheter aortic valve implantation treated patients in intensive care unit - independent predictors of prolonged length of stay; a single center study

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Background: Transcatheter aortic valve implantation (TAVI) is becoming a very successful method of treating high risk patients with severe aortic stenosis. It is a common problem that these group have other comorbidities which may prolong their length of stay in the Intensive Care Unit (ICU). We sought to determine the possible predictors of longer hospitalization (more than 7 days) in the ICU of patients treated with TAVI.

Methods: Comorbidities of 46 high-risk patients with severe aortic stenosis treated with TAVI from 03.2010 to 12.2011 were retrospectively examined and correlated with the length of stay in the ICU

Results: Analyzed elements were divided into two categories–clinical and laboratory based. In multivariate logistic regression analysis in the group of clinical parameters high Body Mass Index above 25 kg/m2 and extracardiac arteriopathy were independent factors contributing to the longer hospitalization in the ICU (OR 8.04, 95%CI 1.4-45.9; p = 0.019 and OR 18.71, 95%CI 1.9-181.0; p = 0, 011 respectively). In the group of laboratory based factors only platelets level below 150 000/µl on admission was found significant (OR 17, 28, 95%CI 1, 71-174, 05; p = 0.0156).

Conclusions: 1.Clinical factors are more significant in predicting longer length of stay in the ICU 2.High BMI, extracardiac arteriopathy and low on –admission platelets level are independent risk factors of prolonged hospitalization.

Table 1. Variables

Independent Variable	Odds Ratio	95% Confidence interval	p
High BMI	8.04	1.4-45	0.019
Extracardiac arteriopathy	18.71	1.9-181.0	0, 011
Previous stroke /TIA	4.03	0.46-35.4	0, 219
Asthma/COPD	8.4	0.9-78.2	0.068
Hypertension	1.45	0.28-7.6	0.663
Sex (female)	5.9	0.98-35.86	0.072
Previous cardiac surgery	6.24	0.4-90.1	0.183
High EuroSCORE>30%	0.76	0.08-7.47	0.816
Diabetes mellitus	2.05	0.45-9.43	0.356
Low on-admission hemoglobin	3.25	0.62-16.9	0.161
Low on-admission platelets	17.3	1.72-174.06	0.015
High creatinine level on admission	4.45	0.94-21.05	0.060

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Infective endocarditis: the optimal surgery timing

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Introduction: Patients with infective endocarditis (IE) often have surgical indication. However, optimal surgery timing remains controversial.

Objective: To evaluate the influence of surgery timing in long-term prognosis of IE patients with surgical indication.

Methods: Longitudinal observational study of patients with IE diagnosis. In the subgroup of patients undergoing surgery during hospitalization, it was characterized the reasons and the timing of surgery, and determined the association of these variables to long-term prognosis. The endpoint was death from any cause.

Results: We evaluated 81 patients, 28 of whom (34.6%) underwent surgery during hospitalization (71.4% male, 60 ± 16 years, 28 ± 32 months of follow-up). The most frequent etiologic agents were Staphylococcus spp (32.1%), Enterococcus spp (14.3%) and Streptococcus spp (10.7%). Aortic valve was affected in 64.3% of patients and there was significant mitral regurgitation in 32.1%. Time from admission to surgery was 19 ± 12 days and the most common reasons were: severe aortic regurgitation (25.0%), prosthesis dysfunction and pacing system explantation (14.3% each ones). Considering the tertiles of time before surgery, there was a significant association of time with mortality in the follow-up (p = 0.034), being higher in the group operated after 26 days of hospitalization (44.4%), intermediate in patients operated up to 11 days (11.1%) and lower in the others (0%). In Kaplan-Meier survival analysis, it was confirmed the unfavorable prognosis of patients belonging to the 3rd tertile of time (estimated survival time: 59 ± 17 months vs 102 ± 5 months, p = 0.05) (figure).

Conclusions: In IE patients requiring surgical intervention surgery timing has long-term prognosis value. Our data suggest that EI patients should be operated at a relatively early stage of admission and not after completion of antibiotic therapy.

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The frequency of acute kidney injury in patients undergoing transcatheter aortic valve implantation (TAVI)

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Background: Transcatheter aortic valve implantation (TAVI) is a new method of treatment of severe aortic valve stenosis in high-risk patients with several comorbidities. The effect of this procedure on renal function is still not well known. We compared the group of patients with acute kidney injury with a control group with normal renal function.

Methods: We assessed the rate of acute kidney injury (AKI) in 44 high-risk patients with severe aortic stenosis treated with TAVI from 03.2010 to 12.2011.AKI was defined according to Acute Kidney Injury Network (AKIN) classification.

Results: Out of 44 patients, 14 (32%) developed acute kidney injury (stage I – 72%, stage II- 21%, stage III- 7%). The mean contrast usage was 242 +/- 76 ml per procedure. The mean length of stay in group of patients with AKI was longer than in control group (31 days vs 19 days), and mean EuroSCORE for this group was also higher (24, 65% and 15, 3% respectively). The group of patients who developed AKI was also characterised by higher percentage of diabetes mellitus (65% vs 20%, p = 0, 07), non-significantly higher rate of major bleeding complications defined by Valve Academic Research Consortium classification (50% vs 30%, p = 0, 55) and higher rate of severe left ventricle dysfunction with LVEF < 35% (29% vs. 13%, p = 0, 42).

Conclusions: Acute kidney injury is associated with longer length of stay of patients undergoing TAVI. High EuroSCORE, diabetes mellitus, and low on-admission ejection fraction may indicate a greater occurance rate of AKI.

Database, registeries and surveys

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Greater institutional experience is associated with progressive reduction in complications following permanent pacemaker implantation

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Background: The national UK database indicates a complication rate between 6-8% following pacemaker implantation. The data from new centres is less clear and as with other procedures there may be a 'learning curve'. Our hospital serves a population of 550, 000 with a substantial south asian ethnic minority and have one of the highest prevalence of cardiac disease in the country. A local bradypacing service implanting single and dual chamber pacemakers started in October 2007.

Methods: 792 pacemakers were implanted as of December 31st 2011. Our centre has an open system of tracking, reporting and discussing complications. The following complications were assessed – pneumothorax, infection requiring

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prolonged antibiotics or removal, hematoma leading to prolonged hospital stay, device erosion, lead displacement and other lead problems. The follow up period was 3 months which is the minimum requirement for reporting complications recommended by Heart Rhythm UK.

Results: The total number of complications were 80 (10.1%). Individual complications were 15 hematomas (1.9%), 13 pneumothoraces (1.6%), 13 infections (1.6%), 5 erosions (0.6%) and 34 lead related (4.2%). There was one death directly related to the procedure (0.12%) and the overall re-intervention rate was 5.3%. The total complications dropped from 16% in the first year of commencing service to 6% in 2012 (9.5% in year 2 and 7% in year 3). This was predominantly driven by a marked reduction in infections which reduced from 10 (5.1%) in year 1 to zero in year 4.There were moderate reductions in lead related complications (5.6% in year 1 and 2.2% in year 4) while the risk of hematomas and pneumothoraces remained stable.

Conclusions: Our experience demonstrates that greater institutional experience in cardiac device implantation is associated with progressive reductions in immediate and short term procedure related complications. An open system of tracking, detecting and discussing complications results in mechanisms which have a positive influence in outcomes.

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Three years follow-up after percutaneous coronary intervention - worse outcomes for STEMI compared to NSTEMI patients

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Purpose: Previous studies have demonstrated that ST-elevation myocardial infarction (STEMI) is associated with a higher risk of short-term mortality compared with non-STEMI (NSTEMI), whereas NSTEMI is associated with a higher risk of long-term mortality. The purpose of this study was to compare the long-term outcomes of patients with STEMI and NSTEMI among those who have undergone percutaneous coronary intervention (PCI) and have survived during hospitalization.

Methods: Patient data from the Estonian Myocardial Infarction Registry for years 2006−2009 in a tertiary care hospital (Tartu University Hospital) were linked with the Health Insurance Fund database and the Population Registry. Hazard ratios (HR) with 95% confidence intervals (CI) for primary outcome (non-fatal myocardial infarction (AMI), revascularization, or death whichever occurred first) and for all-cause mortality were calculated comparing STEMI with NSTEMI. The follow-up started on the date of performing PCI and ended when the patient reached the outcome or the date of the end of follow-up.

Results: From 2101 AMI patients who survived during the hospitalization 1031 (86%) STEMI patients and 906 (58%) NSTEMI patients underwent PCI and were included into the final study sample. Patients with STEMI were younger (65 vs 67 years, $p = 0.029$) had less often diabetes, hypertension, previous AMI, chronic heart failure, and previous revascularization; at the same time they were more often current smokers and had acute heart failure on presentation ($p < 0.05$). There were no major differences in the prescription rates of aspirin, clopidogrel, beta-blockers, angiotensin converting enzyme inhibitors/ angiotensin II receptor blockers, and statins during hospitalization and for out-patient use between the two study groups. During the median follow-up of three years, STEMI patients had higher rates of primary (16% vs 12% $p = 0.025$) and secondary outcomes (38% vs 32%, $p = 0.04$) compared to the NSTEMI patients. The patients with STEMI had worse outcomes also after adjustment for baseline-characteristics: HR for primary outcome was 1.30 (95% CI 1.08−1.57) and for all-cause mortality 1.61 (95% CI 1.19−2.19).

Conclusions: Among patients who have undergone PCI and survived during hospitalization, patients with STEMI have worse long-term outcomes than those with NSTEMI; that even despite lower rates of cardiovascular risk factors reported during index hospitalization. The differences may partly be explained by the selection of lower risk NSTEMI patients to undergo PCI.

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Value of accelerated streptokinase, accelerated alteplase and bolus thrombolytics in patients with intermediate risk pulmonary thrombembolism. Data from the Romanian registry for pulmonary thrombembol

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Background: The value of thrombolysis in patients (pts) with pulmonary thrombembolism (PTE) and an intermediate mortality risk is still controversed.

Objective: To compare the in-hospital mortality of intermediary risk PTE pts treated either with thrombolysis (accelerated regimens of streptokinase, of alteplase or bolus thrombolytics) or unfractionated heparin (UH).

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Methods: Between January 1st, 2009 and March 31st, 2012, the Romanian Registry for Pulmonary Thrombembolism (RO-TEP) enrolled 215 consecutive pts with PTE certified by computer thomography (aged 63.42+/-15.22, 51, 2% females). Pts were divided in high, intermediate and low risk subgroups based on clinical data, right ventricle dysfunction (ultrasound criteria) and myocardial injury markers, according to the 2008 PTE Guidelines of the European Society of Cardiology. The in-hospital mortality and major bleeding were evaluated in pts with intermediary risk treated either with thrombolytics followed by unfractionated heparin (UH) or only with UH.

Results: The average Wells score was 5.10+/-2.21 and the revised Geneva score was 13+/-3.62 in our pts. Criteria of high risk were met in 43 pts (20%), intermediary risk in 145 (67.4%) and low risk in 27 (12.6%) pts, respectively. In 32 pts (14.9%) with intermediary risk, thrombolysis consisting either in accelerated streptokinase (1.5 M. U. /30–60 min. followed by 0.1M. U/h/24 hours), accelerated alteplase (100 mg. /90-120 min.) or bolus thrombolytics (reteplase 10mg+10mg after 30 minutes) or tenecteplase in body-weight adjusted doses were administered. All pts also received UH for 5-7 days, adjusted according with the APTT value and followed by oral anticoagulants. The other 113 pts from this subgroup received only UH followed by oral anticoagulants. The in-hospital mortality was 2.79% in pts receiving thrombolytics, significantly lower compared with the one of 4.65% seen in pts treated with UH ($p = 0.015$). One, non-fatal major bleeding occurred in pts treated with thrombolysis. Conclusion: The RO-TEP data suggest that, compared with unfractionated heparin, thrombolysis with more aggressive regimens of streptokinase or alteplase or bolus thrombolytics can led toward a lower in-hospital mortality in pts with intermediary risk PTE.

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Young Investigator Award - Oral Abstract Session
Monday, 22 October 2012 - 08:30 - 10:00

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Rapid rule out of acute myocardial infarction using undetectable levels of high-sensitive cardiac troponins

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Purpose: The aim of this study was to examine whether undetectable levels of high-sensitive cardiac Troponin T (hs-cTnT) and I (hs-cTnI) can be used as a single variable to rule out the diagnosis of acute myocardial infarction (AMI) at presentation to the emergency department (ED).

Methods: In an ongoing prospective, international, multicenter study we measured hs-cTnT (Roche) and hs-cTnI using two different precommercial prototype assays (Siemens and Beckmann & Coulter) in consecutive patients presenting to the ED with acute chest pain. The final diagnoses of AMI were adjudicated by two independent cardiologists using all available data including hs-cTnT levels. Patients were followed during a mean period of 23 months.

Results: In total 1945 patients were eligible for the analysis of hs-cTnT, 421 of them (22%) had an AMI, of whom 414 (98.3%) had initially detectable levels of hs-cTnT, and 7 (1.7%) had undetectable levels of hs-cTnT (sensitivity: 98.3%, 95%CI 96.6%-99.3%, negative predictive value (NPV): 98.4%, 95%CI 96.6%-99.3%). Among the 7 patients, all in whom the onset of pain could be precisely identified (n = 5) were early presenters (onset of pain < 4h). During the follow up (FU) period 0.5% of the patients with undetectable levels died as compared to 9.6% of the patients with detectable levels ($p < 0.001$). Overall, results were similar for the two hs-cTnI assays. Of the 1169 patients with levels of hs-cTnI (Siemens) available, 234 (20%) had AMI, of whom 232 (99.1 %) had initially detectable hs-cTnI levels and 2 (1.2 %) undetectable levels (sensitivity: 99.2%, 95%CI 97.0%-99.9%, NPV: 98.8% 95%CI 95.7%-99.9%). During the FU period, 3% of all patients with undetectable levels died as compared to 9.8% in patients with detectable levels of hs-cTnI ($p = 0.007$). Of 1141 patients who had hs-cTnI (Beckman&Coulter) levels available for the analysis, 225 (20%) had AMI, of whom 224 (99.6%) had initially detectable hs-cTnI levels and 1 patient (0.4%) had undetectable levels (sensitivity: 99.6%, 95%CI 97.6-100%, NPV: 99.2%, 95%CI 95.8-100%). This patient was an early presenter (chest pain onset within 2h of presentation). Thus, NPV of undetectable hs-cTnI was 100 % in late presenters (>4h). During the FU period, 1.5% of all patients with undetectable levels at presentation died as compared to 9.7% in patients with detectable levels at presentation ($p = 0.006$).

Conclusions: Undetectable levels of hs-cTnT and hs-cTnI at presentation have a very high NPV. Using hs-cTn in conjunction with other clinical information including 12-lead ECG is a very safe and effective tool to rule out AMI without serial blood sampling in many patients.

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Reperfusion delay in patients treated with primary percutaneous coronary intervention: insight from a real world danish STEMI population in the era of telemedicine

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Background: Reperfusion delay in STEMI is associated to adverse outcome. We evaluated time from alarm call (system delay) and from first medical contact (PCI related delay), where fibrinolysis could be initiated, to balloon inflation in a pre-hospital organization with tele-transmitted ECG, field triage and direct transfer to 24/7 primary PCI.

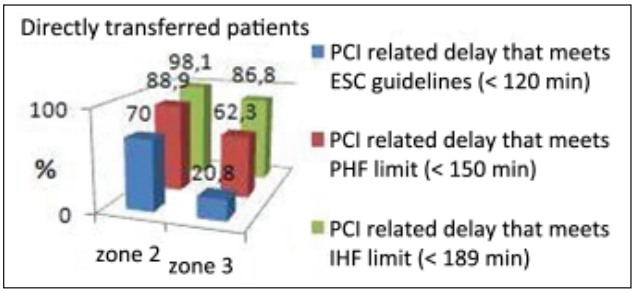
Methods: Single center cohort study in 472 patients. The pPCI center registry was linked by person identification number to emergency medical services (EMS) and National Board of Health databases in the period of 2005-08. Patients were stratified according to transfer distances into zone 1 (≤25 km), zone 2 (65-100 km), zone 3 (101-185 km) and according to referral by pre-hospital triage. We evaluated delays according to ESC gudelines, pre-hospital fibrinolysis (PHF) (120 min acceptable PCI delay + 30 min needle time) and in-hospital fibrinolysis time limits (PHF + transfer time to local hospital).

Results: System delay was 86 min (IQR 72-113) in zone 1, 133 (116-180) in zone 2 and 173 (145-215) in zone 3 ($p < 0.001$) and independently predicted mortality ($p < 0.001$). PCI related delay in directly referred patients was 109 (92-121) min in zone 2, but exceeded recommendations in zone 3 [139 (121-160)] and for patients admitted via the local hospital [219 (171-250)].

Conclusions: In spite of pre-hospital triage in 73 % of STEMI patients, PPCI was delayed beyond ESC guidelines for patients >100 km away and non-directly referred patients. System delay predicts mortality, therefore EMS personnel education should ensure pre-hospital triage as admission via local hospitals delays optimal care.

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Geographical zone stratification identifies patients with long delays. Options are pharmaco-invasive regiments, research in early ischemia detection and airborne transfer.



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TIMI, GRACE and alternative risk scores in acute coronary syndromes; a meta- analysis of 40 derivation studies on 216552 patients and of 42 validation studies on 31625 patients.

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Background: Acute coronary syndromes (ACS) represent a difficult challenge for physicians. Risk scores have become the cornerstone in clinical and interventional decision making.

Methods and results: PubMed was systematically searched for ACS risk score studies. They were divided into ACS studies (evaluating Unstable Angina; UA, Non ST Segment Elevation Myocardial Infarction; NSTEMI, and ST Segment Elevation Myocardial Infarction; STEMI), UA/NSTEMI studies or STEMI studies. The c-statistic of validation studies were pooled when appropriate with random-effect methods. 7 derivation studies with 25525 ACS patients and 15 validation studies including 257654 people were formally appraised. Pooled analysis of GRACE scores, both at short (0.82; 0.80-0.89 I. C 95%) and long term follow up (0.84; 0.82-0.87; I. C 95%) showed the best performance, with similar results to Simple Risk Index (SRI) derivation cohorts at short term. For NSTEMI/UA, 18 derivation studies with 56560 patients and 18 validation cohorts with 56673 patients were included. Pooled analysis of validations studies showed c-statistics of 0.54 (95% CI = 0.52-0.57) and 0.67 (95% CI = 0.62-0.71) for short and long term TIMI validation studies, and 0.83 (95% CI = 0.79-9.87) and 0.80 (95% CI = 0.74-0.89) for short and long term GRACE studies. For STEMI, 15 studies with 134557 patients with derivation scores, and 17 validation studies with 187619 patients showed a pooled c-statistic of 0.77 (95% CI = 0.71-0.83) and 0.77 (95% CI = 0.72-0.85) for TIMI at short and long term, and a pooled c-statistic of 0.82 (95% CI = 0.81-0.83) and 0.81 (95% CI = 0.80-0-82for GRACE at short and long term respectively.

Conclusions: TIMI and GRACE are the risk scores that up until now have been most extensively investigated, with GRACE performing better. There are other potentially useful ACS risk scores available however these have not undergone rigorous validation. This study suggests that these other score may be potentially useful and should be further researched.

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Prognostic impact of atrial fibrillation in acute coronary syndromes: a propensity score matching analysis

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Purpose: Conflicting data exits with respect to the prognostic implication and management of atrial fibrillation (AF) in acute coronary syndromes (ACS). Some studies suggest AF as a mortality confounding factor in ACS that reflects its association with heart failure. We sought to evaluate the real involvement of AF in mortality.

Methods: We designed a prospective study of patients from 40 centers of Andalucia (Southern Spain), previously included in ARIAM registry (Análisis del Retraso en el Infarto Agudo de Miocardio) from 2001 to 2011.Non adjusted and Adjusted Cox multivariate models were conducted. Propensity score matching (PSM) analysis was performed to adjust baseline characteristic of AF group (AFg)

Results: From 39237 patients analyzed, 2852 patients (6.6 %) presented AF. AFg were older (71 ± 9, 8 vs 63 ± 12; p < 0, 00001), more frequently women (34, 6 vs 25, 6%; p < 0, 00001), more likely had cardiovascular risk factors at baseline, and had an adverse outcome during hospitalization: malignant arrhythmias (8, 9 vs 3, 7%; p < 0, 00001), heart failure (46, 7 vs 19% p>0, 0001), cardiogenic shock (16, 7 vs 2, 8 %; p < 0, 00001) and in-hospital mortality (12, 4 vs 5, 1 %; p < 0, 00001). In non-adjusted Cox model, AF (HR 2, 16; p < 0, 0001), age (HR 1, 82; p < 0, 0001 per decade), diabetes (HR 1, 65; p < 0, 0001), malignant arrhythmias (HR 2, 14; p>0, 0001), cardiogenic shock (HR 22, 38; p < 0, 0001) and heart rate (HR) at admission (HR 1, 18; p = 0, 005, every increase of 10 beat min-1) were predictors of in-hospital mortality. Ejection fraction (EF) (HR 0, 67; p = 0, 006, every units of 5%) and beta-blockers

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(BB) use (HR 0, 2; p < 0, 00001) were protective variables. In adjusted model, age, HR, malignant arrhythmias, BB use, and cardiogenic shock persisted as independent predictors of mortality. After removing the two variables of greatest prognostic impact (shock and arrythmias), AF remained as an independent factor. In adjusted Cox model of 3816 PSM patients, only AF (HR 1, 32; p = 0, 006), cardiogenic shock (HR 15, 6; p < 0, 00001), and malignant arrhythmias (HR 1, 35; p = 0, 009) remained as independent predictors of in-hospital mortality.

Conclusions: AF during ACS is associated with a higher rate of in-hospital complications and is an independent predictor of mortality. The occurrence of AF in the course of ACS should not be considered an isolated event, but a factor with prognostic implications that may require more aggressive approach.

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Incidence, etiology and predictors of adverse outcomes in patients presenting to the emergency department with syncope: an international meta-analysis and systematic review.

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Abstract

Context: Syncope remains challenging for Emergency Department (ED) physicians mainly due to difficulties in assessing the risk of subsequent adverse events.

Objective: A meta-analysis was organized to investigate the incidence and predictors of adverse outcomes for patients presenting with syncope to the ED.

Data Sources: PubMed was systematically searched for eligible studies (1990-2010).

Study Selection: Studies were selected if they reported multivariate predictors of adverse events in patients presenting with syncope to the ED.

Data Extraction: Study characteristics, patient characteristics and the incidence and predictors of negative outcomes after syncope were pooled using random-effect methods (point estimate [95% confidence intervals]).

Results: 11 studies were identified, with a median of 670 patients and a follow up of 1 month. Pooled analysis demonstrated that 42% (32-52; CI95%) of patients were admitted to hospital: risk of death was 3.8% (2.55-5.01; CI95%) which was related to cardiovascular etiology in 1.1% (0.68-1.54, CI95%). A large amount of patients were discharged without a diagnosis (29%;11-47, CI95%), while the most frequent etiology was situational, orthostatic or vasavagal syncope (29%; 12-47, CI95%). A diagnosis of heart disease was made in 12% (7.8-16; CI95%) of patients, the most frequent of these being bradyarrhythmic (3.8%; 2.4-5.2; CI95%) and tachiarrhythmic disease (2.1%; 1.13-2.08; CI95%). The most powerful predictors of adverse events (defined as death and hospitalizations or interventional procedures consistent with arrhythmia, ischemic heart disease, and valvular heart disease) were palpitations preceding syncope, syncope during effort, evidence of heart failure or ischemic heart disease, B natriuretic peptide concentration (>300pg/ml), and clinical and instrumental evidence of bleeding (defined as hematocrit less than 30% or hemoglobin < 9 g/dl or positive fecal occult blood).

Conclusions: Syncope still carries an important risk of death, mainly related to underlying cardiovascular disease. Still up to one third of patients are discharged without a clear diagnosis, thus simple predictors of death and cardiac involvement, like palpitations preceding syncope, syncope during effort, history of heart failure or ischemic heart disease, B natriuretic peptide concentration (>300pg/ml), and clinical and instrumental evidence of bleeding could be very useful to identify high risk patients.

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Inhibition of pro-inflamamtory effects in human cardiac myocytes and endothelial cells by levosimendan

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Purpose: Levosimendan is a positive inotropic drug for the treatment of acute decompensated heart failure (HF). In clinical trials, levosimendan was shown to be effective in particular in HF due to acute myocardial infarction and it has been demonstrated that levosimendan reduces infarct size in animal models. Neutrophil recruitment and inflammatory activation are crucial steps in tissue damage due to ischemia reperfusion injury. The aim of the present study was to examine whether levosimendan has anti-inflammatory effects on human adult cardiac myocytes (HACM) and human umbilical vein endothelial cells (HUVEC).

Methods: Primary HACM were isolated from ventricular tissue from explanted human hearts of patients undergoing heart transplantation. HACM were treated with tumor necrosis factor-α (TNF-α) (2000U/ml) or interleukin-1 (IL-1β) (200U/ml) and pre-treated with or without levosimendan (10 μM). IL-6 and IL-8 were measured by rt-PCR and

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specific ELISA. HUVECs were treated with IL-1β (200U/ml) and pre-incubated with or without levosimendan (10 μM). Expression of E-selectin, vascular cell adhesion molecule-1 (VCAM-1) and intercellular adhesion molecule-1 (ICAM-1) was measured by flow cytometry after 8h and by rt-PCR after 2h, 4h, 8h and 24h. HUVECs treated with IL-1β +/- levosimendan for 4h were incubated with polymorphonuclear cells (PMNs) for 5 and 30 minutes to examine cell adhesion.

Results: Treatment with TNF-α and IL-1β increased mRNA and protein levels of IL-6 and IL-8 in HACM. Levosimendan decreased the effects of TNF-α on protein levels of IL-6 and IL-8 by 35% ($p < 0.05$) and 48% ($p < 0.05$) and the IL-1β-induced protein levels of IL-6 and IL-8 by 50% ($p < 0.05$) and 60% ($p < 0.001$), respectively. This was confirmed by rt-PCR. Treatment of HUVECs with IL-1β for 8h increased expression of adhesion molecules. Preincubation with levosimendan down regulated the expression of ICAM-1 by 60% ($p < 0.01$), E-Selectin by 65% ($p < 0, 05$) and VCAM-1 by 30% (n. s.), as measured by flow cytometry and confirmed by rt-PCR. In vitro cell adhesion experiments showed a markedly decreased number of PMNs bound to HUVECs when pretreated with levosimendan (1130 vs. 732 after 30min. $p < 0.01$; 302 vs. 161 after 5 min. $p < 0.001$; mean number of adhered PMNs per 250 μm2, for IL-1 vs. IL-1 + levosimendan).

Conclusions: Levosimendan down-regulates inflammatory mediators in cardiac myocytes and the expression of adhesion molecules in endothelial cells and decreases adhesion of PMNs in vitro. This could explain, at least in part, the beneficial effects of levosimendan after myocardial infarction due to a decrease of ischemia reperfusion injury.

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Oral Abstract Session 3
Monday, 22 October 2012 - 16:30 - 18:00

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Impact on the in-hospital mortality of the Romanian national programme for interventional therapy in ST-elevation myocardial infarction

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Background: Before 2010 less than 15% of patients (pts) with ST-elevation myocardial infarction (STEMI) were treated by primary percutaneous coronary intervention (PPCI) in Romania.

Objective: To present the impact on the in-hospital mortality 18 months after the onset of the Romanian national programme for interventional therapy in STEMI pts.

Methods: Our programme for PPCI was opened in August 2010 in order to treat the STEMI patients by PPCI within the first two hours after the first medical contact. For centres located far away, a strategy of local thrombolysis followed by transfer to the closest PPCI centre was recommended. This programme was based on the following components:

1. A detailed written project;
2. A special state budget covering the costs of equipment (including stents) offered by the Ministry of Health;
3. an integrated pre-hospital emergency medical system;
4. ten experienced PPCI centres organised in a 24/7 system in 5 regional networks;
5. a specific programme for training the dedicated staf in interventional cardiology;
6. A national RO-STEMI registry for monitoring the programme implementation. This programme is a cooperative effort between the Health Ministry and the Romanian Society of Cardiology.

Results: Between August 1st, 2010 and December 31st, 2011, a total of 5598 STEMI pts were treated by PPCI. The percentage of PPCI treated pts increased from 25.0% in 2010 to 49.3% in 2011. Only 10.7% of pts received thrombolysis in 2010.However, 40% of pts did not receive any reperfusion procedure. From 40 PPCI/million inhabitants in 2009, we reached 64/million in 2010 and 210/ million in 2011. In the Bucharest area there were 640 PPCI/ million in 2011. The global in-hospital mortality decreased from 13.5% in 2009 to 9.93% in 2011. In 2011 the in-hospital mortalities were 4.39%, 8.32% and 17.11% for PPCI, thrombolysis and no-reperfusion, respectively. The in-hospital mortality was 7.28% in the PCI centres but 14.20% in centres withouth PCI facilities.

Conclusions:

1. A 50% increase of the PPCI procedures was recorded in 2011 compared to 2010 in our STEMI pts.
2. The national programme for PPCI had a major impact on the in-hospital mortality in Romania: a 19% reduction of mortality was seen after 18 months of programme.
3. This impact was, however, inhomogenous (low mortality in the PPCI centres but still high in the non-PCI ones).

Table 1.

		Men, n = 3826	Women, n = 1174	p
Initial management	Fibrinolysis	618 (16%)	143 (12%)	0.001
	GP IIb/IIIa receptor inhibitors	2269 (59%)	628 (53%)	< 0.0001
	Coronary angiography	3773 (98%)	1122 (95%)	< 0.0001
	Radial access	1348 (51%)	303 (38%)	< 0.0001
	Primary angioplasty	2754 (72%)	829 (70%)	0.36
	Thrombo aspiration	1612 (47%)	425 (43%)	0.075
Intra hospital outcome	High degree AV block	112 (2%)	68 (5%)	< 0.0001
	Atrial fibrillation	138 (3%)	82 (7%)	< 0.0001
	Left ventricular ejection fraction (%)	50.5 ± 10	49.4 ± 11	0.004
	Total length of stay (days)	6.7 ± 4	7.6 ± 4	< 0.0001
Prescription at discharge	Aspirine	3584 (98%)	1022 (95%)	< 0.0001
	Clopidogrel/Prasugrel	3506 (95%)	993 (93%)	< 0.0001
	β blockers	3349 (91%)	940 (88%)	0.001
	ACE inhibitor	2481 (67%)	662 (62%)	< 0.0001
	Statine	3475 (95%)	955 (89%)	< 0.0001
	Cardiovascular rehabilitation	1577 (47%)	267 (27%)	< 0.0001

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Hyperglycaemia in acute coronary syndromes: an audit of current practice in Merseyside and North West regions of England

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Introduction: Hyperglycaemia in Acute Coronary Syndromes (ACS) is associated with poorer outcomes, regardless of preexisting diabetes, and can predict subsequent development of diabetes. Prior randomised trials have attempted to study the benefits of a variety of therapeutic approaches to hyperglycaemia in ACS, but there remains a lack of consensus on treatment guidelines and goals.

UK NICE guidelines (CG130) were released in October 2011. In anticipation of their release we explored existing practices amongst 25 hospitals (including 4 tertiary centres for Cardiology) within Merseyside and North West region of England.

Methods: A telephone survey was conducted over 2 days in September 2011.The nurse 'in-charge' of the coronary care unit (CCU) at the time of contact completed a questionnaire. Endpoints included the existence of local protocols, management of hyperglycaemia (in patients with and without previously diagnosed diabetes), screening for diabetes, and follow-up.

Results: Treatment protocols existed in 56% of CCUs, with 86% using the DIGAMI regime. The remaining units (14%) used local intravenous insulin policies (sliding scale regime). Threshold for initiating treatment was a blood glucose of ≥ 11.0mmol/L in 86% of the study group (range 10mmol/L - 11.1mmol/L). In most units, there was no difference in management between known diabetics and newly presenting hyperglycaemics except in 3 units, where treatment was initiated in all known diabetics irrespective of blood glucose on presentation. Where protocols did not exist, management varied amongst physicians.

96% of units routinely screened for diabetes using fasting glucose (92% on day 1-3, 4% on day 4, 4%- no specific timing). 67% also used HbA1c to aid diagnosis. In patients not diagnosed as diabetic, education about their future risk of developing diabetes, and referral to primary care for annual screening was not routinely offered by any hospital.

Conclusion: Our audit shows the lack of consensus on the method of controlling hyperglycaemia in neighbouring hospitals. No specific treatment regime has been advised by the latest NICE guidelines (CG130), however the DIGAMI regime is no longer advocated, despite its widespread use. There is scope for improvement in diabetic screening and patient education in this cohort, as recommended by NICE. Further studies are required to standardise care in this cohort of patients.

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Are there gender differences in the management of ST-elevation myocardial infarction? Data from ORBI, a prospective registry of 5000 patients.

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Purpose: To determine the gender differences in the management of ST-elevation Myocardial Infarction (STEMI).

Methods: We analyzed data collected in a 6 years period in "ORBI", a prospective registry of STEMI patients admitted within 24 h of symptom onset to an interventional cardiology centre in Brittany (France). Main management data were compared according to the gender.

Results: Among the 5000 included patients, 1174 patients (23.5%) were women: age: 68.8 ± 14 (vs 60.8 ± 12 for men, $p < 0.0001$). Women had longer median delays between symptom onset and call for medical assistance (60 vs 44 min., $p < 0.0001$) and between admission and reperfusion (45 vs 40 min., $p = 0.011$). Intra hospital morbi-mortality was higher in women, with a 9.0% mortality (vs 4.4% for men, $p < 0.0001$). Last, women received significantly less of the recommended treatments at discharge, as presented in table 1.

Conclusions: this study highlights significant differences in management of STEMI according to the gender.

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Primary percutaneous coronary intervention for ST-segment elevation myocardial infarction in octogenarians

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Objective: Elderly having ST-elevation myocardial infarction (STEMI) are underrepresented in trials and little is known about the efficacy and safety of primary percutaneous coronary intervention (PCI) in this population. Oslo University Hospital Ullevål is the primary PCI-centre for Eastern Norway (800 primary PCI/year) and has offered primary PCI without age restrictions for several years. We aimed to study in-hospital mortality of octogenarians undergoing primary PCI for STEMI compared to younger patients.

Methods: Single-centre observational study. All patients with acute myocardial infarction treated at Oslo University

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Hospital Ullevål between 01.01.2006 and 31.12.2010 were included in a local registry. Predefined data including in-hospital mortality were registered.

Results: A total of 4041 patients with a confirmed diagnosis of STEMI were registered; 479 (11, 9%) were octogenarians. The percentage undergoing acute angiography and primary PCI was lower in the octogenarians compared to the younger age groups (table), and in-hospital mortality was higher (16% vs. 3%). In those octogenarians undergoing acute angiography (87%), mortality was 12%. Stroke rate was 0, 6% in patients < 80 years and 1, 9% in patients ≥80 years.

Conclusion: In this high-volume primary PCI centre in Norway, in-hospital mortality for STEMI patients ≥ 80 yrs undergoing acute angiography/primary PCI was 12%. As previous data have shown a much higher in-hospital mortality in octogenarians with STEMI, these data suggest that primary PCI is an effective and safe treatment also in the elderly.

Table 1. In-hospital mortality STEMI patients

Age	< 40 yrs	40-49 yrs	50-59 yrs	60-69 yrs	70-79 yrs	≥80 yrs
N	118	513	1068	1059	804	479
Acute angiography/ primary PCI	99/85	99/88	99/92	99/90	98/87	87/84
Door-to-balloon time (min)	34	34	35	34	35	40*
In-hospital mortality	3%	2%	3%	3%	7%	16%**

*$p < 0.001$ compared to 70-79 yrs, **In patients undergoing acute angiography/PCI, mortality was 12%.

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Early left ventricular dilatation after acute myocardial infarction can be predicted by circumferential strain at admission

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Longitudinal and circumferential strain (S) and strain rate (SR) have been shown to be powerful predictors of outcome in patients with acute myocardial infarction (MI). We investigated the clinical value of these measures as predictors of early left ventricular dilatation in patients with acute MI.

76 patients with recent first Q-wave MI were investigated. 49 (64.5%) pts had anterior MI. Echocardiography was performed during the first 24 hours (mean 14.6 ± 1.4 hrs) after symptoms onset and 10 days after MI. Strain measurements were based on speckle tracking approach. Global longitudinal systolic S and SR were measured from standard apical 2-, 3- and 4- chambers views with circumferential S and SR from short axis midwall view. Early LV dilatation was defined as at least 15% increase of end-diastolic volume.

Both longitudinal and circumferential S and SR were predictive of in-hospital acute heart failure development. 21 (27.6%) pts had early LV dilatation. Circumferential S and SR were significantly reduced in patients with early postMI LV dilatation, while there were no difference between groups in longitudinal S and SR.

The level of CS >-11.0% was predictive of early post MI LV dilataion development (sensitivity 78.3%, specificity 73.1%, $p < 0.001$).

Circumferential, but not longitudinal, S and SR were predictive of early LV dilatation, suggesting that preserved circumferential function may serve to restrain early ventricular enlargement post-MI.

Table 1.

	early LV dilatation (n = 21)	without dilatation (n = 55)	p
GLS, %	–8.36+/–0.57	–9.38+/–0.54	ns
GLSR, s-1	–0.49+/–0.03	–0.53+/–0.03	ns
CS, %	–9.41+/–0.81	–12.88+/–0.91	0.018
CSR, s-1	–0.56+/–0.05	–0.73+/–0.05	0.033
EF, %	44.43+/–1.71	47.36+/–1.62	ns

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Assessment of the combined Tei index and tricuspid annular plane systolic excursion as mortality and morbidity estimator in acute inferior myocardial infarction with ST segment elevation

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Purpose: Tei index of left ventricle (LV) and tricuspid annular plane systolic excursion (TAPSE) are simple non-invasive echocardiographic (EchoCG) quantitative measures which are used for identifying mortality and morbidity risks of heart diseases. The aim of the study was to assess a pooled estimator of [Tei (LV) index≥0.55 and TAPSE≤14mm] as a combined independent predictive factor for in-hospital mortality, 1 year mortality and re-hospitalization in patients with inferior LV ST segment elevation myocardial infarction (STEMI).

Methods: We prospectively studied 221 consecutive patients with inferior LV STEMI (189 males, 38-72 y. o. with mean age of 58) who underwent EchoCG within 24 hours of onset of STEMI. Based on Tei (LV) index and TAPSE values, all subjects were divided into 2 groups: Group 1 with Tei (LV) index ≥0.55 and TAPSE≤14mm (n = 78) and Group 2 (n = 143) of the remaining patients.

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There were no significant between-group differences in age-gender and clinical patterns.

We observed 23 cases of in-hospital deaths. After recharging from the hospital, all subjects of Group 1 (n = 64) and Group 2 (n = 132) were taken into 1 year follow up and all cases of post-hospital deaths and re-hospitalizations were carefully recorded.

We made comparative risk analyses to find out any possible differences between two groups in in-hospital death, 1-year mortality and re-hospitalization rates.

Results: In-hospital mortality, 1-year mortality and re-hospitalization rates were significantly higher in Group 1 than in Group 2 (17.9% vs. 6.3%, $p < 0.01$; 39.1% vs. 14.2%, $p < 0.001$; and 50.0% vs. 18.7%, $p < 0.001$ correspondingly). For ORadj, we received the following values for Group 1: ORadj = 2.85 (99% CI 1.01 to 8.06) for in-hospital mortality; ORadj = 2.75 (99.9% CI 1.16 to 6.56) for 1-year mortality; and ORadj = 2.68 (99.9% CI 1.30 to 5.52) for 1-year re-hospitalization.

Compared with the ORadj for Tei (LV) index≥0.55 vs. Tei (LV) index < 0.55 (ORadj = 1.36, $p>0.05$; ORadj = 2.41, $p < 0.01$; and ORadj = 2.32, $p < 0.01$ correspondingly) or TAPSE≤14mm vs. TAPSE >14mm alone (ORadj = 2.61, $p < 0.05$; ORadj = 1.47, $p>0.05$; and ORadj = 1.22, $p>0.05$ correspondingly), the pooled [Tei (LV) index≥0.55 and TAPSE≤14mm] is shown to be the better predictive estimator with higher ORadj and lower significance p-values for all three rates.

Conclusion: In patients with inferior LV STEMI, the pooled [Tei (LV) index≥0.55 and TAPSE≤14mm] could be more valuable prognostic estimator for identifying patients with higher in-hospital mortality, 1-year mortality and re-hospitalization risks than Tei (LV) index≥0.55 or TAPSE≤14mm alone.

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Moderated Poster Session 3
Monday, 22 October 2012 - 08:30 - 12:30

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Percutaneous closure of post-myocardial infarction ventricular septal defects: a single center registry.

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Background: Ventricular septal rupture occurs in 0.2% of myocardial infarcts and remains associated with very high morbidity and mortality. Surgical repair is difficult because of friable necrotic tissue. Percutaneous closure may be an alternative treatment option in selected patients.

Methods: We report our experience of percutaneous post MI (myocardial infarct) muscular VSDs (ventricular septal defect) closure using the Amplatzer devices. Post MI VSD closure procedures were performed in 13 patients between 2007 and 2011.

Three patients with cardiogenic shock underwent the closure in the acute phase (< 6 days from the infarct) and 10 cases closure was attempted from 7 to 45 days post-MI.

Results: The procedure was successful in deploying a device across the VSD in 11 of 13 patients. Thirty-day survival was 35%. We have follow up 2 years for 7 patients; all of them are still alive. In two cases the post MI VSD was completely closed. Tree patients had a trivial or small residual shunt, and two patients had a moderate residual shunt.

Conclusion: Although rare in era of primary angioplasty, the development of a VSD after myocardial infarct is associated with excessive mortality, patients respond poorly to medical therapy and are often high risk for surgery, percutaneous closure should be considered a good alternative.

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Admission systolic blood pressure and outcomes in patients hospitalized for pulmonary edema - Data from the Romanian acute heart failure syndromes (RO-AHFS) registry

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Purpose: Pulmonary edema (PE) is a common medical emergency associated with high in-hospital mortality. The association between systolic blood pressure (SBP) at admission and adverse in-hospital events has not been well-studied in this population.

Objective: To evaluate the association between adverse in-hospital outcomes in patients hospitalized for acute heart failure syndromes (AHFS) presenting with PE according to admission SBP.

Methods: The Romanian Acute Heart Failure Syndromes (RO-AHFS) registry enrolled 3224 consecutive patients admitted for AHFS, over a 12-month period. Patients were classified into the five clinical profiles at admission: acute decompensated heart failure (ADHF), cardiogenic shock (CS), pulmonary edema (PE), right heart failure (RHF), and hypertensive heart failure (HT HF). Patients with PE were divided into three groups by admission SBP: < 110 mmHg, 110-140 mmHg, and >140 mmHg.

Results: PE clinical profile included 28.7% (n = 924) of RO AHFS population. The mean age was 71 ± 10.4 years and 59% were male. Ischemic etiology was reported for 71% of patients and mean LVEF was 39.2 ± 13.2%. Mean admission SBP was 167 ± 43 mmHg and SBP < 110mmHg, 110-140 mmHg, and >140 mmHg, respectively, included 14.6%, 19.6%, and 65.8% of patients. In-hospital mortality was 7.4%. Discharge outcomes by admission SBP are shown in Table 1.

Conclusions: Patients admitted for PE can be risk-stratified at admission by initial SBP. For patients discharged alive, low SBP and worsening renal function during hospitalization may limit the implementation of evidence-based therapies, potentially contributing to post discharge mortality and morbidity.

Table 1. Discharge outcomes by initial SBP

	SBP <110mmHg (n=133)	SBP=110-140mmHg (n=182)	SBP >140mmHg (n=609)	p value
In-hospital mortality (%)	22.5	10.5	3.3	0.003
Need of admission in ICU (%)	59.4	30.3	1.3	<0.001
Need of mechanical ventilation (%)	23.6	11	2.9	0.002
Alive but SBP <110mmHg (%)	21.8	12.6	5.6	0.02
Alive but increase in creatinine (%)	22.8	19.7	11.3	0.06
Alive but increase in BUN (%)	26.7	21.7	15.9	0.02
No Beta blocker at discharge (%)	70	53.5	49.2	<0.001
No ACEinh/ARB at discharge (%)	73.9	44.3	38.7	<0.001
No Ald Antagonist at discharge (%)	60.9	55	52.6	0.09

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Non invasive ventilation for cardiogenic pulmonary edema in ICCU: froth and bubbles?

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Background: The respiratory failure associated with acute cardiogenic pulmonary edema (ACPE), characterizes a important subgroup of patients with treatment difficulties. These patients when receiving noninvasive positive pressure ventilation (NPPV) via helmet, experienced more effective output with respect to the single therapy.

Objectives: Evaluate the clinical application of NPPV in ACPE complicated by respiratory effort (RE) hospidalized in ICCU.

Population: From January to June 2011 108 ACPE complicated by RE have been treated with medical therapy and NPPV via helmet. RE is defined by a D-pCO2 >2 mmHg value at the entry. D-pCO2 is the difference between pCO2 measured and awaited (pCO2 awaited = 1, 5*HCO3+8).

Methods: Patients with cardiogenic shock, cronic respiratory failure (CRF), anaemia, and other not cardiac causes of dispnea have been excluded. Initial ventilatory settings were continuous positive airway pressure (CPAP) mode, 5 cm H2O, with pressure support ventilation of 10 to 20 cm H2O titrated to achieve a respiratory rate less than 25 breaths/min and an exhaled tidal volume of 7 mL/kg or more. Ventilator settings were adjusted following arterial blood gases (ABG) results.

Results: Failure to improve ABG values was the reason for ETI in 2 patients (2.16%). One patient has died during treatment (1.8%). two patients did not tolerate the helmet (7%). No complications developed for the use of the helmet.

The average duration of NPPV was 27 ± 12 h. After 12 hours of the NINV in these patients has determined an improvement of the cardiac frequency from 109 ± 16 to 81 ± 12 ($p = 0, 002$), respiratory frequency from 38 ± 6 to 19 ± 3 ($p = 0, 002$). Arterial blood saturation increased from $74\% \pm 14$ to $96\% \pm 5$ ($p < 0, 0001$), pH from 7, 21 ± 0, 10 to 7, 40 ± 0, 09 ($p < 0.001$), pO2 from 52 ± 16 to 100 ± 31 ($p < 0, 001$) as well, while pCO2 decreased from 66 ± 17 to 41 ± 10 ($p < 0, 001$). Significant variations of systolic and diastolic blood pressure where not reported.

Conclusions: In patients with acute cardiogenic pulmonary edema, noninvasive ventilation induces a more rapid improvement in respiratory distress and metabolic disturbance than does standard oxygen therapy has no effect on short-term mortality. The application of NPPV in clinical practice in ICCU is a cardiologist's effective and safe alternative to ETI for a patients affected by respiratory failure associated with ACPE.

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Optimization of impella 5.0 implantation using mini-sternotomy approach in post myocardial infarction cardiogenic shock

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Introduction: Acute MI with refractory cardiogenic shock remains a difficult situation with a very high mortality rate in which the early management by LVAD can be lifesaving. Impella Recover LP pump 5.0® (Abiomed, Inc. Danvers, MA) is an intravascular microaxial pump developed to unload the left ventricle and to ensure a systemic blood flow around 5 L/min. The pump was designed to be implanted through a femoral artery cut-down or more recently using a right subclavian artery approach. These surgical procedures are sometimes rendered technically difficult due to the presence of PVD, small vessels or vasospasm induced by vasoactive drugs. We propose a new technique for surgical implantation using a mini-sternotomy which aims at avoiding vascular complications and facilitating the rehabilitation of patients.

Method: Under general anesthesia, including monitoring by a right BP measurement, TOE and Swan-Ganz catheter, a mini-sternotomy is performed. The sternum is sectioned at the second or the third intercostal space. This approach allows easy access to the ascending aorta after opening the pericardium. After heparinization (1 mg/Kg), a 10 mm of dacron prosthesis is implanted under a tangential clamping of the ascending aorta. A skin contra-incision allows the device to move through an intercostal space avoiding mobilization of the pump and easy closing. The Impella device is introduced in the prothesis, through the aortic valve using fluoroscopy and TOE, taking care to not pass through the chordae of the mitral valve. Using TOE, the correct position of the Impella is controlled before turning on the pump at lowest level (P1) and the pump flow above the aortic valve front to the coronary ostia is verified. The performance level is then gradually increased to reach the P8 level (close to 5L/min).

Results: We performed this technique for 14 patients (including 2 redo patients) in whom angiography found severe iliac artery lesions, or small diameters of the subclavian vessels. No failures of the procedure were found but one patient had a pericardial effusion requiring drainage. All patients had high doses of catecholamines, quickly weaned, and an intra aortic balloon pump. 9 patients were weaned from the Impella 5.0, one required the implantation of a HeartMate 2 (Thoractec®). Four patients died in the follow up, two due to multiorgan failure, 1 for sepsis and one with severe hemoptysis. We did not meet any local infection or any secondary mobilization.

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Conclusion: we encourage the cardiac surgeons to consider the mini-sternotomy approach in the particularly setting in the of post MI cardiogenic shock.

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Serum potassium shows U-shapped curve for in-hospital mortality in 1063 heart failure patients

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Background: Despite enormous importance of serum potassium, its concentration has often investigated using e. g. linear regression analysis. The aim of the study is to analyze serum K+ concentration in heart failure (HF) patients, without acute myocardial infarction and without pulmonary edema.

Patients and methods: 1063 HF patients were analyzed, hospitalized from 1998-2001.Shock was not the exclusion criterion. Patients were divided in tertiles according to serum K+ level.

Results: The average K+ concentration was 3.81 ± 0.33 in 1st, 4.44 ± 0.16 in 2nd and 5.24 ± 0.50 mmol/L in 3rd tertile. The most important parameter, in-hospital mortality, was from 1st to 3rd tertile: 5.66%, 1.42% and 9.01%, respectively. Diabetes mellitus was more prevalent in 3rd tertile vs 2nd (41.06% vs 32.06%, p = 0.0435) and vs 1st (41.06% vs 27.86%, p = 0.00266). Glycemia was higher in 3rd tertile vs 1st (7.40 ± 4.11 vs 6.65 ± 3.29 mmol/L, p = 0.04710). Coronary artery disease prevalence was higher in 3rd vs 2nd tertile (76.68% vs 65.31%, p = 0.0134). Atrial fibrillation was more common in 1st vs 2nd tertile (55.56% vs 43.54%, p = 0.01420). Serum urea and creatinine were higher and sodium concentration lower from 1st to 3rd tertile. Systolic, diastolic, mean and pulse pressure and left ventricle global contractile function were similar between the tertiles. Enlargement of left ventricle was more common in 1st vs 3rd tertile (74.84% vs 63.69%, p = 0.03302). Left atrial and right ventricle enlargement were more frequent in 1st vs 2nd tertile. Septum was ticker in 3rd vs 1st tertile 11.75 ± 2.69 vs 10.78 ± 2.41 mm (p = 0.03695).

Conclusion: Serum K+ level shows "U-shapped curve" for in-hospital mortality in heart failure patients. Mortality was the lowest 2nd tertile (4 times vs 1st and over 6 times lower vs 3rd). K+ should not be analyzed with e. g. linear regression in heart failure. Patients in various tertiles of serum K+ level have many clinically relevant differences.

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Cardiogenic shock and in-hospital mortality of patients with ST-segment elevation myocardial infarction treated by primary percutaneous coronary intervention by transradial access

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[1]Hospital Espírito Santo, Évora, Portugal [2]Em nome dos investigadores do RNSCA, SPC, Portugal

Background: Cardiogenic shock results is a physiologic state in which inadequate tissue perfusion results from cardiac dysfunction, most commonly following ST-segment elevation myocardial infarction (STEMI).

Purpose: The purpose of the present study was to evaluate the prevalence rate of cardiogenic shock and in-hospital mortality following STEMI treated with primary percutaneous coronary intervention (PCI) by transradial access.

Methods: We studied 912 patients with STEMI treated by primary PCI included in a national multicenter registry. We considered 2 groups: patients with transradial (TR) access and patients with transfemoral (TF) access. We compared in the 2 groups age, gender, cardiovascular risk factors, history of chronic renal failure, ejection fraction (EF) at admission, number of vessels with lesions and in-hospital mortality. Cardiogenic shock was defined by the presence of at least one of the following: Killip class IV, use of inotropics drugs and intraaortic balloon pump.

Results: TR access was used on 473 pts (51.9%). The patients with TR access were younger (62.1 ± 13.2 vs. 63.8 ± 13.5 years; p = 0.048) and more often male (80.8 vs. 73.3%; p = 0.008). There were no differences in cardiovascular risk factors, history of chronic renal failure and EF at admission in the 2 groups. The patients with TF access had more one-vessel coronary artery disease (CAD) (88.3 vs. 80.0%, p < 0.001) and less two-vessel CAD (8.7 vs. 17.1%; p < 0.001). There were no differences in three- vessel disease and left main coronary artery int the 2 groups. The patients with TR access received less therapy with inotropics drugs (5.3 vs. 12.8%; p < 0.001) and have a lower prevalence of Killip class IV (3.2 vs. 9, 6%; p < 0.001). There were no differences in the use of intraaortic balloon pump in the 2 groups (TR: 1.7 vs. TF: 2.5%; p = 0.390). The TR access was associated with lower in-hospital mortality (2.1 vs. 8, 2%; p < 0.001).

Conclusions: Our results suggest that radial access for primary PCI is associated with lower in-hospital mortality and lower cardiogenic shock, constituting as the preferred vascular access in STEMI treated with primary PCI.

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Troponin elevation in acute ischemic stroke (TRELAS)

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Introduction: Elevated levels of the cardiac muscle protein troponin T (cTnT) are frequently found in the clinical setting of acute ischemic stroke. The underlying pathomechanism of troponin release and its clinical significance remains uncertain. Therefore, elevated troponin levels in acute ischemic stroke remain a clinical enigma.

Methods: All consecutive patients at our institution with acute MRI- or CT-confirmed ischemic stroke admitted within 72 hours after symptom onset had cTnT-levels determined on the day of admission and the following day. Patients with increased cTnT (>0.05 µg/l) without renal insufficiency, without ST-elevation on ECG, who were able and willing to give informed consent (modified Rankin Score (mRS) >4) underwent diagnostic coronary angiography within 72 hours.

The primary endpoint of this ongoing study is detection of coronary culprit lesions with acute plaque rupture, suggestive of true acute coronary syndrome. The secondary endpoint is the localization of stroke in the cerebral imaging.

Results: Elevated troponin levels were found in 99 of 742 (13%) patients with acute ischemic stroke. Troponin-levels were 0, 080 [0, 052 - 0, 152] on day 1 (Median [IQR]; µg/dl) and 0, 123 [0, 089 - 0, 213] on day 2.Reasons for exclusion from coronary angiography were renal insufficiency (N = 34), unable (N = 25) or unwilling (N = 8) to give informed consent or premorbid mRS (N = 19). Therefore, 13 patients underwent coronary angiography (median [IQR] age; 77 [68, 5-82, 5] years, 54% female). A potential culprit lesion as underlying mechanism of troponin release was found in only 1 patient. However, also in this case TIMI Flow was III (normal). One patient underwent stenting of a coronary stenosis after the acute phase of ischemic stroke as a staged procedure. Of all patients included, insular cortex was affected in 44% with troponin elevation and 26% without troponin elevation (p = 0.003).

Conclusion: In our ongoing study, acute plaque rupture was not the predominant underlying mechanism of troponin release in patients with acute ischemic stroke. This finding could have significant impact in patient management. Involvement of the insular cortex was associated with a higher chance of troponin release.

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Direct comparison of threenatriuretic peptides in chronic hemodialysis: insights for their use in acute cardiac care

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Background: Natriuretic peptides (NP) are powerful diagnostic tools in the early diagnosis of acute heart failure. The presence of kidney disease seems to be an important confounder in the interpretation of NP levels. A better understanding about the determinants and clinical value of NPs, particularly the only recently introduced midregional pro-ANP (MR-proANP), in patients with terminal kidney disease could help clinicians to best use NPs in acute cardiac care.

Methods: We directly compared all three commercially available NPs (BNP, NT-proBNP and MR-pro-ANP) in a prospective observational study. The aim was to identify the determinants as well as the accuracy for risk prediction of BNP, NT-proBNP and MR-pro-ANP in 239 stable ambulatory hemodialysis patients.

Results: The plasma concentration of MR-pro-ANP was highly elevated 907 pmol/L [interquartile range 650-1298] and correlated independently with age, degree ofsystolic dysfunction and negatively with residual diuresis. The plasmaconcentration of MR-pro-ANP was associated with mortality within 2 years offollow-up. Receiver-operated curves revealed a low sensitivity (32%), but highspecificity (93%) resulting in a high negative predictive (86%) at a cut-offvalue of 1684 pmol/L. The performance of MR-pro-ANP was similar to that ofNT-pro-BNP and BNP.

Conclusion: In hemodialysis patients, the fragmentMR-pro-ANP is largely elevated which is partially explained by accumulation. The prognostic performance of MR-pro-ANP is similar to that of NT-pro-BNP or BNP.

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Effect of hemolysis on sensitive and high-sensitive cardiac troponin I in the early diagnosis of non-ST-elevation myocardial infarction

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Purpose: Hemolysis is the most frequent preanalytical interference. Recent data showed an interference of hemolysis and cardiac troponin (cTn) I and T in an experimental setting with major implications around the 99th percentile.

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Therefore we investigated the effect of hemolysis on the diagnostic accuracy of one sensitive and two high-sensitive cTnI assays in the diagnosis of non-ST-elevation myocardial infarction (NSTEMI).

Methods: In an ongoing, international, multicenter study enrolling patients presenting with acute chest pain to the emergency department, blood samples were collected at baseline and serially after. Plasma was analysed with three cTnI assays (Beckman-Coulter Accu TnI (Beckman AccuTnI), a prototype high-sensitive cTnI assay by Beckman Coulter (Beckman hs-TnI) and a prototype high-sensitive cTnI assay by Siemens (Siemens hs-TnI). Gold-standard diagnosis was adjudicated by two cardiologists using all available clinical data including concentrations of high-sensitive cTnT. The presence of hemolysis was determined visually by expert laboratory physicians.

Results: Of the 1126 patients with 3404 serial blood samples, hemolysis was detected in 13.5% (n = 460). Median cTnI levels did not differ significantly between hemolytic and non-hemolytic samples for all investigated assays (For Beckman AccuTnI 7.1 vs. 6.3 ng/l, p = 0.26 for comparison hemolytic vs. non-hemolytic sample; for Beckman hs-TnI 6.5 vs. 5.9 ng/l, p = 0.42; for Siemens hs-TnI 6.0 vs. 5.5 ng/l, p = 0.59, respectively).

The diagnostic accuracy for measurements obtained at presentation, as quantified by the area under the receiver operating characteristics curve (AUC), was similar in hemolytic and non-hemolytic samples for Beckman Accu TnI (AUC 0.89 vs. 0.90, p = 0.69), Beckman hs-TnI (AUC 0.89 vs. 0.92, p = 0.40) and Siemens hs-TnI (AUC 0.87 vs. 0.92, p = 0.21).

Since the introduction of sensitive cTn-assays changes as additional criteria to the level at presentation have gained importance in the diagnosis of NSTEMI. Therefore the diagnostic accuracy of absolute cTnI-changes over one, two and three hours in patients with only one hemolytic sample was compared to patients with none hemolytic samples. The AUC did not differ significantly for absolute cTnI-changes (for one-hour changes: AUC for Beckman AccuTnI 0.93 vs. 0.91, p = 0.61 for Beckman hs-TnI 0.89 vs. 0.89, p = 0.90; for Siemens hs-TnI 0.90 vs. 0.93, p = 0.57, respectively).

Conclusions: The extent of hemolysis visually seen does not seem to have a clinically relevant effect on the diagnostic accuracy of sensitive and high-sensitive cTnI in the early diagnosis of NSTEMI.

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Use of and adherence to antiplatelet agents after an acute coronary syndrome (ACS): data from a community setting of more than 2, 700, 000 subjects.

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Purpose: To assess in a community setting how patients discharged alive after an acute coronary syndrome (ACS) are treated with antiplatelets. Specifically, the rate of prescription of single or dual antiplatelet regimens, and the 6-12 months adherence to antiplatelet treatment have been evaluated.

Methods: From the ARNO Observatory database, we carried out a record linkage analysis of hospital discharge records and prescription databases, which included 2, 758, 872 subjects of 7 Local Health Authorities in Italy. The accrual period lasted from January 1, 2008 to December 31, 2008. Discharge records and prescription patterns were analyzed also for the 1 year before and after the accrual period to identify events and prescriptions reported before and after that period. Adherence to antiplatelet therapy was defined when patients received an amount of antiplatelet agents during the whole year of follow-up consistent with a daily treatment.

Results: Of the 2, 758, 872 subjects, 7082 (2.6‰) were hospitalized for ACS in the 12 months of the accrual period. Mean age was 72 ± 13 years, females accounted for 36% of the total population, diabetics for 25%. Of the 7082 patients, 66.0% was treated medically 33.1% with PCI, while in-hospital all-cause death occurred in 6.9%. Of the 6306 patients discharged alive, 5801 (92%) received a prescription of at least an antiplatelet, 27% aspirin alone, 45% aspirin plus a thienopyridine (mostly clopidogrel), 6% a thienopyridine alone. Dual antiplatelet treatment was prescribed more frequently in patients treated with PCI than in those treated medically (75.3% vs 28.8%, p < 0.0001).

Post-discharge to 1 year all-cause death occurred in 5.7% of cases (33% for cardiovascular causes). At least one re-hospitalization occurred in 58.6% of cases (18.4% for a recurrent episode of ACS, 24.8% for other cardio-vascular (CV) reasons and 15.4% for non CV reasons). Adherence to dual antiplatelet treatment was observed in 68.0% and 60.3% of the patients respectively at 6 and 12 months after discharge for an ACS.

Conclusion: In a large community setting, the rate of prescription of antiplatelets after ACS seems to be satisfactory, but the rate of prescriptions of dual antiplatelet treatment, that is recommended by current guidelines for all patients after ACS, was only 45.3%, mostly of them treated with PCI. Long-term adherence to dual antiplatelet treatment is suboptimal. The rates of all-cause death and re-hospitalizations after ACS remain quite high, but CV deaths and the recurrence of ACS accounted for just about one third of the events.

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Poster Session 3
Monday, 22 October 2012 - 08:30 - 12:30

Acute coronary syndromes: STEMI

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Angiopoietin-2 and microvascular obstruction evolution after primary percutaneous coronary intervention

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Background: Microvascular obstruction (MO) after primary percutaneous coronary intervention (PPCI) is a dynamic process with MO reversibility being associated with preserved left ventricle function. However, mechanisms involved in MO reversibility are not fully elicited. In particular, neoangiogenitic response after reperfusion has not been assessed in the setting of MO evolution.

Methods: Forty consecutive patients (64 ± 12.5 years; male sex, 32%) presenting with ST-elevation myocardial infarction and undergoing PPCI within 12 h of symptoms onset were enrolled. Electrocardiographic (ECG) MO was defined as ST-segment resolution (STR) < 70% 90 minutes after PPCI (n = 22 patients, 55%). Patients with MO found to have an improvement of STR leading to a final STR>70% at pre-discharge (mean 5 days) were classified as reversible MO (n = 15 patients, 37.5%), the remaining patients were classified as sustained MO (n = 7 patients, 17.5%). Variables predicting ECG MO patterns, recorded on admission, were assessed among clinical, angiographic and laboratory data, including Angiopoietin-2 (Ang-2) (pg/mL), measured at baseline and variations (Δ) in Ang-2 levels between 24h (2) and basal values (1) and pre-discharge (3) and 24h (2) were related to ECG MO evolution.

Results: Pre-procedural Ang-2 systemic levels were similar among patients with sustained and reversible ECG MO and patients with STR>70% after PPCI [11.473 (8.128;14.807) vs 7.926 (5.563;12.340) vs 10.701 (6.884;14.133), p = 0.30]. Δ Ang-2 (2-1) was higher in patients with sustained [-4.468 (-7.799; - 6.327)] and reversible [-2.782 (-3.353; 0.353)] ECG MO as compared to patients with STR>70% after PPCI [-0.673 (-6.321;4.601); Bonferroni-adjusted (Ba) -p = 0.04 and p = 0.11, respectively], while did not differ between sustained and reversible ECG MO (Ba-p = 0.88). Δ Ang-2 (3-2) was significantly higher in patients with sustained ECG MO [-4.517 (-8.001; -4.125)] as compared to patients with reversible ECG MO [-0.234 (-2.118; 3.687), Ba-p = 0.006] and patients with STR>70% after PPCI [1.343 (-1.415;9.162), Ba-p < 0.001].

Conclusion: A significant fall in systemic Ang-2 levels is observed in ECG MO patients as compared to those with ECG good reperfusion. Moreover, Δ Ang-2 show lesser reduction in patients with reversible MO, this suggests that persistent angiogenesis may contribute to MO reversibility.

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Direct admission to catheterization laboratory reduces door-to-balloon time for primary percutaneous coronary intervention in patients with ST-segment elevation myocardial infarction

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Purpose: Timely performance of primary percutaneous coronary intervention (PCI) in patients with ST-segment elevation myocardial infarction (STEMI) improves left ventricular function and survival. However, triage at emergency department (ED) may unnecessarily delay this time-dependent treatment. This study was designed to determine whether direct admission of STEMI patients to catheterization laboratory (Cath Lab), bypassing the ED, is feasible and can shorten the door-to-balloon time (DBT) for primary PCI.

Methods: Since January 2010, we implemented a new system of direct Cath Lab admission for primary PCI provided patients were arrived with pre-hospital notification or electrocardiogram. All consecutive STEMI patients who underwent primary PCI from January 2010 through December 2010 were included for this study. Baseline clinical characteristics, time interval parameters, and angiographic and procedural characteristics were compared between patients with direct Cath Lab admission and patients with conventional ED admission.

Results: Among a total of 115 patients (age 62.1 ± 13.0 years, 87 males) who underwent primary PCI, direct Cath Lab admission was eligible in 83 (72%) patients. There were no differences in baseline clinical characteristics between patients with direct Cath Lab admission and patients with conventional ED admission. Median symptom-to-door time (SDT) was similar in both groups (386 vs. 164 min, p = 0.54). Median DBT was significantly shorter in patients with direct Cath Lab admission than in patients with conventional ED admission (41 vs. 77 min, p = 0.001). This difference was also maintained during 'off-duty' hours (44 vs. 67 min, p = 0.08). The rates of DBT ≤90 min, ≤60 min, and ≤30 min were significantly higher in patients with direct Cath Lab admission than in patients with conventional ED admission (100% vs. 85%; 89% vs. 3%; 16% vs. 0%, respectively). There was no difference in infarct size

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determined by peak troponin levels. In-hospital death was not different (1.4% vs. 2.9%, p = 0.504).

Conclusions: Clinical profiles of STEMI patients eligible for direct Cath Lab admission did not differ from patients with conventional ED admission. Direct Cath Lab admission, based on pre-hospital notification or electrocardiogram reduced DBT significantly in primary PCI. These results suggest that the protocol of direct Cath Lab admission allows shorter DBT targets to be reliably achieved.

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Early and late ST-segment recovery and outcome after primary percutaneous coronary intervention for ST-elevation myocardial infarction

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Purpose: Primary percutaneous coronary angioplasty (PPCI) is an effective and widely adopted treatment for acute myocardial infarction. A simple method of determining prognosis after PPCI would facilitate appropriate care and expedite hospital discharge. Thus, we determined the prognostic importance of early and late ST-segment–elevation recovery (STR) after primary PCI in contemporary cohort of patients with ST-elevation myocardial infarction.

Methods and Results: We analyzed ECG data describing the magnitude and extent of ST-segment elevation and deviation using single lead max STE-Post in two interval time, i. e early (0' after PPCI) vs late (60' after PPCI) in the study cohort of 206 subjects with electrocardiographically high-risk ST-elevation myocardial infarction. This study enrolled at National Cardiovascular Center Harapan Kita (NCCHK) from October 2010 to June 2011.Hazard ratio was calculated using Cox Regression.

There were significant difference between early vs late complete STR (9.2 vs 21.1%, p = 0.001). Hazard ratio of late vs early complete STR to major cardiovascular event (MACE) in 3 months was 2.241 (CI 95%, 1.326-3.988, p = 0.001). In multivariate analysis; age>65 yo, diabetes, troponin T> 1μg/dl, random blood glucose > 200 g/dl, LAD as a culprit lesion, Ejection Fraction >40%, patients without ACE-Inhibitors and beta blocker was confounding factors for both STR and MACE.

Conclusions: An early STR is related to significant lower incidence of MACE compared to late STR. An ECG performed early after primary PCI is a simple, widely available, inexpensive, and powerful prognostic tool applicable to patients with ST-elevation myocardial infarction.

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Contrast induced acute kidney injury is a strong predictor of persistent renal dysfunction in patients with acute myocardial infarction undergoing percutaneous coronary intervention

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The incidence and predictor of persistent renal dysfunction in patients with acute myocardial infarction (AMI) treated with primary percutaneous coronary intervention (PCI) are not well characterized. The aim of this study was to determine the clinical predictors of persistent renal dysfunction in patients undergoing primary PCI for AMI.

Methods: 253 consecutive AMI patients undergoing primary PCI were enrolled in this study. Persistent Renal Dysfunction was defined as an increase in serum creatinine of > = 0.5 mg/dl or a > = 25% increase from the baseline value at the 6 month follow-up after PCI.

Results: Overall, persistent renal dysfunction occurred in 77 (30.4%) patients. Patients with and without persistent renal dysfunction had similar baseline creatinine levels (0.86 ± 0.40 mg/dl vs 0.85 ± 0.27mg/dl, p = 0.864). The incidence of hypertension and anemia at admission (baseline hemoglobin < = 13.0mg/dl) were significantly higher in patients with persistent renal dysfunction (hypertension: 59.7% vs 39.2%, p = 0.002, anemia: 28.6% vs 15.9%, p = 0.017). And also, the incidence of contrast induced acute kidney injury (CIAKI) was significantly higher in patients with persistent renal dysfunction (62.3% vs 9.1%). In multivariate analysis, CIAKI was an only independent predictor of persistent renal dysfunction (OR 14.6, 95%CI 7.27-29.46, p < 0.001).

Conclusion: We found out that persistent renal dysfunction frequently occurred in patients undergoing primary PCI for AMI and the presence of CIAKI was strongly associated with persistent renal dysfunction.

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Emergency transport detail of patients with acute myocardial infarction in Tokyo metropolitan area

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Background: ST elevation myocardial infarction is known critical requirement of early admission to cardiac center enabling emergency percutaneous coronary intervention. For this reason emergency ambulance transport to appropriate hospital in earliest time is needed especially in serious condition.

Objective and Method: In order to clarify current status of emergency transport (ET) in Tokyo Metropolitan area we analyzed registered data of patients with acute myocardial infarction (AMI) in Tokyo CCU network database dated January to December 2009.

Result: From registered 2094 patients ET status eligible 1862 patients (Age 68.3 ± 13.3, male n = 1384) were divided into two groups, which comprised emergency medical transport group (EMT: n = 1493, 80.2%) and ordinary transport (OT: n = 369). EMT included Tokyo Metropolitan Fire Department Ambulance (n = 1411), hospital ambulance (n = 61) and OT included various transport according to own patient decision. Killip class 2-4 were more transported in EMT (26.5%) comparing with OT (16.5%) ($p < 0.02$). In-hospital mortality was significantly worse in EMT (8.8%) vs OT (3.8%) ($p < 0.01$). The onset-hospital time was significantly shorter in EMT (median:115min, average:4hr5min) than OT (median:320min; average:5hr35min) ($p < 0.01$). Although emergency coronary angiography was similarly undertaken (EMT:89.5% vs 88.2%), emergency PCI rate was higher in EMT than OT (70.3% vs 60.7%; $p < 0.01$) because of the delay to hospital in OT group with similar door -balloon time < 90min to STEMI in both group (74% vs 76%). Patients were first seen by neighboring general practitioner (GP) more frequently in OT (69% vs EMT:32%; $p < 0.01$), and OT group were not called up ambulance in contrary to EMT group with immediate ambulance call by GP.

Conclusion: It is confirmed that ET system played a significant role in managing prehospital AMI care in Tokyo Metropolitan Area resulting early admission and emergency PCI. Furthermore this analysis emphasizes education for citizen and GP to call public EMT to diminish delay on most important treatment.

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ST-segment deviation resolution before early reperfusion in ST elevation myocardial infarction: a quick method to predict coronary flow

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Current state of the art treatment of ST elevation myocardial infarction (STEMI) is targeted at restoration of myocardial perfusion by means of pharmacologic as well as mechanical interventions. Uploading patients with anti-platelet and anti-coagulant drugs may facilitate reperfusion. Analysis of electrocardiographic changes may predict restoration of myocardial perfusion and might be a marker of outcome.

Method: Serial electrocardiograms (ECGs) of patients referred to our interventional center were analyzed. All ECGs were made by the ambulance personnel. The first at arrival of the ambulance. This diagnostic ECG was compared with the ECG just before entering the catheterization laboratory without changing the lead positions. ST segment deviation was measured afterwards. ST segment deviation resolution (STDR) was expressed as percentage. The initial TIMI flow before PCI was evaluated afterwards by an experienced observer unaware of the ECG changes.

Results: A total number of 127 patients were included. Fifty-five showed no STDR at all (≤0), only 25.5% of them had a TIMI flow of 2 or 3. Forty-five had a STDR of 0-29%. Less than half of them had a TIMI flow of 2 or 3.In the remainder of 27 patients STDR was ≥30%. In this group a TIMI flow of 2 or 3 was observed in 59%. There was a significant correlation between STDR and TIMI flow before PCI ($p = 0.014$).

Conclusion: ST-segment resolution can differentiate between STEMI patients with an open and closed vessel. It may thus be helpful in prioritizing patients and up-titrating medication.

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Beneficial effect of pre-hospital resolution of ST-segment elevations on outcomes in STEMI patients treated with primary coronary interventions

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A total resolution of ST-segment elevations in STEMI patients early after reperfusion therapy was shown to be related to a reduced infarct size and lower mortality.

Aim of the study: To assess the effect of pre-hospital resolution of ST-segment elevations on outcomes in STEMI patients undergoing primary coronary interventions (PCI).

Material and methods: We studied 310 consecutive STEMI patients referred to our department for PCI. Inclusion criteria were: (1) chest pain persisting for >30min, (2) ST-segment elevation >1mm in ≥ 2 contiguous leads,

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(3) admission within 12 hours from symptoms onset, (4) pre-treatment with an unfractionated heparin, aspirin and a loading dose of 600 mg clopidogrel. The sum of ST-segment elevations were assessed in: (1) qualifying ECG (performed in the peripheral hospital or in the ambulance), (2) ECG before angiography (after patient's transfer) and (3) ECG performed 60 min post PCI as well as the rate of total ST-segment resolution (STR) prior to PCI and 60 min post PCI. Relationships between STR prior to intervention and factors such as age, sex, BMI, diabetes mellitus, total ischemic time (symptom onset to balloon inflation), peak troponin T level and CK-MB level, TIMI flow and MBG were analyzed.

Results: Total STR prior to PCI was observed in 72 patients (23.2%) – group I and lack of STR in 238 patients (76.8%) – group II. Patients with STR did not differ in terms of age (58.3 ± 9.6 vs. 60.9 ± 11.4 years; NS), BMI (27.8 vs. 27.8; NS), male sex (76.6% vs 75.3%; NS) and total ischemic time (232.4 ± 117.7min vs. 241.1 ± 136.3min; NS) when compared to patients in group II except for the incidence of diabetes mellitus (9.7% vs. 20.7%; $p = 0.036$). TIMI flow ≥2 prior to PCI was four-fold often observed in patients with STR (79.2% vs. 18.9%: $p < 0.0001$). STR was associated with significantly lower peak troponin T level (2.2 ± 2.5ng/ml vs. 6.4 ± 5.0ng/ml, $p < 0.0001$) and max CK-MB level (133.6 ± 122.7U/l vs. 290.4 ± 196.5U/l; $p < 0.0001$) and significantly higher rate of normal myocardial blush grade (MBG 3) (80.6% vs. 56.4%; $p < 0.001$) when compared to group II.

Conclusions:

1. Pre-hospital total ST-segment resolution is closely related to TIMI flow ≥2 at initial angiography.
2. STR prior to PCI is associated with significantly higher rate of MBG 3 and lower peak troponin T level and max CK-MB level when compared to patients with lack of STR.

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Tricuspid annular plane systolic excursion as a predictive measure of in-hospital mortality and acute cardiac complications in acute inferior myocardial infarction with ST segment elevation

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Purpose: Tricuspid annular plane systolic excursion (TAPSE) is a simple echocardiographic (EchoCG) quantitative measure of myocardial contractility of right ventricle (RV). The purpose of the current study was to evaluate the relation between TAPSE and the increase in rates of in-hospital mortality and serious acute cardiac complications in inferior left ventricular (ILV) ST elevation myocardial infarction (STEMI).

Methods: We prospectively studied 221 consecutive patients with ILV STEMI (189 males, 38-72 y. o. with mean age of 58) who underwent EchoCG within 24 hours of STEMI onset.

Based in TAPSE values, all subjects were divided into 2 groups: Group 1 with TAPSE≤14mm (n = 115) and Group 2 with TAPSE>14mm (n = 106) with no significant inter-group differences in clinical patterns or treatment methods.

All subjects were taken under hospital follow-up to record all cases of in-hospital deaths, ventricular arrhythmias (Lown ≥IIIo) (VA); II-IIIo sinoatrial and/or atrioventricular blocks (BL), supraventricular tachiarrhythmias (SVT) and cardiogenic shocks (CS).

Results: In-hospital mortality was 14.8% in Group 1 compared with 5.7% in Group 2 ($p < 0.05$). We received an adjusted odds ratio (ORadj) of 2.6 with 95% confidence interval (CI) 1.1 to 6.4.

Similar to the mortality, acute cardiac complications were more frequent in Group 1 than Group 2: 31.3% vs. 14.2% for VA ($p < 0.01$, ORadj = 2.2 and 99% CI 1.1-4.5); 31.3% vs. 16.0% for BL ($p < 0.05$, ORadj = 1.9 and 95% CI 1.2-3.3); 18.0% vs. 16.0% for SVT ($p>0.05$); 11.3% vs. 3.8% for CS ($p < 0.05$, ORadj = 3.0 and 95% CI 1.1-8.9).

Conclusion: With the exception of SVT, TAPSE≤14mm has been found as an independent predictor of in-hospital mortality and all remaining acute cardiac complications in patients with ILV STEMI. The results of the current study suggest that, when possible, EchoCG should be applied and TAPSE should be implemented in the early follow-up of ILV STEMI patients.

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PCI in STEMI patients admitted more than 12 hours after the onset of symptoms

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Nearly one-third of patients with acute ST-segment elevation myocardial infarction (STEMI) do not receive early reperfusion therapy, mostly because of late presentation after symptom onset. The benefit of PCI in STEMI patients admitted after 12 hours remains unclear. The goal of our study was to assess whether an invasive strategy based on PCI with stenting is associated with better in-hospital outcomes than is a conservative treatment strategy in patients with acute STEMI presenting more than 12 hours after symptom onset.

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Methods: The data from 789 patients hospitalized with STEMI in 2010 were analyzed retrospectively. Among the 101 patients (12.8% of the total) admitted more than 12 hours from symptom onset (excluding those with cardiogenic shock and/or prior thrombolysis), 41 underwent PCI with stenting (the invasive group) and 60 were treated conservatively (the conservative group). The groups were comparable in baseline clinical and infarct characteristics. All patients received aspirin, clopidogrel, anticoagulation if indicated, ACE inhibitors, beta-blockers, and statins, unless contraindicated.

Results: Hospital mortality was lower in the invasive group (7.3% vs. 11.7%), but this difference was not significant. There was a statistically significant difference in a composite of death, reinfarction, New York Heart Association class III-IV heart failure, and clinically significant arrhythmias (24% in the invasive group vs. 38% in the conservative group, p = 0.02) The incidence of post-infarction angina was significantly lower in the invasive group (0% vs. 41.7%; p < 0.01). The total of in-hospital cardiovascular events (death, post-infarction angina, recurrence of infarction) was also lower in the invasive group (7.3% vs. 53.3%; p < 0, 01).

Conclusion: Revascularization (PCI) in patients with STEMI admitted more than 12 hours after the onset of symptoms can lead to improved in-hospital outcomes.

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Anemia impact in ST elevation myocardial infarction: inhospital morbidity and mortality

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Introduction: Hemoglobin impact in inhospital morbidity and mortality of patients with STEMI has been target of little investigation.

Methods: Retrospective study of 192 consecutive patients, admitted for STEMI, between October 2009 and October 2011. We defined anemia according to the WHO (hemoglobin < 13g/dl in men and < 12g/dl in women). We divided them into two groups: patients with anemia (group A; N = 31; 16, 1%; 75, 2% men); and without anemia (group NA; n = 161; 83, 9%; 61, 3% men) and compared them in relation to primary compound objective (nonfatal re-infarction, stroke and CV mortality) and secondary objectives (total mortality; stroke and re-infarction isolated) during inhospital stay.

Results: Prevalence of anemia at admission in STEMI was high: 16, 1%. They presented older age (A = 72 ± 12 vs NA = 62 ± 12, 8 years; p < 0, 001), higher prevalence of DM (A = 41, 7% vs NA = 23, 3%; p = 0, 034), CKD (A = 6, 5% vs NA = 0, 6%; p = 0, 017) and peripheral arterial disease (A = 9, 7% vs NA = 0, 6%; p = 0, 001). The BMI was lower (A = 24, 9 ± 4, 2 vs NA = 26, 9 ± 3, 7 years; p = 0, 003). There were no differences in the percentage of women, hypertension, dyslipidemia, smoking, previous myocardial infarction or previous revascularization. There were no differences in previous therapeutic. At admission patients with anemia presented higher levels of creatinine (A = 1, 28mg/dl; interquartile ratio [IQR]: 0, 93-1, 63] vs NA = 1, 0mg/dl; IQR: 0, 775-1, 225; p = 0, 013), higher BNP (A = 451 ± 593ng/ml vs NA = 1305 ± 1296ng/ml; p < 0, 001), Killip-Kimbal Class >1 (A = 46, 4% vs NA = 16, 9%; p = 0, 001) and at 72h (A = 48, 1% vs NA = 25, 4%; p = 0, 017). No differences found in antiplatelet use (except for IIb/IIIa glycoproteins inhibitors, less used in patients with anemia) and anticoagulant, but patients with anemia received less ACEi/ARB (A = 32, 2% vs NA = 67, 1%; p < 0, 001), more diuretics (A = 41, 9% vs NA = 22, 4%; p = 0, 022), inotropes (A = 32, 3% vs NA = 10, 6%; p = 0, 001) and mechanic ventilation (A = 22, 6% vs NA = 4, 3%; p < 0, 001). No differences in realization of coronaryography, multivessel disease and angioplasty. Patients with anemia presented cardiogenic shock (A = 29% vs NA = 7, 5%; p < 0, 001) and more mechanical complications (A = 12, 9% vs NA = 1, 9%; p = 0, 003). Anemia patients had higher primary compound objective (A = 29% vs NA = 6, 8%; p = 0, 002), due to an higher mortality (A = 25, 8% vs NA = 5, 6%; p = 0, 001), and there were no differences in stroke and re-infarction incidences.

Conclusions: Anemia in STEMI patients is a frequent comorbidity, revealing a worst clinical, but not angiographic, profile. During inhospital stay they evolved more frequently with cardiac insufficiency, cardiogenic shock and death.

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Blood glucose level on admission as a predictor of in hospital mortality in acute ST elevation myocardial infarction

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Purpose: Diabetes subjects are more likely to experience a myocardial infarction and have worse outcomes compared to non diabetic subjects. The aim of this study is to evaluate effect of blood glucose level on admission in patient with or without diabetes with in-hospital mortality of patients with acute ST elevation myocardial infarction (STEMI).

Methods: The patients with diagnosis of acute STEMI between 2007-2011 were enrolled. This study was performed in Emergency Department of National Cardiac

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Center Harapan Kita, Jakarta, Indonesia. We evaluate the risk factors of CAD, laboratory results, and coronary angiography. The in hospital mortality of patients with elevated and normal glucose level was compared.

Results: A total of 1457 were included in this study (mean age 55 years old). Of those, we found that 434 patients have history of diabetes (29.7%) and 1023 patients (70.3%) was normal. In group of patient without history of diabetes, the in hospital mortality between normoglycemic and hyperglycemic level at admission was not significant (5.3% vs 10.39, p: 0, 072). In group of patients with history of diabetes, it is also showed that there is no significant difference in hospital mortality between nomoglycemic and hyperglycemic level at admission (6.8% vs 12.8%; p 0.059). However, we found that group of patients with elevated blood glucose level demonstrated higher number of in hospital mortality than normoglycemic level at admission (10.8% vs 5.8%, $p < 0.001$).

Conclusion: Patients with STEMI having elevated blood glucose level have a worse outcome than that patient without diabetes. In hospital mortality was significantly higher in patients with hyperglycemia at admission than normoglycemia.

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Manual thrombaspiration during primary PCI in STEMI patients with visible thrombus in the infarct-related artery

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Purpose: Despite primary PCI brings to rapid and complete recanalization of infarct-related coronary artery, adequate distal flow is not always obtained due to distal embolization. To prevent distal embolization several devices for mechanical thrombus aspiration have been proposed. Impact of routine use of these devices during primary PCI still remains controversial but their efficacy is obvious for aspiration of huge visible thrombus from coronary arteries.

Methods: 104 patients presented with STEMI and visible or presumably huge amount of thrombus in infarct related coronary arteries were divided into two groups: Group 1 – (n = 89 – 85, 6%) patients after successful cross of the target obstruction and thrombus aspiration; and Group 2 – (n = 15 – 14.4%) patients with unsuccessful attempt to cross the lesion due to significant stenoses (conventional strategy of stenting after balloon predilation was performed for these group of patients).

Results: Incidence of SlowFlow or No Reflow Phenomenon (defined as a TIMI flow grade < 3) was significantly lower in patients with successful thrombus aspiration versus unsuccessful cases with conventional primary PCI (12.4% vs. 33.3%). Rate of ≥50% resolution of ST segment elevation during 1st hour after PCI was significantly higher in the group 1 versus group 2 (65, 2% vs. 40%). Mean LVEF improvement between patient admission and 30 days follow up was 14.3 ± 4.1% in the group 1 vs. 10.1 ± 3.8% in the group 2.Mean hospital stay was 3.7 ± 1.3 days for the 1st group vs. 5.1 ± 2.7 days for the 2nd group.

Conclusions: Upstream manual thromboaspiration before stent implantation in patients with STEMI and visible thrombus in infarct related artery improves myocardial perfusion, decreases the rate of SlowFlow/NoReflow Phenomenon. Thrombaspiration improves left ventricular contractility and shortens mean hospital stay.

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Prognostic significance of mild chronic kidney disease in patients treated with successful primary percutaneous coronary intervention

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Purpose: To determine prognostic significance of mild chronic kidney disease (CKD) (creatinine clearance-CrCl = 60-89ml/min) on 30-day overall mortality and major adverse cardiovascular events–MACE (comprising cardiovascular mortality, reinfarction and stroke) in patients with ST-elevation myocardial infarction (STEMI) treated with successful primary percutaneous coronary intervention (pPCI).

Methods: We analysed 2904 patients who undewent successful pPCI (postprocedural TIMI 3 flow through infarct related artery). Baseline CrCl was calculated using Cockroft-Gault formula and renal function was subdivided into CKD stages. Patients presenting with cardiogenic shock and patients on hemodialysis were excluded.

Results: CKD was present in 1271 patients (43.7%). Mild CKD was present in 892 patients (70.2% of all patients with CKD). The incidence of 30-day overall mortality and MACE was significantly higher in patients with mild CKD compared with patients with preserved renal function (CrCl≥90ml/min): 2.92% vs 0.92% and 7.62 vs 4.37% respectively ($p < 0.001$). In Cox regression model mild CKD was an independent predictor of 30-day overall mortality (HR 2.01, 95%CI 1.20-4.31, p = 0.038) and MACE (HR 1.98, 95%CI 1.10-2.63, p = 0.015) and the risk for the occurence of 30-day mortality and MACE was increasing with increasing CKD stage. Other independent predictors

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of 30-day mortality and MACE were age, heart failure at admission, left ventricular ejection fraction and prior myocardial infarction.

Conclusion: In patients with STEMI who underwent successful pPCI the presence of mild CKD with CrCl = 60-89ml/min is associated with 2-fold increase in 30-day overall mortality and MACE.

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Effects of previous treatment with betablockers on the clinical course of acute coronary syndrome

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Purpose: Betablockers (BB) have shown to have a beneficial effect on myocardial infarction (AMI), reducing mortality when administered after admission. We analyze the effect of previous betablockers treatment on patients admitted because of acute coronary syndrome (ACS).

Methods: We analyzed the data of patients included in the register ARIAM-Andalucia, which involves 40 hospitals in Andalucia, Spain, from 2001 to 2011.Patients on BB treatment previously to admission because of ACS constituted the BB group (BG), and were compared with the group of patients not on BB (NBG).

Results: We included 37353 patients, of whom 7786 (20.8%) were BG and 29567 (79.2%) were NBG. BG were older (66 ± 11 vs 64 ± 13, $p < 0.001$) and more often female (29 vs 26%, $p < 0.001$), or had diabetes (43 vs 31%, $p < 0.001$), hypertension (73 vs 50%, $p < 0.001$), previous AMI (49 vs 11.2%, $p < 0.001$), arrhythmia (10 vs 6%, $p < 0'001$), heart failure (9.5 vs 4%, $p < 0.001$), stroke (8 vs 5.5%, $p < 0.001$), vasculopathy (7 vs 5%, $p < 0.001$) or renal failure (4 vs 1%, $p < 0.001$). They were less often smoker (21 vs 37%, $p < 0.001$). BG were Non-ST elevation ACS more often than NBG (57 vs 36%, $p < 0.001$). BG presented less atrio-ventricular blockade (5 vs 6.5%, $p < 0.001$), and less ventricular fibrillation or tachycardia (7 vs 9%, $p < 0.001$). There were no significant differences in the incidence of shock (BG 5.7 vs NBG 5.5%) and hospital mortality (BG 5.7 vs NBG 5.6 %). Logistic multivariate regression analysis did not find BG to be a significant predictor of mortality. In contrast, in-hospital use of BB was a strong predictor of better prognosis (table 1).

Conclusions: Patients previously treated with betablockers are a group of more cardiovascular risk factors. They had less often ventricular arrhythmias or atrioventricular block. However they showed no significant differences in heart failure or in-hospital mortality. Multivariate analysis did not show a significant role of the previous treatment of BB on short-term prognosis. That is an intriguing result that requires further investigation.

Table 1.

	Odds Ratio	95% Confidence Interval	p
BG	1.12	0.98-1.27	NS
Heart Failure	5.46	4.91-6.06	<0.001
In-hospital betablocker	0.14	0.12-0.16	<0.001

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What are the predictors of not receiving a reperfusion therapy in STEMI patients?

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Background: The standard of care for ST-segment elevation myocardial infarction (STEMI) is prompt coronary reperfusion with primary percutaneous coronary intervention or thrombolysis. However, a substantial number of patients (pts) with myocardial infarction receive only conservative medical management.

The aim of the present study was to examine predictive factors of not receiving reperfusion therapy among STEMI pts.

Methods and Results: From January 1995 to December 2010, the MIRAMI Registry enrolled 1318 patients admitted for STEMI. Multivariate analysis was performed to determine predictors of not receiving reperfusion therapy. Two hundred eighty nine patients were excluded from this analysis because of lacking data. The remaining 1029 pts were considered for this analysis with 360 (35%) that received a reperfusion therapy and 669 (56 %) that were treated conservatively. Multivariate analysis identified only three independent predictors for not receiving a reperfusion therapy: age ≥75 years ($p = 0.004$), time to hospital admission ≥ 6 hours from the onset of symptoms ($p < 0.001$) and night (from 08:00 PM to 08:00 AM) occurrence ($p = 0.004$).

Conclusions: More than half of the population of this study did not receive a reperfusion therapy. Elderly, female patients, late presenters and patients who present at night are more likely to not receive a reperfusion therapy.

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Acute coronary syndromes: Non STEMI

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Accuracy of a new diagnostic strategy for the evaluation of chest pain combining high-sensitivity troponin T and CCTA. The TRUE pilot study.

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Background: Acute chest pain is one of the most common complains of patients presenting to the Emergency Department (ED). The main challenge in patients with chest pain and non-diagnostic electrocardiogram (ECG) is to identify those with an acute coronary syndrome (ACS) in order to deliver effective treatment and at the same time discharge safely those with non-ischaemic chest pain.

Purpose: We sought to evaluate the diagnostic performance of a new diagnostic strategy combining high-sensitivity troponin T (hsTnT) and cardiac computed tomography angiography (CCTA) and compared it to our standard protocol, in the evaluation of chest pain with non-diagnostic electrocardiogram (ECG) in the ED.

Methods: We conducted a randomised, open clinical trial that enrolled patients admitted to the ED for chest pain with non-diagnostic ECG. One group of patients (fast strategy) underwent hsTnT determination (Roche Diagnostics) and, if negative, a subsequent CCTA (Philips iCT 256) was performed. The other group of patients (standard strategy) underwent TnT determination using a 4th generation essay (Roche Diagnostics) and, if negative, a subsequent exercise stress test. If either the CCTA or the exercise stress test were negative the patient was discharged. Conversely with a positive result the patients were scheduled for an invasive coronary angiography (ICA).

Results: A total of 36 patients were included in the study; 58 % were male with an average age of 58, 1+/-12, 1 years, 30% were smokers, 48% were hypertensive, 20% were diabetics, 57% had abnormal lipid profiles, 5% had peripheral artery disease and no patients were in chronic renal failure. Only 2 patients (11%) randomised to standard strategy underwent ICA compared to 6 (33%) of those assigned to the fast strategy group. Importantly while the 6 patients of the fast strategy group that were evaluated by ICA underwent revascularisation, the 2 patients of the standard strategy group were found to have coronary arteries without significant lesions. In the multivariate analysis, fast strategy shows a trend towards better prediction of myocardial revascularization although not reaching statistical significance (OR 3:75; CI 95% 0.64-22.04; p = 0.14).

Conclusion: The evaluation of patients presenting to the ED with chest pain by use of hsTnT and CCTA strategy may allow for a more more appropriate selection of those requiring myocardial revascularization, than the conventional strategy (4th generation troponin and stress test).

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Acute coronary syndrome in human immunodeficiency virus-infected patients in the era of highly active antiretroviral therapy: a single center experience with more than three years of follow-up.

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Background: Many studies have provided features and outcomes of patients with acute coronary syndrome (ACS) in HIV patients. However the clinical outcome and long-term prognosis are not yet fully clarified.

Material: HIV-infected patients admitted in our hospital with ACS. During the hospitalization, baseline clinical characteristics, angiographic presentation, revascularization strategy and events were appraised. After discharge patients were followed up to access incidence of coronary events, HIV-related complications and death.

Results: Between 2001 and 2011 we enrolled 21 consecutive HIV-infected patients admitted with a diagnosis of ACS. All patients were male, mean age 52 ± 8 years at presentation, 10/21 were affected by hypertension (47%), 9/21 were dyslipidemic (43%) and 16/21 tobacco users (76%), only one was diabetic (4%). Eighteen (87%) were receiving highly active antiretroviral therapy (HAART). Most patients (12/21; 57, 1%) were admitted with ST Segment Elevation Myocardial Infarction (STEMI) mainly involving the anterior wall (8/12); nine patients (42, 8%) with non-ST Segment Elevation syndrome. The angiography showed three vessels disease in three patients (14, 3%), two vessel disease in three (14, 3%) and left main involvement in two cases (9%). Percutaneous transluminal coronary angioplasty (PTCA) was the most exploited revascularization strategies in fourteen patients (66, 66%) although three patients (14, 2%) required surgical revascularization. The in-hospital course was favorable in absence of significant events (death, re-infarction or heart failure). During a medium follow-up of 37 months (quartiles 2-114) HIV-infected patients had a high incidence of re-infarction (9/17; 52, 9%) with 6 (35%) percutaneous coronary re-angioplasty. Moreover, cardiac death was recorded in two patients (11, 7%).

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Conclusions: HIV patients on HAART therapy, admitted for ACS, show an high incidence of multivessel disease (often requiring surgical revascularization), benign in-hospital course but significant long-term risk of myocardial infarction, coronary revascularization and cardiac death.

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Stress hyperglycemia and atrial fibrillation in 2670 acute myocardial infarction patients

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Background: Stress hyperglycemia (SH), high admission glycemia, is a sign of bad prognosis in acute myocardial infarction (AMI). Only in a few studies coexistence of SH and atrial fibrillation (AF) in AMI was investigated. In PubMed, only one published study and one editorial were found using search words: "stress hyperglycemia atrial fibrillation acute myocardial infarction" on April 1, 2012.

Patients and methods: 2670 AMI patients were studied, hospitalized from 1998 to 2005, before (primary) PCI was available in our institution. SH was defined as admission plasma glucose level ≥8 mmol/L, found by receiver-operator curve (ROC) in our previous series of 543 AMI patients.

Results: AF was statistically significantly more common in SH group (15.74% Vs. 12.29%, p = 0.0153). Both already diagnosed and new-onset diabetes mellitus were more prevalent in SH group. SH is at least a marker of worse prognosis, as judged by the following- in SH group more prevalent were: STEMI (68.23% vs. 58.58%, p = 0.0002), left ventricle (LV) enlargement (31.19% vs. 26.15%, p = 0.0214), decrease of LVEF (37.63% vs 26.00%, p = 0.0002), LV aneurysm (15.76% vs 11.54%, p = 0.0086), in-hospital mortality (21.80% vs 6.92%, p < 0.0001), but ventricular tachycardia /fibrillation's prevalence was similar (14.29% vs 11.45%, p = NS).

Conclusion: recently described coexistence of stress hyperglycemia and atrial fibrillation in AMI was confirmed in the largest database so far published (to the best of our knowledge). Worse LV dimensions and function, as well as metabolic disturbances can explain the more prevalent AF in AMI patients with stress hyperglycemia, leading to higher in-hospital mortality. Having in mind detrimental effects of AF in AMI setting, more efficaceous prevention of AF is needed in patients with stress hyperglycemia.

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Prevalence and non-invasive predictors of left main or three vessel coronary disease in patients with ACS: evidence from a collaborative international meta-analysis including 22, 740 patients.

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Background: Left maindisease (LMD) and three-vessel disease (3VD) carry important prognostic valuein patients with coronary artery disease. However, uncertainties still exist ontheir prevalence and predictors in patients with acute coronary syndrome (ACS). Thus we aimed to perform a collaborative systematic review and meta-analysis toappraise the prevalence and predictors of LMD or 3VD.

Methods: MEDLINE/PubMed wassystematically searched for eligible studies published up to 2010, reportingmultivariate predictors of LMD or 3VD. Study features, patient characteristics, prevalence and predictors of LMD and 3VD were abstracted and pooled withrandom-effect methods (95% confidence intervals).

Results: 11 studies (27, 896 patients) were included: LMD or 3VD occurred in 20.1% (7-33), LMD in 12.0% (10.5-13.5), and 3VD in 25.7% (23.1-27.0). Heart failureat admission, extent of ST-segment elevation in aVR on 12-lead ECG and score ofTIMI were the most powerful predictors of LMD or 3VD.

Conclusions: Thismeta-analysis documented that severe coronary disease, i. e. LMD or 3VD, is morecommon among patients both with ACS than generally perceived, and that simpleand low cost tools may help to select the most appropriate therapeuticapproach.

Acute heart failure

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Acute heart failure in pulmonary embolism: the appropriate use of the diagnosis resources in the real life. findings from Romanian registry for pulmonary tromboembolism (RO-TEP)

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Background: The suspected diagnosis of the acute right heart failure in pulmonary embolism (PE) start from the history and physical examination is suggested by electrocardiogram (ECG), blood gases, biomarkers and chest X-ray and must be confirmed by further investigation (chest CT scan, echocardiography and certainly, whenever possible, angiography). The rational management strategy established by the Guidelines must be transposed in real life wherefrom the Registries provides reliable data.

Methods: Romanian Registry for Pulmonary Trombembolism (RO-TEP) enrolled 215 consecutive PE patients (pts) between January 2009 and March 2012, 51.2% woman, aged 63.42+/-15.22, with Wells score 5.10+/-2.21 and revised Geneva score 13+/-3.62.PE was stratified into levels of early risk using clinical, right ventricle (RV) dysfunction and myocardial injury markers: high risk 43 pts (20%), intermediate risk 145 pts (67.4%) and low risk 27 pts (12.6%).

Results: We notified the main symptoms of PE (acute dyspnoea 176 pts – 81.9%, chest pain 85 pts -39.5%, insidious 49 pts – 22.8%, syncope 35 pts – 16.3% and hemoptysis 18 pts – 8.4%) and clinical findings (none 96 pts – 44.7%, jugular venous distension 47 pts – 21.9%, deep venous thrombosis in calf 44 pts – 20.5% and thigh 28 pts – 13%). The shock index (heart rate divided by systolic blood pressure) was < 1 in 166 pts (77.2%) and > 1 in 45 pts (20.9%). Admission ECG was normal in 51 pts (23.7%) and the negative T wave in V1-V3 derivations at discharge is strong correlated with the patient survival ($p < 0.05$). D-dimers was positive values in 71 pts (33.02%), troponine in 86 pts (40%) and high BNP values was founded in 59 pts (27.44%). Chest radiography was performed in 131 pts (60.9%) and was normal in 26 pts (12.1%). Chest CT was done in 152 pts (70.7%), lung scan in 3 pts (1.4%), pulmonary angiography in 4 pts (1.9%) and necropsy in only one case (0.47). Transthoracic echocardiography (TTE) was performed in 171 pts (79.5%), transoesophageal echocardiography in 2 pts (0.9%) and the compression ultrasonography in 78 pts (36.3%). TTE finding correlated with patients survival was the admission RV-RA gradient ($r = 0.213$, $p = 0.05$), admission TAPSE ($r = –0.422$, $p = 0.01$), admission PASP ($r = 0.245$, $p = 0.01$) and the presence of the floating thrombus ($r = 0.152$, $p = 0.05$).

Conclusions: Ro-TEP Registry offer a accurate view on the daily use of the diagnosis resources for the suspected, suggested and confirmed diagnosis of the acute right heart failure in PE which also allows a quick correction of the reported deficiencies.

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Incidence of acute heart failure in an adult contemporary cohort of myopericarditis

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Purpose: The clinical manifestations of myopericarditis vary from chest pain to fulminant heart failure. Natural history data come from old series from referral centre populations. The study objective was to assess the incidence of heart failure complicating acute myopericarditis diagnosed by using more sensitive markers of myocardial necrosis (cardiac Troponin I).

Methods: We studied 145 consecutive patients, older than 14 years old, admitted to our Coronary Care Unit between 2000 and 2008. The diagnosis of myocarditis established by clinical criteria and evidence of cardiac necrosis markers elevations (Troponin I and CK MB mass). Serial two dimensional echocardiography was performed in all patients during admission. Coronary angiography was performed in 26.9% of patients.

Results: Mean age was 28.8 ± 8.5 (16-59) years. There were 93.8% males. 46.2% of patients were smokers and 10 had recent used cocaine, previous history of pericarditis or myopericarditis in 8 patients (5.5%), few patients had risk factors for coronary heart disease, mainly dyslipidaemia (8.3%) Evidence of an acute viral infection was present in 64.1%, but witout a seasonal pattern of presentation. 23 patients presented fever at admission. Chest pain was present in 86.8% of patients. Initial ECG with ST segment elevation (> 1mm) were seen in 71.7% of patients, predominantly diffuse elevation pattern. Pericardial effusion was found in 18 patients (12.4%), neither with echocardiographic o clinical tamponade findings. On ECG monitoring we found non sustained ventricular tachycardia in 12 patients (8.3%). Serum cardiaca markers: mean CK was 465.7 ± 327.7 ng/mL and CK MB mass was 58.2 ± 47.5 ng/mL, the mean Troponin I peak level was 14.09 ± 10.8 ng/mL. Left ventricular wall motion abnormalities were described at admission in 28 patients (19.3%) with a complete recovery in all of them at discharge. Mean ejection fraction at admission was 60.6 ± 6.3% (range 40-78), of the 17 patients (11.7%) with initial impaired systolic function (Ejection fraction < 55%) ejection fraction normalized in all of them. Two patients developed transitory heart failure during admission. Only one patient died in an haematological inmunosuppression context after multiple myopericarditis recurrence.

Conclusion: Adult contemporary acute myopericarditis have a benign course with low incidence of acute heart failure or persistent left ventricle dysfunction.

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Initial characteristics and outcome of cardiogenic shock due to acute decompensated heart failure

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Background: Cardiogenic shock (CS) is severe clinical condition of ventricular failure leading to a high mortality and morbidity. Acute myocardial infarction (AMI) is the most common etiology of CS. However, there has not yet been clarified the characteristics and outcomes in patients with CS due to acute decompensated heart failure (ADHF) compared with AMI.

Methods: Data from the Tokyo CCU Network registered cohort in 2009 were analyzed. The Tokyo CCU Network is operated through 67 hospitals with the help of Ambulance Units through the Control Room of the Tokyo Fire Department.

Results: Among a total of 8823 registered patients (pts), we analyzed 554 pts of CS transported to medical centers via emergency medical service (EMS). CS was defined as systolic blood pressure (sBP) is < 90mmHg including cardiac arrest. One hundred seventy eight pts were excluded from this analysis because of the non-cardiovascular or unknown etiology. Of the total, 143 pts were AMI, 77 pts were ADHF, 78 pts were arrhythmia and 78 pts were other cardiovascular disease. In comparison with the ADHF pts and the AMI pts, there were no significant differences among these 2 groups in term of age, gender, body mass index and the median time interval between EMS arrival and CCU arrival. On the other hand, SpO2 of the pts with ADHF was lower than that of the pts with AMI (79.5 ± 22.4 vs 84.6 ± 28.4%, p = 0.00). Though in-hospital mortality of pts with ADFH with or without shock was similar with that of AMI, the in-hospital mortality of pts with ADHF complicated with CS was higher than that of pts with AMI (36.4% vs 23.8%, p = 0.048).

Conclusion: CS due to ADHF showed a higher mortality rate than that due to AMI, and SpO2 was lower in pts with ADHF, suggesting that early and appropriate management including prehospital care would be important for CS due to ADHF, as well as for due to AMI.

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Extracorporeal membrane oxygenation (ECMO) support in cardiogenic shock due to acute myocardial infarction: in-hospital results

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Background: The mortality rate of cardiogenic shock during acute myocardial infarction is very high. Despite advances in treatment with emergent revascularization, inotropes and intra-aortic balloon pump cardiogenic shock still carries a severe prognosis.

Material and Methods: From May 2010 to Febbruary 2012, 8 patients (mean age 59 + 8 ys; range 47 - 70; M:F 6:2) admitted to our Center for acute myocardial infarction complicated by cardiogenic shock requiring ECMO support. All cases underwent urgent coronary angiography, primary PCI and IABP insertion and required oral intubation for respiratory failure. Venoarterial cannulae for extracorporeal membrane oxygenation was inserted by cardiac surgeons and the patients followed by critical care physicians.

Results: Diagnosis of presentation was anterior myocardial infarction in 7 cases and inferior myocardial infarction with right ventricle involvement in 1case. Continuous venovenous hemofiltration was used in 5 patients. Mean duration of ECMO support was 10 days (range 5-21 days). Complications during ECMO support was: vascular in 3 patients, intestinal ischemia in one patient and non fatal haemorrages in one patient. Five patients (62 %) were successfully weaned from ECMO assistance. Four (50%) patients died: two patients within 24 hours after admission during ECMO support because of cardiogenic shock and two patients because of septic shock (one on ECMO support). Four patients were discharged and they were currently alive.

Conclusions: In patients with acute myocardial infarction and refractory cardiogenic shock despite emergent revascularization, inotropes and intra-aortic balloon pump, ECMO support permit survival in almost half of patients. Vascular complications were common.

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Indicators in severe Takotsubo cardiomyopathy in Tokyo CCU network

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Takotsubo cardiomyopathy, also called stress-induced cardiomyopathy, is a transient form of acute heart failure triggered by stressful events and associated with a distinctive left ventricular contraction pattern. Despite the severity of the acute illness, Takotsubo cardiomyopathy is generally favorable prognosis. Conservative treatment with hydration and

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resolution of the physical or emotional stress usually results in rapid resolution of symptoms and ECG changes. However, some heart failure becomes severe, and require the use of inotropic agents and IABP (intra-aortic balloon pumping). We investigate whether there is any correlation with severe heart failure requiring cardiac supporting therapies in a patient profiles and laboratory findings on admission, using a Tokyo CCU Network database, comprising of 67 large volume cardiovascular centers in the metropolitan area, provides us a unique opportunity to characterize fundamental feature of the disease. During Jan 1 to Dec 31, 2010, data on 73 cases of Takotsubo cardiomyopathy (mean age, 75 ± 10; male, 23%). During hospitalization, 16% cases necessitated cardiac supporting therapies (inotropic agents, n = 9; pacing, n = 2; IABP, n = 2). Pleural effusion ($p < 0.05$) and pulmonary congestion ($p < 0.05$) on chest X-ray have a significant correlation with severe heart failure requiring cardiac supporting therapies. Vital signs at admission, ST-segment elevation in 12-lead electrocardiogram, and CPK and BNP levels don't have a significant correlation with severe heart failure requiring cardiac supporting therapies. Association with prognosis is not at all.

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Comparison of results of the treatment of patients with acute myocardial infarction complicated by cardiogenic shock hospitalized in years 2000-2003 and 2004-2007

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Background: Cardiogenic shock is the most significant predictor of in-hospital death among patients (pts) suffering from acute myocardial infarction. The application of invasive revscularisation, especially percutaneous coronary intervention permitted to reduce mortality in this group to about 50% by comparison with 80-90% in case of medical treatment. However, little data exist regarding further decrease of in-hospital mortality in this group of pts.

Methods: We retrospectively reviewed medical records of 298 consecutive pts with myocardial infarction complicated by cardiogenic shock treated invasively in our department in years 2000-2007.This group was devided into two subgroups: AMI-CS1 with 111 pts hospitalized in the period 2000-2003 and AMI-CS2 with 187 pts in years 2004-2007. AMI-CS2 patients in comparison to AMI-CS1 were significantly older, with statistically lower LVEF assessed usually on 5th day after admission and with contrast induced nephropathy more often complicating their hospitalization. Patients admitted in the later period were not treated with thrombolysis in fact and what is more the duration of symptoms before admission to hospital with cathlab was not reduced.

Results: When compared mortality in both groups the in-hospital and 1-year mortalities appeared significantly higher in group AMI-CS2. In addition the death in the first year after hospitalization happened more often in subgroup AMI-CS2 but this difference was not statistically significant. So higher 1-year mortality is a result of higher in-hospital mortality in fact. Results were shown in table 1.

Conclusions: Results of treatment of patients with acute myocardial infarction complicated by cardiogenic shock hospitalized in years 2004-2007 compared to results in years 2000-2003 did not revealed improvement despite of progress in therapeutic methods used. Most probably it is the result of less favourable clinical profile of patients in later period, and also not reduced time to admission for invasive treatment and abandoned thrombolytic treatment.

Table 1.

	AMI-CS1 (n = 111)	AMI-CS2 (n = 187)	p
In-hospital mortality	42 (37, 8%)	95 (50, 8%)	< 0, 05
Death in the 1st year	7 (10, 1%)	15 (16, 3%)	NS
1-year mortality	49 (44, 1%)	110 (58, 8%)	< 0, 05

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The state of oral cavity and the occurrence and course of the myocardial infarction in the hospital phase

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Objectives: The aim of this study was to assess the impact of oral health status on the occurrence and course of acute myocardial infarction during hospitalization in the population of up to 60 years of age.

Methodology: The study included patients hospitalized with acute myocardial infarction (MI) with ST and no ST elevation. The control group consisted of people with stable coronary artery disease (CAD). Laboratory tests included: glucose, creatinine, total cholesterol, LDL-cholesterol, HDL-cholesterol, tryglicerydes (TG), CRP, fibrinogen, IL-6, TNFα, CK-MB, troponin, BNP and GFR. Aproximal plaque index (API), clinical attachment loss (CAL), periodontal pocket depth (PD), sulcus bleeding index (SBI), number of teeth were assessed in every patients. Research picturesque comprised: electrocardiogram, echocardiogram, angiography examination, carotid ultrasound, measurement of ABI.

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Results: The study included 112 persons (85 men, 27 women). The control group consisted of 67 patients with stable CAD (43 men, 24 women). Study group was divided into a subgroup of edentulism (34 people), a subgroup with advanced periodontal disease (PD) (46 patients) and subgroup with mild periodontal disease (PD) (32 persons). In the group of patients with MI there was a higher intensity of risk factors compared to group with stable CAD. In the study group were significantly higher concentrations of CRP and fibrinogen, IL-6, TNF-a and BNP. The highest concentrations of CRP was in the group of edentulous patients (21, 5 mg/l) and in the group with advanced PD (14, 2 mg/l). The thickness of IMT was significantly higher among edentulous patients ($p < 0, 0001$). The most frequently atherosclerotic plaques occurred in the group with advanced PD and the group of edentulism ($p = 0, 0488$). PD occurred more frequently in the study group ($p < 0, 0001$). In the group with MI was significantly higher: API, CAL, PD, SBI. A positive correlation between API rate but the concentration of fibrinogen and between CAL but CRP was revealed. A negative correlation between the number of teeth and the concentration of CRP and the number of teeth (< 10) and the concentration of fibrinogen and a positive correlation between the number of teeth (>10) and the concentration of fibrinogen. Multivariate analysis showed a correlation between the parameters describing the state of oral health in particular periodontal disease (API, CAL, PD, SBI, edentulism) and the occurrence and extent of MI (CK-MB, troponin, BNP, EF) and IMT. Summary. Poor condition of the oral cavity, particularly an often appearing periodontal disease can influence occurrence and extent of MI.

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Effects of Levosimendan infusion in patients with cardiogenic shock

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The aim of investigation: The evaluate of clinical effect and tolerability of Levosimendan therapy in patients with acute myocardial infarction (AMI) complicated with cardiogenic shock.

Material and methods: Levosimendan was infused 10 patients with AMI complicated with cardiogenic shock. All patients were of male sex. The average age of patients is 59 ± 34, middle body weight– $84 \pm 3, 6$ kg.

Results: During infusion 3 patients had episodes of arterial hypotension to 80/50 mm Hg, what passed independently during 30 minutes after a stop of infusion. Heart rate (HR) decreased on 15% (from $112 \pm 2, 9$ to $95 \pm 3, 1$ at 1 minute, $p < 0, 05$), without the substantial changes of other indexes. On 5-6 days, when the improvement of hemodynamic allowed to halt introduction of dopamine, there was a decline of HR on 24% (from $112 \pm 2, 9$ to $85 \pm 2, 8$ on a minute, $p < 0, 05$), central venous pressure (CVP) decreased on 34% (from $192 \pm 11, 4$ to $126 \pm 8, 9$ mm of water, $p < 0, 05$), increase of diuresis on 88% (from 800 ± 100 to 1500 ± 250 ml, $p < 0, 05$) and glomerular filtration rate (GFR) on 24% (from $48, 2 \pm 3, 4$ to $59, 6 \pm 2, 9$ ml/min/1, 73m², $p < 0, 05$). Systolic blood pressure (SBP) and SaO2 did not change practically. The systolic function of the left ventricle became better end-systolic volumes diminished on 23% (from $95 \pm 8, 3$ to $72 \pm 7, 0$ ml, $p < 0, 05$), ejection fraction (EF) of the left ventricle grew on 16% (from $37 \pm 1, 8$ to $43 \pm 2, 1$ %, $p < 0, 05$).

Conclusions: In patients with AMI complicated with cardiogenic shock with systolic blood pressure more than 90 mm Hg, on a background infusion of middle and high doses of dopamine, careful use of levosimendan promotes a correction and stabilizing of hemodynamic, to the waiver of inotropnic support and increase of day's diuresis and GFR. Levosimendan can be used for complex therapy of this patients category.

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Acute heart failure (AHF): the influence of body mass index (BMI) on effort tolerance before discharge

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Purpose: The aim of study was to analyse the prevalence of obesity and abdominal obesity in patients with AHF, the influence of BMI on effort tolerance before discharge and the relation between BMI and left ventricular systolic disfunction.

Method: We studied 85 patients with mean age 73, 58% men, hospitalized with AHF between 1.02.2011-1.03. 2012. We excluded: aortic stenosis and mitral stenosis with surgical indication, hypodiastolic heart failure, acute coronary syndromes. The lot was divided in 5 groups by BMI: G1: BMI < 18, 5kg/m2; G2: BMI 18, 5-24, 99 kg/m2; G3: 25-29, 99 kg/m2; G4: BMI 30-34, 99 kg/m2; G5 >35 kg/m2.The limit for abdominal obesity was waist circumference 88cm for women and 102 cm for men. The effort tolerance was evaluated by 6 min walk test before discharge. Left ventricular systolic disfunction (ejection fraction EF < 50%) was evaluated by echocardiography.

Results: The distribution by BMI was: G1 7%; G2 27%; G3 30, 5%; G4 15, 5%; G5 20%. 35% of all were obese, 30, 5% were overweight and 58, 8% had abdominal obesity. Left ventricular systolic disfunction was presented in 83, 3% of underweight patients, 65, 2% of normal patients by BMI, 38% of overweight patients, 46% of patients with moderate obesity and 58, 8% of patients with severe obesity. The worst effort tolerance was in underweight patients (the distance < 200m in 83, 3% of all), then the patients with severe

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obesity (the distance<300m in 70%), the obese patients (the distance<300m in 61%), the overweight patients (the distance<300m in 53%). The normal patients by BMI had the best effort tolerance, the distance<300m in 48% of all, despite the high prevalence of left ventricular systolic disfunction (65, 2%). The obese patients (BMI >30kg/m2) had more reduced effort tolerance than nonobese patients (normal and overweight), distance<300m in 66, 6% vs distance<300m in 51%, despite similar prevalence of left ventricular systolic disfunction (53% vs 51%).

Conclusions: Obesity and abdominal obesity had high prevalence in patients with AHF. Obesity had a major impact on effort tolerance and functional status before discharge, indifferently of left ventricular systolic disfunction. The normal patients by BMI had the best effort tolerance despite the high prevalence of left ventricular systolic disfunction, the underweight patients had the worst effort tolerance and the biggest prevalence of left ventricular systolic disfunction. The overweight patients had a good effort tolerance and the best left ventricular systolic function. The study has not statisticaly signification because of small number of patients.

Arrhythmias

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Effects of ivabradine treatment on dobutamine-induced increase in ventricular arrhythmias

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Purpose: Dobutamine (DOB) has been known to increase heart rate (HR) and induce cardiac arrhythmias. Ivabradine, a novel HR lowering agent, has been shown to improve clinical outcomes in chronic heart faliure (HF). However, data on the effect of ivabradine for specifically cardiac arrhythmias are still lacking. Therefore, we evaluate the effect of ivabradine on DOB-induced increase in cardiac arrhythmias.

Methods: Fifty four patients with decompensated HF requiring inotropic support, LVEF < 35% and in sinus rhythm were included in this study. All patients underwent holter recording for 6 h before the initiation of DOB infusion and thereafter, DOB was administered at incremental doses of 5, 10 and 15 μgr/kg/min, with 6-h steps. Holter monitoring was continued during 18 h of DOB infusion. Ivabradine 7.5 mg was given at the initiation of DOB and readministered at 12 h of DOB infusion in 26 patients (ivabradine group) and 28 patients did not receive ivabradine (control group). Holter recordings were analyzed for change in HR, ventricular premature contractions (VPC), ventricular couplets, non sustained ventricular tachycardia (NSVT) and total ventricular arrhythmia for each step of study protocol.

Results: In control group, mean HR gradually and significantly increased at each step of DOB infusion ($p = 0.001$), while no significant increase in HR was observed in ivabradine group ($p = 0.439$). The median number of VPCs significantly increased in both ivabradine and control groups ($p < 0.001$ and $p < 0.01$). The median number of ventricular couplets significantly increased in only ivabradine group ($p = 0.003$). No significant change was observed in the incidence of NSVT in both groups. Overall, total ventricular arrhythmias were found to increase in both ivabradine and control groups (Table).

Conclusions: This study suggested that ivabradine prevents the increase in HR during DOB infusion, however, it has almost no effect on DOB-induced ventricular arrhythmias.

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Fluoroless catheter ablation of atrial fibrillation by novel electroanatomical mapping

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Background: Fluoroscopy-guided catheter ablation exposes both patient and operator to a substantial lifetime risk of radiation-induced cancer diseases. We assess the impact of simultaneous visualization of multiple catheters by using a novel electroanatomical mapping system CARTO 3 on the fluoroscopy exposure during catheter ablation of atrial fibrillation (AF).

Table 1.

	VPCs Control	VPCs Ivabradine	Couplets Control	Couplets Ivabradine	Total arrhythmia Control	Total arrhythmia Ivabradin
Baseline	149 (42-340)	132 (23-271)	1.5 (0-3.25)	0.0 (0-2.0)	128 (42-322)	158 (48-312)
DOB 5 μg/kg/min	256 (55-508)	147 (30-538)	2.5 (1-5.25)	1.0 (0-3.0)	258 (58-469)	205 (55-722)
DOB 10 μg/kg/min	251 (57-549)	158 (47-588)	1.0 (0-5.25)	1.0 (0-4.0)	241 (59-446)	226 (112-739)
DOB 15 μg/kg/min	208 (44-446)	198 (47-503)	1.5 (0-5.0)	1.0 (0-7.0)	212 (45-438)	261 (74-493)
p	0.01	0.001	0.159	0.003	0.018	0.015

(Abstract 370)

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Methods: 157 patients (114 male) referred for AF ablation were consecutively enrolled in this study. One group was treated with CARTO XP system (18 patients). The other group was treated with the novel CARTO 3 system (139 patients) allowing precise localisation and navigation visualisation of both ablation catheter and mapping catheters. Pre-procedural CT or MRI imaging was integrated into the procedure. Procedural endpoint was electrical isolation of all pulmonary veins in both groups.

Results: No differences for age (mean age of 60.8 years), sex distribution (73% male) and clinical characteristics (left atrial size, AF type, heart disease) were observed in both groups. Both fluoroscopy and procedure times were significantly shorter in the patients using simultaneous visualization of multiple catheters with CARTO 3 than using conventional electroanatomical mapping CARTO XP, 14.7 min vs. 47.1 min ($p < 0.001$) and 139.5 min vs. 203.8 min ($p < 0.005$), respectively. Electrical isolation of all pulmonary veins was obtained in all patients.

Conclusion: Novel electroanatomical mapping enabling simultaneous visualization of multiple catheters to guide AF ablation allows a significant reduction of both fluoroscopy and procedure times.

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Elective coronary artery by-pass graft surgery: occurrence and treatment of postoperative atrial fibrillation

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Introduction: Atrial fibrillation (AF) is a most common arrhythmia after surgical myocardial revascularization. Effective and safe strategy is required for the acute management of postoperative AF.

Objective: To determine which factors influence the occurrence of postoperative AF in patients scheduled for elective coronary artery by-pass graft (CABG) surgery and which therapeutic principles are used for its management.

Material and methods: The study included a total of 55 patients (15 women, 40 men, mean age 62.47 ± 7.99 years) scheduled for elective CABG surgery during period of four months. Of the 55 patients, in first group was 19 patients who did have postoperative AF and in second 36 who didn't have postoperative AF. Standard preoperative preparation included medical history, clinical examination, transthoracic echocardiography (ECHO) and selective coronary angiography. We analyzed the effect of demographic characteristics of patients, risk factors, preoperative therapy, echocardiography findings and coronary angiography findings on occurrence of AF. We also analyzed characteristics of postoperative AF and its treatment.

Results: The group with postoperative AF was older (66.21 ± 6.09 vs. 60.50 ± 8.24 years, $p = 0.01$) which was statistically significant difference between first and second group. When we compared data about presence of risk factors for coronary disease it was interesting to find that in group with postoperative AF were fewer current tobacco users (6/19 vs. 22/36, $p < 0.05$) which was statistically significant difference between groups. There was no statistically significant difference in other risk factors, in used preoperative therapy, previous myocardial infarction, ECHO, coronary angiography findings, by-pass pump-time, aorta cross-clamp time, myocardial protection by cold cardioplegia and number of arterial and venous grafts between groups. Postoperative AF occurred in 19 patients. AF occurred a mean of 2.11 ± 1.49 days after surgery. The maximal ventricular rate during atrial fibrillation was 139.11 ± 12.19 beats per minute and duration of atrial fibrillation was a mean of 4.68 ± 2.36 hours. Postoperative AF was converted to sinus rhythm by intravenous use of amiodarone in 14 (73.7 %) patients and by intravenous use of beta-blocker in 5 (26.3 %) patients.

Conclusion: Age is a significant risk factor for occurrence of postoperative AF. We also showed that the use of intravenous amiodarone and beta-blocker according to guidelines for management of postoperative AF is an effective and safe treatment.

Biomarkers

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Early diagnosis of acute myocardial infarction in patients with kidney disease using more sensitive cardiac troponin assays

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Purpose: The rapid and reliable diagnosis of acute myocardial infarction (AMI) is a major unmet clinical need, particularly in patients with kidney disease (KD), who are known to have elevated levels of cardiac troponins (cTn) already in the absence of AMI, which may lead to a lower diagnostic value of cTn in this high-risk subgroup.

Methods: We conducted an international multicenter study to examine the diagnostic accuracy of more sensitive cTn assays in 1291 consecutive patients presenting to the emergency department with symptoms suggestive of AMI, of whom 186 (14%) were determined to have KD (MDRD GFR < 60ml/min/1.73m²). CTn levels were determined using three sensitive assays (Roche high-sensitive Troponin T (hs-TnT), Siemens Troponin I Ultra

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(TnI Ultra), Abbott-Architect Troponin I (TnI Abbott)) and a standard assay (Roche Troponin T (TnT4)). The final diagnosis was adjudicated based on hs-TnT by two cardiologists.

Results: AMI was the final diagnosis in 33% (n = 61) of all KD-patients as compared to 17 % in patients without KD ($p < 0.001$). Among KD-patients with other diagnoses than AMI, baseline cTn-levels were elevated above the 99thpercentile with hs-TnT in 67%, with TnI-Ultra in 16% and TnI Abbott in 12%. In patients with KD the diagnostic accuracy at presentation, quantified by the area under the receiver operator-characteristic curve (AUC), was significantly greater for the sensitive cTn-assays compared to the standard assay (AUC for hs-TnT, 0.88; TnI Ultra, 0.89; and TnI Abbott, 0.89 vs. AUC for the standard assay, 0.83, $p < 0.05$ for all comparisons). In patients presenting within three hours after the onset of chest pain, TnI Ultra (AUC 0.92) and TnI Abbott (AUC 0.93) were superior to hs-TnT (AUC 0.82, $p = 0.05$ and $p = 0.015$ for comparisons, respectively) and TnT4 (AUC 0.73, $p < 0.01$ for both comparisons), whereas hs-TnT no longer performed superior to TnT4 ($p = 0.07$). Using the predefined 99th-percentile cutoff of the sensitive cTn-assays, specificity and diagnostic accuracy was significantly reduced in KD-patients, whereas sensitivity remained similar.

Conclusions: Sensitive cTn-assays have high diagnostic accuracy also in KD-patients and are superior to conventional cTn-assays. In addition, there seems to be a difference among the sensitive assays in the early presenters with a higher diagnostic accuracy of TnI Ultra and TnI Abbott as compared to hsTnT, which might be caused by the higher renal excretion of cTnT in KD-patients. Mild elevations are common in non-AMI patients and test-specific optimal cut-off-levels tend to be higher in KD-patients than in patients with normal kidney function.

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The value of serum osteoprotegerin levels in patients with angina like chest pain undergoing diagnostic coronary angiography

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Background: Osteoprotegerin (OPG) is a member of the tumor necrosis factor (TNF) superfamily. Recent evidence supports a relationship between serum OPG level and atherosclerosis. The aim of this study was to evaluate the possible association of OPG with the presence of coronary artery disease (CAD), its severity and prognosis in patients with chest pain and suspected coronary stenosis.

Design and Methods: In this cross-sectional analytic study, 180 candidates of elective coronary artery angiography were recruited. Serum level of OPG was measured by ELISA method in all patients and its relation with presence and severity of CAD based on a coronary atherosclerosis score (CAS) was assessed. Patients were followed for a mean period of about 24 ± 3.2 months and the relationship between OPG levels and future cardiac events were evaluated.

Results: The mean serum level of OPG was 1637 ± 226 g/ml in those with CAD and 1295 ± 185 pg/ml (nonparametric $p = 0.001$) in those without it. There was a significant direct correlation between the level of serum OPG and CAS (rho = 0.225, $p = 0.002$). The optimal cut-off point for predicting a significant coronary artery obstruction was a serum level of ≥1412pg/ml with a sensitivity and specificity of 60% and 57.8%, respectively. Major adverse events (MACE) including cardiovascular death, admission with ACS or heart failure, was significantly higher in those with higher OPG levels [22 (34.3%) vs. 15 (16%), $P = 0.012$].

Conclusion: There was a direct and significant correlation between the serum level of OPG and CAS. MACE occurred more commonly in those with higher baseline OPG levels.

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Elevated cardiac troponin I as predictor of adverse outcomes in hypertensive patients

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Purpose: Myocardial damage detected as elevated serum cardiac troponin I (cTnI) indicates increased risk for future cardiac events in patients with chronic heart failure. Whether elevated cTnI is associated with adverse outcomes in patients with hypertension (HT) without left ventricular (LV) systolic dysfunction is unknown.

Methods: We measured cTnI levels in 194 patients with essential HT without LV systolic dysfunction (LV ejection fraction ≤ 55%), renal failure, and prior cardiovascular or cerebrovascular diseases and 48 normal controls.

Results: Levels of cTnI were elevated (≥ 0.1 ng/mL) in 19 (10%) of the patients with HT and in 0 (0%) of the normal controls ($P = 0.04$). The rate of diabetes mellitus (DM), the cardiothoracic ratio, plasma B-type natriuretic peptide (BNP) value, and LV mass index were significantly higher in patients with than without elevated cTnI (DM, 9/19 versus 31/175, $P = 0.004$; cardiothoracic ratio, 58.5 ± 4.2 versus 51.2 ± 5.6%, $P = 0.04$; BNP, 101.2 ± 138.6 versus 37.2 ± 48.6 pg/mL, $P = 0.04$; LV mass index, 232 ± 82 versus 148 ± 61 g/m2, $P = 0.0001$). Kaplan-Meier analysis

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demonstrated that significantly fewer (P < 0.00001) patients with, than without elevated cTnI remained free of events (hospitalization due to cardiovascular or cerebrovascular disease).

Conclusion: cTnI is a novel and useful predictor of future cardiovascular or cerebrovascular events in hypertensive patients.

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Significance of brain natriuretic peptide in the prediction of secondary morbidity and mortality in post-MI patients

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Prognostic value of elevated plasma level of brain natriuretic peptide (BNP) has been reported in patients with chronic heart failure (CHF). However the role of this marker in the prediction of secondary morbidity and mortality in post-MI patients has not been well established.

Aim: The aim of the study is to estimate the role of BNP for the prediction of heart failure and mortality in post-MI patients for follow-up period of one year.

Methods and Results: The role of plasma BNP level in the prediction of heart failure and mortality was prospectively assessed in 453 patients with acute myocardial infarction. Mean age of patients was 62 ± 11 years, mean BMI was 25.96 ± 3.42kg/m2 and M/F ratio was 299/154.BNP levels were measured at the admission, after 24 hours and after 72 hours. Ejection fraction was determined by echocardiography in all patients. The patients divided in two groups: group A (152 patients) in which were patients with BNP < 70 pg/ml and group B (301 patients) in which were patients with BNP > 70 pg/ml. There was not significance difference for age, sex and BMI between the groups. During follow-up period of one year 6 patients had clinical signs of heart failure and 1 patient died in group A and 39 patients had clinical signs of heart failure and 18 patients died in group B, patients in group B had lower ejection fraction than patients in group A (p < 0, 05). Distribution showed that BNP level was related to heart failure and to mortality in post-MI patients (p < 0, 05).

Conclusion: Higher level of BNP in acute phase of myocardial infarction predict worse prognosis during follow up of one year in patients with acute myocardial infarction.

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Assessment of the multi-biomarker approach for prevention of cardiovascular events in patients with unstable ungina

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Purpose: Recent investigations have indicated that increases in biomarkers of necrosis, inflammatory cytokines, acute-phase reactants, plaque destabilization and rupture biomarkers, biomarkers of ischemia, and biomarkers of myocardial stretch may provide earlier assessment of overall patient risk and aid in identifying patients with higher risk of an adverse event. Mean platelet volume (MPV) is elevated in patients with acute coronary syndrome (ACS) and is used as an independent predictor of recurrent myocardial infarction and cardiac death. We investigated biomarkers that are underlying the pathological process of atherothrombosis in an attempt to identify novel useful biomarkers that could be used in the prevention of cardiovascular events.

Methods and results: Eight biomarkers [myeloperoxidase (MPO), von Willebrand factor (vWf), high-sensitivity C-reactive protein (hsCRP), homocysteine, cardiac troponin T (cTnT), B-type natriuretic peptide (BNP), antithrombin III (AT III), D-dimers] and mean platelet volume (MPV) were measured in 180 patients presenting on admission with symptoms of unstable angina (M/F = 120/60, 61 ± 12.2 years). MPV measurements were obtained from the admission blood work. All samples were obtained in standardized dipotassium ethylenedinitrotetraacetic acid (EDTA) tubes. The measurements were performed using automated hemograms (Bayer Advia 2120, Bayer Diagnostics, NY).

Adverse events (all-cause mortality, nonfatal myocardial infarction, recurrent UA, urgent percutaneous coronary intervention or coronary artery bypass grafting) at 6 months occurred in 65 patients (36%). In these patients MPO (360 ± 20, 3 vs. 260 ± 10, 2 ng/l, p < 0.05), vWf (186, 2 ± 14, 3 vs. 160, 4 ± 20, 1%, p = 0, 03), hsCRP (1, 9 ± 0, 3 vs. 1, 1 ± 0, 4 mg/l, p < 0.05), homocysteine (15, 4 ± 2, 6 vs. 12, 8 ± 2, 4mcmol/l, p = 0, 04), BNP (103, 5 ± 7, 9 ng / ml vs. 61, 6 ± 9, 3, p = 0, 0001), AT III (88 ± 9, 8 vs. 102, 2 ± 5, 6 %, p < 0.05), D-dimer (660 ± 24, 1 vs. 382, 2 ± 13, 0 ng /ml, p = 0, 001) were greater compare to patients without.

In patients with events the mean baseline MPV was greater than that in those without (9.1 ± 0.6 vs. 8.9 ± 0.7 fl, p < 0.05.

The criteria for 6 months adverse events were MPV>9.0 fl, MPO > 350 ng/l, vWf > 175 %, hsCRP > 1, 8 mg/l, homocysteine > 14, 5 mcmol/l, D-dimer >640 ng/ml, AT III > 92%, BNP>110 ng/ml.

Conclusion: MPV can be used as a risk biomarker in prognosticating the 6 months outcomes for unstable angina. Patients with adverse outcomes in unstable angina have increased level of D-dimer, BNP, vWf, MPO, homocysteine. These biomarkers can be used in a risk-assessment of patients with ACS.

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Relationship between coronary angiographic features and pregnancy-associated plasma protein-A (PAPP-A) levels in patients presenting with acute coronary syndromes

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Background: Pregnancy-associated plasma protein-A (PAPP-A) is a biomarker of plaque rupture. Higher PAPP-A concentrations have been found in patients with acute coronary syndromes (ACSs) than in patients with stable angina, and elevated PAPP-A concentrations have been shown to be associated with adverse cardiac events in ACS patients.

Aim: To identify coronary anatomic features related to PAPP-A level elevation in patients presenting with ACSs.

Methods: Forty consecutive patients (22 males, mean age 57 ± 11) with acute coronary syndromes were prospectively included in this study. Serum samples for PAPP-A were obtained at admission using ELISA. All patients underwent coronary angiography and subsequent percutaneous coronary intervention (PCI) within 6 hours of sampling.

Results: Of the studied patients, 20 had final diagnosis of unstable angina (UA), 6 had non ST-segment elevation myocardial infarction (NSTEMI) and 14 had STEMI. Serum PAPP-A levels were significantly higher in STEMI patients (11.8 ± 2 μg/ml) compared to NSTEMI (11 ± 2.6 μg/ml) and UA (8.7 ± 2.3 μg/ml, $p < 0.001$). Mean PAPP-A values were significantly lower in patients with TIMI 3 flow on initial angiogram (7.7 ± 1.4 μg/ml) when compared to patients with worse TIMI flow patterns (11.8 ± 2 μg/ml, $p < 0.001$). Higher PAPP-A levels were significantly associated with more complex culprit lesion morphology (11.8 ± 2 μg/ml for type C lesions versus 9.7 ± 2.5 μg/ml and 7.3 ± 3.5 μg/ml for type B and type A lesions, respectively, $p < 0.001$), while no relationship to number of diseased coronary vessels.

Conclusion: Higher PAPP-A levels in patients presenting with ACSs are associated with unfavorable coronary anatomy on initial angiography, a finding that may explain the worse outcome previously reported with PAPP-A elevation in these patients.

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Correlation between platelet hyperactivity, endothelial dysfunction biomarkers and plasma hemostasis factors in patients with unstable angina

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Purpose: In patients with unstable angina (UA) correlations between platelet hyperactivity, endothelial dysfunction biomarkers and plasma hemostasis factors at baseline and effects on mid-term prognosis were evaluated.

Materials and methods: In 150 patients with UA correlation between platelet hyperactivity (mean platelet volume (MPV), platelet distribution width (PDW), mean cell high, mean high of isolated cells, mean clot high and percentage of pathologically active cells, mean pseudopodia high, spontaneous and induced (ADF, adrenalin) platelet aggregation), endothelial dysfunction biomarkers (von Willebrand factor activity) and plasma hemostasis factors (BNP, D-dimers, fibrinogen) at baseline and effects on incidence of major acute cardiovascular event (MACE) were evaluated at 6 months follow up. Statistical analysis for the study was conducted using Statistica 6.0 (StatSoft. Inc, USA).

Results: MACE at 6 months occurred in 54 (36%). In these patients, the mean baseline MPV was greater (9.1 ± 0.6 vs. 8.9 ± 0.7 fl, $p < 0.05$), PDW was less (13, 4 ± 1, 2 vs. 13, 8 ± 1, 1 %), spontaneous and induced platelet aggregation ($p \leq 0, 05$) were greater compare to patients without events. Patients with UA and adverse outcomes have mean cell high (1243 ± 80, 1 mcm2, $p = 0, 002$), mean high of isolated cells (1159 ± 36, 1 mcm2, $p = 0, 02$), mean clot high (960 ± 18, 8 mcm2, $p = 0, 048$), mean pseudopodia high (285 ± 12, 1 mcm2, $p = 0, 048$) and high percentage of pathologically active cells (56, 2 ± 4, 9%, $p = 0, 02$) greater vs. those without (973 ± 66, 2 mcm2; 994 ± 48, 1 mcm2; 899 ± 10, 1 mcm2; 215 ± 10, 2; 47, 6 ± 2, 5 % respectively).

In patients with MACE higher serum values of fibrinogen (6, 3 ± 0, 4 vs. 4, 6 ± 0, 5 g/l, $p = 0, 02$), D-dimers (660 ± 24, 1 vs. 382, 2 ± 13, 0 ng /ml, $p = 0, 001$), BNP (103, 5 ± 7, 9 ng /ml vs. 61, 6 ± 9, 3, $p = 0, 0001$), von Willebrand factor (186, 2 ± 14, 3 vs. 160, 4 ± 20, 1%, $p = 0, 03$) were established.

Conclusions: Investigated morfofunctional particulates of trombocytes in patients with UA and adverse outcomes shows platelet activation to be a corner factor of thrombosis and the development of vascular complications. In patients with UA higher values of platelet hyperactivity, endothelial dysfunction biomarkers and plasma hemostasis factors at baseline were correlated with significant higher incidence of cardiovascular death, nonfatal acute myocardial infarction, readmission for heart failure and recurrent angina, urgent percutaneous coronary intervention or coronary artery bypass grafting. Presence of biomarkers at baseline has an effect on prognosis with a significant higher incidence of MACE even at 6 months follow up.

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Clinical pharmacology and pharmacotherapy

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Direct sanitary costs of patients with acute coronary syndrome treated with dual antiplatelet treatment with clopidogrel and aspirin in a subpopulation of the ARNO project.

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Objectives: The aim of this study was to evaluate the average annual direct costs of treating patients with a recent admission for acute coronary syndrome (ACS).

Methods: Direct medical costs of patients with an episode of ACS (index event) in the period 01/01/2008 – 31/12/2008 and treated with dual antiplatelet therapy (clopidogrel+aspirin) were estimated in a follow-up period of one year.

Resource consumption measured were: reimbursed drugs, diagnostic procedures, hospitalizations (ordinary and day hospital). The analysis was performed from the National Health Service (NHS) perspective. Unit costs considered were prices for drugs and NHS reimbursement tariffs for diagnostic and hospitalizations.

Results: A total of 2, 758, 872 subjects form 7 Local Health Units were observed; 7, 082 (35.8% females) of these were hospitalized for ACS during the 1-year accrual period (2.6‰).

Among patients with ACS, 60% were medically treated, 33.1% were treated with percutaneous coronary intervention (PCI) and 6.9% died during the first hospitalization. Dual antiplatelet treatment was prescribed in 25.9% of patients with ACS medically treated and in 70.1% of patients with ACS treated with PCI.

During follow-up, all-cause mortality rate was 5.7% (33% for cardiovascular causes); among the 58.6% of patients with at least one re-hospitalization, 18.4% had a recurrent episode of ACS, 24.8% had other cardiovascular (CV) episodes and 15.4% were hospitalized for non-CV reasons.

Average yearly cost/patient for total ACS population was 12, 673€/year (drugs: 1, 896€, hospitalizations: 10, 315€, diagnostic: 462€). For patients with an index event of ACS medically treated, average annual cost was 11, 043€/year (drugs: 1, 968€, hospitalizations: 8, 558€, diagnostic 517€) and for patients with ACS treated with PCI, average annual cost per patient was 13, 776€/year (drugs: 1, 848€, hospitalizations: 11, 492€, diagnostic: 436€). Hospitalization costs of patients with a relapse were at least 49% higher than for patients without recurrent events.

Patients died for a CV event during follow up period had an average cost of 19, 198€/patient.

Conclusions: This analysis of a large database showed that patients with ACS had relevant costs of management being the need for a new hospitalization the major cost driver.

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Utilization of recommended drugs after percutaneous coronary intervention in a tertiary care centre in Estonia

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Purpose: Current guidelines on myocardial revascularization recommend the use of platelet aggregation inhibitors, beta-blockers, angiotensin converting enzyme inhibitors (ACEI) / angiotensin II receptor blockers (ARB), and statins for in-hospital and long-term treatment after percutaneous coronary intervention (PCI). We aimed to estimate the rates and possible sex differences in the drug utilization during hospitalization and recommendations for out-patient use among patients under 75 years who have undergone PCI.

Methods: The study included all consecutive patients who underwent PCI in Tartu University Hospital in Estonia during 2008. Data onrisk factors, concomitant diseases, indication for PCI, drug utilization during hospitalization and recommendations for out-ptient use were retrospectively collected from patient files according to study forms.

Results: Among the final study sample (n = 827), 599 (72.4%) were men and 228 (27.6%) women. 66% of men and 68% of women underwent PCI because of acute myocardial infarction. The mean age of men and women was 61 vs 65 years, respectively ($p < 0.001$). Men were more often smokers, had higher rates of previous myocardial infarction, and left ventricular ejection fraction < 40%; while women had higher rates of hypertension, diabetes, and chronic heart failure. The rates in the drug utilization during hospitalization and recommendations for out-patient use for the drugs studied were high (Table 1). Overall, there were no differences between sexes, except for ACEI/ARB that were recommended more often for women than for men during hospitalization.

Conclusions: For patients under 75 years who have undergone PCI the rates of recommendation of evidence-based drugs is high. The higher recommendation of ACEI/ARB for women during hospitalization may be due to the higher incidence of diabetes, hypertension, and heart failure.

Table 1. Table 1 Utilization of recommended drugs

	During hospitalization			For out-patient use		
	Men (n = 599) %	Women (n = 228) %	p	Men (n = 578) %	Women (n = 222) %	p
Aspirin	96.5	96.9	0.757	95.2	94.6	0.744
Clopidogrel	95.7	97.8	0.146	94.8	97.3	0.129
Beta-blockers	79.1	78.9	0.954	79.6	77.0	0.427
ACEI/ARB	79.3	87.7	0.005	79.9	84.2	0.164
Statins	80.8	85.6	0.083	86.7	89.2	0.338

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Effect of levosimendan and dobutamine on systolic and diastolic tissue Doppler parameters in patients with acute decompensated heart failure

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Purpose: Levosimendan (LEVO) has been shown to have a better hemodynamic profile over dobutamine (DOB) in increasing cardiac output and reducing pulmonary wedge pressure in patients with acute decompensated heart failure (HF). There is limited data comparing the effect of LEVO with DOB on systolic and diastolic tissue Doppler imaging (TDI) parameters. So, we evaluated the effects of LEVO and DOB on systolic and diastolic TDI parameters.

Methods: Fifty patients with NYHA class III-IV decompensated HF requiring inotropic support, LVEF < 35% and in sinus rhythm were randomized to LEVO (n = 25) or DOB (n = 25). Both inotropic agents were administered as a continuous 24-h infusion (LEVO at a dose of 0.2 μgr/kg/min with a preceding bolus dose of 12 μgr/kg and DOB at a dose of 10 μgr/kg/min without a bolus dose). All patients underwent conventional and TDI echo evaluation before and at the end of inotropic infusion. LVEF, peak systolic (Sa), peak early (E') and late (A') diastolic velocities taken from mitral lateral annulus with TDI and peak early (E) and late (A) mitral inflow diastolic velocities and LV Tei index were measured.

Results: As compared with baseline values, LVEF and peak Sa were found to be significantly increased at the end of both LEVO and DOB infusions with a similar extent in both groups (table). E', A', E, A and Tei index did not significantly change during both inotropic infusion. E/E' was significantly reduced in the LEVO group, while no significant change was observed in E/E' during DOB treatment.

Conclusions: Both LEVO and DOB are almost equally effective in improving systolic echo/TDI parameters. In contrast to previous studies, this study suggested neutral effects of LEVO on diastolic TDI parameters.

Table 1. Changes in echo/TDI parameters

	Before DOB	After DOB	p	Before LEVO	After LEVO	p
LVEF, %	27.9 ± 4.6	30.8 ± 4.7	0.0001	26.0 ± 5.5	30.6 ± 5.4	0.0001
Sa, cm/s	6.96 ± 1.3	8.13 ± 1.3	0.0001	6.83 ± 1.4	7.97 ± 1.5	0.0001
E', cm/s	12 ± 3.5	11.5 ± 4.6	0.370	11.8 ± 3.2	12.3 ± 4.0	0.180
A', cm/s	8.08 ± 2.7	8.72 ± 3.1	0.183	9.14 ± 3.4	9.90 ± 3.1	0.161
E, cm/s	94.1 ± 23	86.5 ± 22	0.075	90.3 ± 21	85.9 ± 23	0.098
A, cm/s	55.0 ± 25	59.7 ± 26	0.260	54.1 ± 27	56.5 ± 26	0.448
E/E'	12.3 ± 4.6	12.0 ± 5.5	0.693	11.0 ± 4.7	9.63 ± 3.4	0.013
Tei index	0.55 ± 0.1	0.55 ± 0.1	0.998	0.58 ± 0.1	0.57 ± 0.1	0.756

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Examining secular trends in the utilization of warfarin among women and men hospitalized with atrial fibrillation: experience from a middle eastern country (1991-2010)

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Objectives: there is paucity of data about anticoagulation rates and trends of treatment in patients with atrial fibril lation (AF) in the developing countries and whether there are gender differences in the utilization of warfarin as some reports have suggested. The aim of this study was to evaluate trends of utilization of warfarin in women and men hospitalized with AF in a real-world population in a Middle-Eastern Country. Methods: Retrospective analysis of prospective registry of all patients hospitalized with AF in Qatar from 1991 through 2010 was made. Rate and trends of warfarin use was examined in relation to gender over the years of the study. Results: During the 20-years period; 1417 women and 2432 men were hospitalized for AF. Overall, 33.8% of men and 35.6% of women received warfarin at hospital discharge (p = 0.24). The use of warfarin was significantly trending higher from 18.7 % in the earlier years of the study to 44.7% in the latter years but no differences were found between men and women all through the study period. Conclusions: although the trend is significantly increasing over time, warfarin remains underutilized in patients hospitalized with AF irrespective of gender. There is an urgent need for prospective studies to investigate warfarin contraindications, relative warfarin efficacy and bleeding risks in our region to help guide healthcare providers in warfarin prescribing and consequently reduce the risk of AF-related disabling strokes.

Table 1. Trends of warfarin use in AF patients

Years	1991-94	1995-98	1999-02	2003-06	2007-10	P value
Number of patients	648	900	474	891	935	
Age (mean ± SD), yrs	55 ± 16	56 ± 15	56 ± 15.6	56 ± 16	57.5 ± 16	0.02
Women (%)	215 (33.2)	350 (38.9)	181 (38.2)	349 (39.1)	322 (34.4)	0.04
Warfarin use						
All (%)	121 (18.7)	301 (33.4)	148 (31.2)	338 (38.0)	418 (44.7)	0.001
Men (%)	79 (18.2)	176 (32)	97 (33)	204 (37.6)	265 (43.2)	
Women (%)	42 (19.5)	125 (35.7)	51 (28.2)	134 (38.4)	153 (47.5)	
P value	0.69	0.25	0.26	0.80	0.21	

Data are expressed in numbers (%) of patients

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Experience of ivabradine in acute coronary syndromes in an university hospital.

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Background: Heart rate is often increased in patients with myocardial infarction. This leads to increasing ischae mia and infarct size. Ivabradine is an If inhibitor which decreases heart rate without decreasing blood pressure (BP) and heart function.

Methods: This is a retrospective study that was performed in a University hospital. The patients were divided into three groups: A. Patients with sinus rhythm and high pulse who do not tolerate betablockers (52 patients, of whom 38 patients with STEMI-73%). B. patients whom heart rate cannot be normalized with optimal doses of betablockers and BP is not high (111 patients, of whom 78 with STEMI-70, 2%). C. Patients who did not get reperfusion therapy because of 3 vessel disease, diffuse changes in coronary arteries and heart rate could not be optimized with betablockers (56 patients). The C group was compared with control group of patients. Ivabradine 5-7, 5 twice per day was given to all patients in group A, B and C. The control group was given optimal treatment without ivabradine. All the patients were observed for 30 days.

Results: In the C group there were 56 patients of whom 66% were males (37 patients). The average age was 72, 3 ± 9.4 years. In the control group there were 57 patients, 68% were males (39 patients). The average age in control group was 67, 9 patients ± 10, 6 years. Lowering heart rate < 70bpm was observed in 44 patients (79, 5%) in group C, $p < 0.05$.The recurrent ischaemia was observed in 7 (12, 5%) patients in group C and in 12 patients (21%) in control group, $p < 0.05$.Serious rhythm disturbances were observed in 3 patients (5, 3%) in C group and in in 7 patients (12, 2%) in the control group, $p < 0$, 05.30-day mortality in C group was 1, 75% (1 patient) and 3, 5% (2 patients) in the control group, but the result is not statistically significant.

In all the groups significant decrease of heart rate was observed. There were no negative inotropical effect and no BP drop observed.

Conclusions: Ivabradine can reduce the ischemic risk in patients for whom heart rate cannot be controlled with betablockers.

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Feasibility and safety of transradial approach and bivalirudin treatment in elderly patients undergoing early invasive strategy for ACS

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Purpose: A disproportionately lower use of cardiovascular medications and invasive treatment in elderly compared to younger pts with ACS is observed, generally due to comorbidities, diffuse coronary artery disease, increasing periprocedural complications and greater incidence of drug-related side-effects. The prospective registry described in this study was aimed at exploring the feasibility and safety of transradial approach (TRA) and intraprocedural bivalirudin (biv) in elderly pts with ACS.

Methods: We prospectively collected data from 84 consecutive pts aged above 70 years referred for ACS and treated with an early revascularization strategy. The biv was used intraprocedural with a bolus dose of 0.75 mg/kg followed by continuous infusion of 1.75 mg/kg/h. All pts were pretreated with a loading dose of 300 mg of ASA and 600 mg of clopidogrel. Pts were stratified for bleeding complications (CRUSADE bleeding score) and for 'frailty' (Charlson comorbidity index). The overall in-hospital and 1-month MACE rates (including cardiac death, myocardial infarction and target lesion revascularization) and stent thrombosis (ST) were evaluated.

Results: Diagnosis at admission was a STEMI in 53 and a NSTEMI in 31 cases. Male/female ratio was 22/62 (26%/74%). Mean age was 77.01 (range 70–91), with 32 (38%) pts classified as elderly (70–80 years) and 52 pts (62%) as very elderly (>80 years). Mean age was 79.74 years (range 70–91) and median 81.The mean CRUSADE bleeding score was 43 (range 28-76). The weighted index of comorbidity was 12+2 with an estimated 10-year survival = 0%. The TRA was successfully performed in all procedures: in 79 (94%) from left wrist and in 5 (6%) pts from right one. No pts required blood transfusion during hospital stay, but one (1.19%) experienced a clinically relevant gastrointestinal bleeding. No pts died during hospitalization and one (1.19%) subacute ST occurred 16 days after the procedure, related to premature dual antiplatelet discontinuation. At mean follow-up of 30+5 days MACEs occurred in 5 (5.95%) pts including 1 (1.19%) cardiac death, 2 (2.38%) myocardial infarction and 2 (2.38%) target lesion revascularization.

Conclusions: An 'ad hoc' management aiming to minimize treatment risk should be carefully considered in order to

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positively affect outcome in elderly pts with ACS. Despite the small number of pts and the heterogeneity of the sample, the present registry shows that combined pharmacoinvasive treatment using intraprocedural biv and TRA is well tolerated and associated with a low incidence of adverse events in elderly pts with ACS.

Haemodynamics

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Can a novel 6-french intra-aortic balloon pump catheter reduce vascular complications in patients undergoing percutaneous coronary intervention?

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Context: The use of small catheters for intra-aortic balloon pumping (IABP) has extended the indications and reduced the complications. Objectives: This study aimed to evaluate the feasibility and efficacy for preventing vascular complications of a novel 6-Fr IABP catheter for the patients who underwent percutaneous coronary intervention (PCI).

Method: From January 2007 to December 2011, 234 patients received hemodynamic support with IABP catheters during PCI. Of those, 69 patients received a 6-Fr IABP catheter (Zeon Medical Corp., Tokyo, Japan). The remaining 165 patients received a 7- or 7.5-Fr IABP catheter. The operators used their discretion while choosing the 6-Fr IABP catheter, mainly depending on the patients' body size and presence of contraindications for the femoral approach. We retrospectively analyzed clinical indices of the patient treated with the 6-Fr IABP catheters and compared with those of the patients who treated with a 7- or 7.5-Fr IABP catheter.

Results: The mean age and proportion of women in the patients treated with 6-Fr were 76.9 years and 36% respectively. These values were significantly higher when compared with the patients with 7- and 7.5-IABP catheters. The average body weight and height were 56.7 kg and 156.7 cm, respectively, and these indices were significantly lower as compared with those of the patients who received the 7- or 7.5-Fr IABP catheters. The prevalence of patients with acute coronary syndrome and those who were concomitantly treated with extracorporeal membrane oxygenation was lower in the group treated with 6-Fr IABP catheters and conversely, the prophylactic use of IABP was higher in this group. The IABP catheter was inserted through the femoral artery in 58 (93.5%) patients in the 6-Fr catheter group and 164 (99.4%) patients in the 7- or 7.5-Fr group ($p = 0.027$). The mean support time was 49.8 ± 71.2 h in the 6-Fr catheter group and 70.3 ± 76.6 h in the 7- or 7.5-Fr catheter group. The in-hospital mortality was 7.2% in the 6-Fr catheter group and 30.0% in the 7- or 7.5-Fr catheter group ($p = 0.043$). No patients with the 6-Fr IABP catheter experienced limb ischemia, whereas 6 patients with the 7- of 7.5-Fr IABP catheter developed limb ischemia; however, the difference was not significant ($p = 0.184$). Conclusion: The novel 6-Fr IABP catheter may be useful for overcoming the access site limitations and vascular complications associated with larger catheters. These preliminary findings in the current study are encouraging; however, further large scale randomized study is required.

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Efficacy of continuous veno-venous hemofiltration (CVVH) in removing radiocontrast media after percutaneous coronary intervention in patients at high risk of contrast induced nephropathy

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Contrast induced nephropathy (CIN) is the most important cause of acute renal failure in patients (pts) undergoing percutaneous coronary interventions (PCI). The administration of radiocontrast media (RCM) carries a high risk of developing CIN particularly in pts with severe chronic kidney disease (eGFR $\leq$ 30 ml/min/m2). CVVH performed before and after PCI without net fluid loss was successfully utilised in high risk patients for preserving renal function. The mechanism of this effect in unknown. Aim of the study was to evaluate the efficacy of CVVH, coupled with simultaneous extrahydratation and performed after PCI, in removing RCM in pts with eGFR $\leq$ 30 ml/min/m2 (MDRD formula).

Methods: We studied 6 pts (4 male, 2 female) mean age 78 ± 10 years, with chronic renal failure (eGFR 22 ± 5 ml/min) undergoing PCI with RCM iopamidol mean volume 135 ± 60 ml. All pts received saline hydration at the rate of 1, 2 ml/min started 12 hours before PCI and going on up to 24 hours after PCI. CVVH in predilution or pre/post dilution mode started 60 min after PCI and lasted 6 hours. Substitution fluid composition was: Na 142, K, 2, 0, Cl 113, 3, HCO3 32, mg 0, 5, Ca1, 75, acetate 3.0 mmol/l with a flow rate of 1200 ± 100 ml/h. The hemofilter was an AN69ST membrane with a surface of 0, 6 m2. During CVVH all pts received an extrahydratation with 2000 ml of saline infusion in a peripheral vein on the opposite side of the inserted double lumen catheter for CVVH. During CVVH the ultrafiltration rate was matched to obtain a net fluid loss of the given saline infusion during CVVH treatment. Iopamidol concentration was measured with HPLC method in pre-hemofilter plasma, urine and in effluent ultrafiltrate. Plasma samples were carried out at 10 min and at 360 min, ultrafiltrate samples at 10 min, at 360 min, and in the whole

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ultrafiltrate collected at the end of CVVH (total volume: 9200 ± 300 ml). Urine were collected from the beginning of PCI until 12 hours after PCI in order to measure iopamidol concentration. The total diuresis was 1931 ± 326 ml.

Results: total iopamidol removal was 86 ± 10% of infused volume. During CVVH the percentage of removed iopamidol was 34 ± 17 % by kidney and 38 ± 9% by ultrafiltration. In the next 6 hours after CVVH it was removed another 14 ± 5% by kidney. The Iopamidol Sieving coefficient (SC) was 0, 93.

Conclusion: our study demonstrates that CVVH concurs actively in removing RMC and this effect may be the main mechanism involved in preserving renal function by CVVH.

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The relationship cerebrovascular reactivity and ejection fraction of the left ventricle in elderly patients with coronary heart disease

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Inadequate cerebral blood circulation by patients with ischemic heart diseases with attributes of heart insufficiency till now was estimated by various cognitive tests. At the same time is shown to correlation between ejection's fraction of the left ventricle, class on classification NYHA and restriction cognitive ability. Transcranial duplex scanning of intracranial vessels now is the most suitable method of functional diagnostics for studying activity of autoregulatory systems of vascular tone on various kinds of stimulation.

The purpose of the work was the estimation of the background and induced parameters of the cerebral circulation by elderly patients with coronary heart disease at application of the apnea-test. 50 patients with coronary heart disease (35 men and 25 fem) (middle age of 71, 36+ 5, 59 ages) and 16 patients with coronary heart disease (11 men and 5 fem) younger than 60 years with middle age 52, 6+ 4, 64 years are surveyed. All patients with use of transcranial duplex scanning were examined. Parameters of the cerebrovascular reactivity in Artery cerebra media in reply to the functional test (apnea-test) were studied. Multiple regressions analysis results have shown, that ejection's fraction of the left ventricle is the significant factor influencing on cerebrovascular reactivity. No other clinical parameter has shown statistical importance at the similar analysis. The revealed essential dependence's between cerebrovascular reactivity and clinical classification NYHA, and also between cerebrovascular reactivity and ejection's fraction of the left ventricle testifies in favor of that decrease cerebrovascular reactivity at patients depends more on degree hearts insufficiency and ejection's fraction of the left ventricle, than from age, sex and accepted medicaments.

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A pilot study of optimisation of cardiac output and stroke volume using temporary epicardial pacing systems in a cardiothoracic intensive care unit

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Purpose: Previous studies have demonstrated with permanent pacemakers, that adjustment of heart rate (HR) and atrio-ventricular delay (AVD) may result in improved haemodynamics. Temporary epicardial pacing systems are commonly implanted peri-operatively following cardiac surgery. Currently limited data exists for optimisation of such systems, with patients generally paced at standard preset settings. The purpose of this pilot study was to investigate the potential for increasing stroke volume (SV) and cardiac output (CO) using optimisation of the pacing settings within the post cardiac surgical intensive care.

Methods: Patients were consented into the study prior to scheduled elective surgery. Post operatively, only when the patient was haemodynamically stable, with no changes in inotropic or respiratory support or loading conditions were they entered into the study. A standardised protocol was used which was having the patient in DDD mode and using a range of AVD at 80-200 milliseconds (ms), in 20ms increments, and using HR of 80-120 beats per minute (bpm), in 10bpm increments.

Changes to SV and CO were measured by 2D Doppler trans-thoracic echocardiography (single operator). SV was calculated from the VTI taken using PW sample volume positioned in the left ventricular outflow tract (LVOT). The LVOT diameter (d) was measured in systole, and the cross-sectional area (LVOT-CSA) calculated. SV was calculated by LVOT VTI multiplied by LVOT-CSA, and CO (SV multiplied by HR). Paired t-test was used to compare highest SV and CO achieved by pacing optimization compared to baseline values, $p < 0.05$ was deemed statistically significant. Data is presented as mean with standard deviation.

Results: In total, 6 patients (2 female) were recruited, with a mean age of 71.5 ± 14.3 years, LVEF pre surgery was 57.3 ± 5.1%; QRS duration was 112 ± 32 ms. All patients underwent surgical aortic valve replacement. 5 patients underwent the full protocol as above, 1 patient was unable to. Mean change in AVD was 28.3 ± 27.1 ms resulting in a significant increase in SV (64.8 ± 14.4 to 77.0 ± 22ml; $p = 0.04$) and CO (5.7 ± 1.2 to 6.5 ± 1.5 l/min;$p = 0.01$). Mean change in HR was 18.3+/-17.3 bpm, resulting in a significant increase in SV (64.8 ± 14.4 to 77 ± 21 ml; $p = 0.048$) and CO (5.7 ± 1.2 to 6.5 ± 1.5 l/min; $p = 0.01$).

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Conclusion: The adjustment of AVD and HR within temporary epicardial pacing systems in post cardiac surgical patients in the intensive care setting can lead to a significant increase in SV and CO. Further work is needed to characterise the effect and to establish whether this results in clinical significance.

Invasive imaging - cardiac catheterisation and angiography

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Left main coronary artery stenting: a suitable alternative for most patients

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Purpose: Although surgery remains the standard revascularization method for left main coronary artery (LMCA) disease, emerging evidence suggests that percutaneous coronary intervention (PCI) is a good alternative, mainly in elective procedures and lower risk lesions. We aimed to assess mid and long term clinical outcomes of patients undergoing LMCA PCI at our center.

Methods: Retrospective analysis of consecutive patients undergoing LMCA PCI between January 2005 and June 2011, in a hospital with cardiac surgery. Patients were divided in 4 groups (G), according to indication for PCI: G1 - patients considered inoperable (29.2%), G2 - emergent PCI (13.5%), G3 - elective PCI of protected LMCA (37.5%) and G4 – elective PCI of unprotected LMCA (19.8%).

Results: Ninety-six patients were treated, mostly male (69.8%) and with a mean age of 69.4 ± 10.5 years. They had multiple CV risk factors (39% with diabetes) and various comorbidities (previous myocardial infarction (MI) in 40% and peripheral artery disease in 27%). Most patients (69%) had acute coronary syndrome, 14% had cardiogenic shock and 38% were treated with intra-aortic balloon pump support. Critical stenosis of distal LMCA was seen in 63%. Drug-eluting stents were used in 60% of LMCA PCI and multivessel PCI was performed in 29% of the patients. The success rate of the procedure was 99%.

Patients of groups 1, 2 and 3 had more multivessel disease (96, 86 and 90%, respectively), as opposed to G4 (isolated LMCA disease in 59%). Also in G4 there were more patients with stable angina (73.7%). Mean ejection fraction (39.2 ± 11.9) was lower in G1 and G2 compared with G3 and G4 (52.2 ± 7.8).

The mean follow-up was 28 ± 21 months (100% complete), with a total mortality rate of 28.1% (14.6% of cardiovascular (CV) causes). Seven patients (7.3%) had in-hospital death, one-year mortality was 12.4% and MACCE rate (CV death, nonfatal MI, stroke and LMCA revascularization) was 26%. Five patients (5.6%) required reintervention; CABG was performed only in 1 patient.

In subgroup analysis it was found that total mortality in G1 and G2 (46.4% and 69.2%) was significantly higher than that of G3 and G4 (11.1% and 5.3% respectively), $p < 0.001$. The same trend was observed for CV mortality: G1 (25.0%) and G2 (38.5%) vs G3 (5.6%) and G4 (0%), $p = 0.003$.

Conclusion: In our experience, LMCA PCI proved to be a safe technique with low mortality in patients with protected LMCA and those with favorable anatomy for percutaneous revascularization. Patients undergoing emergent PCI or considered inoperable had a large number of events, according to their very high baseline risk profile.

Non invasive imaging - Echocardiography, CMR, CT and nuclear techniques

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The important role of cardiac magnetic resonance for patients suffering from acute coronary syndrome with normal coronary arteries

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Background: The definitive diagnosis in patients (pts) admitted with the suspition of acute coronary syndrome (ACS) with normal coronary arteries (NCA) is complex. Magnetic resonance (MR) with double inversion-recovery T2-weighted sequences and late gadolinum enhancement allows an accurate diferential diagnosis between acute myocardial infarction (AMI) and myocarditis.

Methods: Between 2008 and 2010, 255 pts undergoing cardiac catheterization with the diagnosis of ST elevated/non-elevated ACS showed NCA. Of them, 50 remained in our hospital and were our target population. Seventeen pts were studied with cardiac MR before discharge.

Results: Pts undergoing MR were younger and with lower cardiac biomarkers levels although no differences were found concerning the distribution of cardiovascular risk factors when compared to those without MR (Table 1). Between the lasts, diagnosis on discharge was: AMI with NCA in 48%, chest pain with NCA in 27%, potential coronary spasm in 9%, potential Tako-tsubo in 6%, and syndrome X in 3%; 70% of the pts within this group were discharged under ASA, 6% clopidogrel, 52% beta-blockers, 39% ACE-inhibitors, and 58% statins. In pts with MR a

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pattern of myocarditis was found in 35%, of AMI in 24% and of Tako-tsubo in 6%. These results clearly influced the treatment on discharge (myocarditis vs. other diagnosis): ASA 17% vs. 60%, clopidogrel 0% vs. 20%, beta-blockers 0% vs. 40%, ACE inhibitors 17% vs. 30%, statins 0% vs. 70%.

Conclusions: In pts with initial suspition of ACS and normal coronary arteries, the perform of MR within the in-hopital period has relevant diagnostic and therapeutic consequences.

Table 1.

	MR	no MR	p-value
Age (years)	53	64	0.02
Male (%)	75	52	0.11
Hypertension (%)	37	57	0.19
Diabetes Mellitus (%)	0	18	0.16
Smoking (%)	56	33	0.13
Dyslipidemia (%)	31	33	0.38
Peak-creatinkinase (U/L)	520	647	0.01
Peak-T troponine (ng/mL)	0.83	1.06	0.05

Main epidemiologycal variables and blood tests of patients with and without MR.

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Withdrawn

Resting RV performance assessment in young athletes: a comparison between 3D and 2D echocardiography

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Purpose: Right Ventricle (RV) ejection fraction (EF) of young athletes, where the onset of the "athletes heart" is not yet recognizable, is currently assessed by 2D-RV area change. The role of a 3D–RV method is not investigated in them. The study aims to analyze RV function in young athletes from different kind of sports by 2D and 3D echo.

Methods: 25 young trained athletes (20 soccers, 5 basketball) aged 20 ± 3 yrs matched with 20 sedentary controls, were studied by 2D and 3D-RV methods (Image Arena, Tomtec) measuring RV diastolic (RVDV), systolic (RVSV) volumes and EF. Data were compared by ANOVA test.

Results: all the EF, RVDV and RVSV values resulted in normal range. However, 3D–RV volumes were slightly higher in athletes (RVDV: 106.14 ± 30.3 ml; RVSV: 50.74 ± 15.25 ml) than sedentary (88.0 ± 41.36 ml; 40.67 ± 23.96 ml). On the contrary, the 2D volumes resulted to be lower in athletes, even if not significantly, (RVDV: 43.40 ± 13.11; RVSV: 21.13 ± 6.5) than controls (45.33 ± 14.05 ml; vs. 22.0 ± 7.8 ml). The EF values, by the two methods, were slightly but not significantly lower in athletes (3D-RV: 52.10 ± 6.4; 2D-AC:50.865 ± 6.5) than sedentary (3D RV:55.61 ± 7.4 ml; 2D AC: 52.0 ± 4.0 ml). Significant differences were conversely found comparing 3D-RV and 2D-AC volumes within each group (RVDV: $p = .001$ for athletes and $p < .001$ for controls, RVSV: $p < .04$ for athletes and $p < .001$ for controls). None significant difference for the EF was found.

Conclusions: Despite the normal range of RV chamber values iscurrently unknown in case of young athletes, the results support the hypothesis that 2D and 3D methods cannot be considered completely overlapped. The higher values found by 3D are suggestive for a more accurate analysis than 2D.

Miscellaneous

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The value of cardiac biomarkers, conventional echocardiography and tissue Doppler imaging in early prediction of future cardiotoxicity induced by doxorubicin

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Doxorubicin is an effective drug widely used in cancer treatment, but its application is limited by the cumulative dose-dependent cardiotoxicity. Assessment of left ventricular ejection fraction (LVEF) and fractional shortening (FS) are recommended to diagnose cardiac dysfunction; however, their normal values can mask subclinical LV impairment. We assessed whether early conventionalechocardiography, Tissue Doppler imaging and/or cardiac biomarkers determination could predict later doxorubicin-induced cardiotoxicity. Cardiotoxicity was defined as a reduction of the LVEF of ≥5% to < 55% with symptoms of heart failure or an asymptomatic reduction of the LVEF of ≥10% to < 55%.

Methods: We analysed 70 consecutive patients (53 ± 12 years) in sinus rhythm, without known cardiac disease and LVEF>50%, referred for echocardiography before therapy with doxorubicin. Echocardiography, troponin T (TnT) and N-terminal pro–B-type natriuretic peptide (NTproBNP) measurements, were performed before and after 6 and 36 weeks after start of chemotherapy. Peak systolic (S'), peak early (E') and peak late (A') diastolic velocities were obtained at the septal and lateral sites of the mitral annulus and the average of the values was used. The E/E' ratio was obtained (E = early transmitral flow velocity). The difference between the baseline value of analysed variables and the value determined after 6 weeks of chemotherapy was calculated (Δ).

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Results: Nine patients (12.8%) met the criteria for cardiotoxicity. Averaged cumulative doxorubicin dose was 177 ± 59 mg/m². Univariate logistic regression identified ΔLVEF, ΔFS, Δ isovolumic relaxation time, ΔS', ΔE', ΔE'/A', ΔTnT as predictors of patients who developed cardiotoxicity (all $p < 0.05$). Age, sex, cardiac risk factors, Δ blood pressure, Δ heart rate, ΔLV end-diastolic volume, ΔLV end-systolic volume, Δ left atrial volume, Δ pulmonary artery systolic pressure, Δ myocardial performance index, ΔE, ΔA (late trasmitral flow velocity), ΔE/A, ΔA', ΔE/E' and ΔNTproBNP, were not associated with future cardiotoxicity. On multiple logistic regression analysis, including all the univariate predictors, ΔTnT emerged as the only independent predictor of later cardiotoxicity (Odds ratio = 1.22, $p = 0.009$).

Conclusion: The change of TnT level after 6 weeks of treatment with doxorubicin was able to predict future doxorubicin-induced cardiotoxicity, unlike Tissue Doopler imaging and conventional echocardiographic parameters.

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Resistance to aspirin and clopidogrel in acute myocardial infarction (REACT-MI trial): preliminary results

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Background: Dual antiplatelet therapy is the cornerstone of treatment of coronary heart disease after stent implantation. The interindividual response to this therapy is not uniform, however. Although there are many platelet function assays, uncertainty still remains about the link between high residual platelet reactivity and ischaemic vascular events/risk factors.

Aim: The purpose of this study is to compare assays for antiplatelet therapy monitoring (VerifyNOW, PFA-100, Multiplate) to golden standard (Light transmittance aggregometry) in high-risk patients early after acute myocardial infarction and angioplasty with stent implantation. High residual platelet reactivity (HPR) and stent thrombosis/risk factors associations are assessed in this preliminary results report.

Methods: In this patient cohort ($n = 22$) HPR identification was compared between PFA-100 and VerifyNOW by Spearmann correlation. The relation between HPR and stent thrombosis was assessed by Fisher exact test. The link between HPR and classical ischaemic heart disease risk factors was identified by logistic regression. Moreover plasma lipid values association with HPR was obtained by Wilcoxon test.

Results: Anopyrin related HPR examined by PFA-100 was similar to HPR identified by VerifyNOW ($r = 0.47$, $p = 0.026$). In-stent thrombosis occurence was significantly higher in patients with clopidogrel-related HPR obtained by VerifyNOW ($p = 0.05$). Inverse correlation between HDL plasma level and clopidogrel related HPR measured by PFA-100 P2Y12 was observed ($p = 0.03$). Type 2 diabetics are at 3.6x increased risk of anopyrin related HPR determined by PFA-100 ($p = 0.026$).

Conclusion: There is a link between high residual/on-treatment platelet reactivity and stent thrombosis in high risk patients after angioplasty+stent implantation and acute myocardial infarction. Classical risk factors for atherosclerosis as low HDL plasma level and diabetes mellitus type 2 are associated with high residual platelet reactivity. For confirmation of our results larger patient sample is needed, however.

(clinicaltrials. gov, NCT01381185)

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Anxiety assessment with state trait anxiety inventory in an acute cardiac care unit

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Although anxiety is common in cardiac patiens, and is related to worse prognosis, it is seldom measured by validated scales. The purpose of our present study was to investigate the anxiety and well-being among acute coronary syndrome patients.

The State-Trait Anxiety Inventory was developed by Spielberger, Gorsuch, Lushene & Vagg Jacobs and it comprises of separate self-report scale for measuring state and trait anxiety. The Strait-Anxiety scale consists of twenty statements that evaluate how respondents feel "right now at this moment". The T-anxiety scale consists of twenty statements that assess how people generally feel.

We performed the State-Trait Anxiety Inventory to fifty consecutive patients admitted to the acute coronary care unit (CCU), 20 (40%) of them with STEMI and 30 (60%) with NSTEMI. The test results were that 14 (28%) of them had anxiety, with 21 (42%) showing no anxiety and 15 (30%) intermediate results. There were no significant differences when we compared the subgroups by diagnosis (STEMI vs NSTEMI), sex or age.

We also applied a non validated questionnaire about the main disturbances for the inpatients, whose main complaints were the lack of information and the scarce time the visits were allowed in the CCU.

Conclusion: Anxiety disorder is common in patients admitted to the CCU, and it's incidence is independent of the diagnosis, age and sex. Validated tests are available to diagnose this disorder, that might be mitigated by improving information given to patients and families.

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Effect of peritoneal dialysis on life quality in patients with refractory end stage congestive heart failure

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Peritoneal dialysis (PD) may be the therapy of choice for the long-term treatment in patients with congestive heart failure (CHF) unresponsive to conventional treatment. Although an improvement on different parameters, such as NYHA stage and frequency of hospitalization has been reported, little data exist regarding measurements of self-perceived quality of life.

We present an assessment of individual's perception of his/her quality of life of patients with CHF who were treated with PD in our department.

Thirteen patients, nine men and four women, mean age 71.5 ± 6.9 years with NYHA class IV cardiac failure were enrolled. None of the patients suffered from primary renal disease, but 11 out of 13 had evidence of cardiorenal syndrome (mean serum creatinine at the inception of dialysis 1.78 ± 0.5 mg/dl). Initially, patients received aggressive haemofiltration until they achieved an optimal dry body weight. Once stabilized, they were converted to an intermittent peritoneal dialysis regimen according to their individual needs. Before and one month after initiation of the treatment all subjects completed the 36-item short form generic questionnaire designed to measure health status (SF-36 v2). The SF-36 measures, in a range from 0 to 100, eight health concepts that make up a multidimensional scale from various items. A higher score indicates better health. Means and standard deviations were evaluated comparatively in the eight parameters measuring respective health concepts.

During a one year follow-up pre and post dialysis, both the frequency and the duration of their hospitalization was reduced significantly (from 3.2 ± 1.7 to 1.6 ± 1.3 and from 45.5 ± 32.4 to 20.2 ± 33.6 days respectively, $p < 0.05$).

Except for the bodily pain, there was a significant improvement in the health status in all other parameters evaluated before and after the peritoneal dialysis implementation (Physical Functioning 17 ± 2.5 vs 31.4 ± 10.5, Role Physical 27.9 ± 0.2 vs 45.1 ± 12.1, General Health 21.2 ± 3.5 vs 31.6 ± 9.1, Vitality 30.7 ± 10.1 vs 44.7 ± 14.6, Social Functioning 27.7 ± 10.8 vs 40.1 ± 12.7, Role Emotional 31.2 ± 11.7 vs 41.8 ± 13.2 and Mental Health 19.9 ± 13.6 vs 36.5 ± 19.3, $p < 0.005$ to 0.05). Thus, also the overall physical and mental component scales were also improved significantly (from 29.5 ± 5.5 to 37.8 ± 5.8 and from 28.1 ± 14.6 to 41.8 ± 16.5 respectively, $p < 0.02$).

In patients with CHF without ESRD, the use of PD not only reportedly result in an improvement in clinical symptomatology and a reduction in hospitalization, but also improves the quality of life which remains the ultimate goal of health care.

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Clinical profile of uni- and bilateral forms of pulmonary embolism

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Is known that the clinical course of pulmonary embolism vary from case to case, depending on multiple variables. In specialized literature over 90% of the cases of pulmonary embolism are attributed to evident complications of a deep vein thrombosis.

Purpose of this paper is to shape the clinical profile of uni and bilateral forms of pulmonary embolism, in order to stratify the risk, when the venous source of pulmonary embolism is not revealed by traditional clinical methods.

Materials and methods: retrospective study on 44 patients (34 men, 10 women, 40-89 years), consecutively admitted to hospital with a confirmed diagnosis, in a period of 12 months. They formed two groups based on uni or bilateral location of the thrombus. We followed several clinical markers (hypotension), radiological (pulmonary condensation, infiltrative lesions, the rise of the diafragm, pleural effusion), electrocardiographic (S1Q3T3, tall R in V1), echocardiographic (hipokinesia and/or RV dilatation), biological (NT pro-BNP, troponin I), markers that were corroborated with computed tomography data (location, size, morphology of the thrombus).

Results: 11 (25%) patients had bilateral pulmonary embolism, 22 (50%) were older than 70 years, mostly men, 24 (54, 5%) had higher body mass index above 35% (obesity grade II), 25 (56, 8%) were bedridden over 5 days, 39 (68, 2%) had clinically dehydration on admission (persistent skin fold, hypotension, hyponatremia), 14 (31, 8%) had a digestive or lung cancer diagnosis, 8 (18, 2%) were admitted with a diagnosis of inferior and RV acute myocardial infarction, without anticoagulant therapy during the acute period and 19 (43, 2%) had congestive heart failure NYHA class III on admission, bilateral pleural effusion, tall R in V1, QRS axis over 75 grades. Computed tomography performed in the first 6-12 hours after the onset of dyspnoea (predominantly tachypnea) settle the diagnosis and his severity;all patients with bilateral embolism had thrombi occupying over 75% of circulating lumen and 25% of cases with unilateral embolism had thrombi occupying 40-50% of

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the lumen;this is an important argument that defines the utility of this investigation in patients with risk factors, even if the Doppler exam is negative for the venous source.

Conclusions: unilateral or bilateral location of thrombus in the pulmonary embolism is not a decisive factor of the immediate prognostic;severity and duration of mechanical obstruction, cardiopulmonary status previous to the embolic episode and magnitude of the thrombogenic risk at a time complete the polymorphic manifestations of pulmonary embolism and dictate the immediate prognostic

Nursing

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Groin dressing post cardiac catheterization: traditional pressure versus transparent film

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Purpose of the study: To determine the efficacy of using a small transparent non pressure dressing compared with the traditional controlled pressure dressing applied to the femoral artery puncture wound site to maintain haemostasis following cardiac catheterization procedures.

Materiala and methods: Design: An experimental design, randomized study.

Setting: King Fahd University Hospital in Khober, Kingdom of Saudi Arabia (KSA).

Patients: 80 post cardiac catheterization patients were randomized to have their groins dressed either with pressure dressing (N = 40) or Transparent Film Dressing (N = 40). Patients ambulated 8 hours after the procedures. Outcome variables were hematoma formation or bleeding, patient discomfort, and nurse-reported ease of observation of the groin puncture site after the procedure. Five instruments were used for data collection: 1) Demographic and medical data sheet, 2) Hematoma Formation and Bleeding Scale, 3) Skin Integrity Scale, 4) Patient Discomfort and Pain Scale & 5) Nurses Ease of Assessment Scale.

Results: There were no significant differences in base line characteristics and medical data between the two groups. 100% in transparent film group vs 55% in pressure dressing group reported feeling very comfortable (p value of 0.003). Hematoma formation was equal in the two dressing groups with no incidence of bleeding complications. Nurses rated the ease of assessing the groin significantly higher for transparent film dressing than for pressure dressing (p value of 0.000).

Conclusions: Dressing of the puncture site after cardiac catheterization with transparent film dressing was more comfortable than the conventional pressure dressing without any difference in hematoma or bleeding complications. So transparent film dressing can be used safely and comfortably after achieving hemostasis.

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To determine the stressors of patients who undergoing coronary artery bypass greft surgery before discharge according to Roy Adaptation Model: A qualitative study

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To determine the stressors of patients who undergoing coronary artery bypass graft surgery before discharge according to Roy Adaptation Model: A qualitative study

Objectives: The aim of this study was to determine the stressors of patients who undergoing coronary artery bypass graft surgery (CABG) before discharge according to Roy Adaptation Model (RAM).

Methods: In this research, a qualitative design was used. The research strategy is exploratory and descriptive within a phenomenological framework. Written consent was obtained from the owner of the scale, the institutions and patients with also approval of the concerned ethics committee. This research was conducted at cardiovascular surgery clinics of a university hospital in Antalya between January 2011-March 2011. In this study, purposeful sampling was used. The sample consisted of 16 patients (9 male, 7 female) who on-pump undergoing coronary artery bypass graft surgery. In the study, all data were collected from sociademographic data collection form and semi-configured interview form. All interviews with patients were done face to face by using deeply interviewing technique before discharge. Interviews were recorded by a voice recorder. After interviews, recorded voices were converted into written document. For analysis of answers, a content analysis method was used.

Results: The RAM formed the theoretical framework for this study as it provided the framework for understanding the recovery of CABG surgery patients, and assessing the stimuli and adaptive behaviors associated with their recovery. Three themes (focal, contextual, residual stimulus) and subthemes (complications related to surgery, pain, diet, to keep fit, poor strength, insomnia, medication, uncertainty, scared, depression and frustration, dying, change and adapt, activity, return to work, financial concerns, caregiver responsibility etc. according to psychological, selfconcept, role function, and interdependence adaptive modes) were identified. Turkish patients were satisfied that having a

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positive experience related to surgery and recovery of early period in hospital. In addition patients demonstrated positive expectations about the behavior of care by care providers after going home.

Conclusion: Patients expressed that the most significant stressor after surgery was openning of the sternum while at home. On the other hand, some patients expressed their perceptions regarding CABG surgery, it is not their fears for post-operative care.

Sudden death / resuscitation

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Prognosis in comatose cardiogenic shock patients after resuscitated out-of-hospital cardiac arrest

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Purpose: Comatose survivors of out-of-hospital cardiac arrest (OHCA) complicated with cardiogenic shock (CS) have a poor prognosis for short term survival due to both cardiovascular instability and the risk of anoxic brain damages. Therapeutic hypothermia (TH) is not routinely applied in CS patients because of the hemodynamic impact. In landmark hypothermia studies, CS has been an exclusion criteria and therefore potential benefits of TH in OHCA with complicating CS are unclear.

This study assesses outcome in comatose OHCA patients with CS admitted to a tertiary Heart Centre.

Methods: We retrospectively studied comatose survivors of OHCA admitted to the intensive care unit in the period 2004-2010.We stratified the population in OHCA with CS upon arrival or CS developed during TH (OHCA+CS, n = 38) and OHCA admitted to intensive treatment (OHCA-CS, n = 342). CS was defined as hypotension with sustained systolic blood pressure (SBP) below 80 in more than 30 minutes or administration of inotropes to maintain SBP above 80 and signs of end organ hypoperfusion. Therapeutic hypothermia was applied according to current guidelines in the OHCA-CS group and at the discretion of the attending cardiologist in the OHCA+CS.

Survival was evaluated with Kaplan-Meier statistics and proportional hazard analysis.

Results: A total of 380 comatose patients (81% males, age 61 ± 14 years) were included. No differences in baseline demographics including sex, initial rhythm, bystander CPR and time to ROSC were found between OHCA-CS and OHCA+CS. OHCA+CS was older (66 vs. 61 years, p = 0.02) had a lower left ventricle ejection fraction (24 % vs. 39%, p < 0.001) and a higher lactate level upon admission (12 vs. 10 mmol/L, p = 0.04) compared to OHCA-CS, respectively. OHCA+CS had more frequently ST-elevations in first ECG (58% vs. 31%, p = 0.001. Acute coronary angiography (< 24 hour) was performed in 76 % of OHCA with CS.

Survival by 30-days was 21% and 62% in OHCA+CS and OHCA-CS, respectively, log-rank < 0.0001.In OHCA+CS a comparable subgroup developed CS during TH (late shock) and had a survival rate similar to OHCA with CS upon admission (early shock), (17% vs. 27%, log-rank 0.66), respectively. In OHCA+CS the cause of death was cardiovascular in 27 (90%) patients. Adjusted hazard ratio was HR = 4.2 (CI: 2.6-6.7, p < 0.0001) in OHCA with CS compared to OHCA.

Conclusion: Comatose survivors after OHCA complicated with CS had a severe prognosis and a low survival rate compared to cardiogenic shock studies.

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Direct comparison of the effect of mild hypothermia and controlled normothermia on blood pressure, cerebral oxygenation, resuscitability, and organ damage after cardiac arrest in porcine model

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Introduction: Mild therapeutic hypothermia was implemented in the management of post cardiac arrest syndrome after publication of clinical trials comparing hypothermia with common practice, i. e. usually with hyperthermia. Current evidence on comparison of therapeutic hypothermia (HT) and controlled normothermia (NT) in cardiac arrest survivors is, however, still insufficient.

Methods: We used porcine model (sus scrofa domestica; females; 45 kg) under general anesthesia and mechanical ventilation (HT and NT groups, four animals per group). Veno-arterial extracorporeal membrane oxygenation (ECMO) was inserted and at minimal ECMO flow (0.5 L/min) ventricular fibrillation was induced by rapid ventricular pacing. After 20 min of cardiac arrest, circulation was restored by increase of ECMO flow to 4.5 L/min, followed by 90 min of reperfusion. Target core temperature (33°C in HT and 36.8°C in NT) was maintained using heat exchanger on oxygenator. Blood pressure was measured invasively in the aortic arch; cerebral oxygenation was assessed by near-infrared spectroscopy. At

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60 min of reperfusion, up to three defibrillation attempts were performed. Blood samples for determination of troponin I (TnI), myoglobin (MGB), creatine-phosphokinase (CPK), alanin-aminotransferase (ALT), and neuron-specific enolase (NSE) were taken at 90 min of reperfusion.

Results: Significantly higher blood pressure and cerebral oxygenation values were observed in the HT group ($P < 0.05$). Sinus rhythm was restored in all HT animals after first defibrillation, whereas no restoration was attained in the NT group, even after three defibrillation attempts ($P < 0.05$). The levels of TnI, MGB, CPK and ALT were significantly lower in the HT group ($P < 0.05$ vs. NT), NSE was low and comparable in both groups.

Conclusion: Our results indicate superiority of mild hypothermia over controlled normothermia in the maintenance of blood pressure, cerebral oxygenation, resuscitability and organ protection after cardiac arrest.

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Urgent invasive strategy for out-of-hospital cardiac arrest survivors is associated with better survival.

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Out of hospital cardiac arrest (OHCA) is a leading cause of adult death in industrialized world. Hospital survival rates ranging from 21% to 40% and have not improved in recent years. Acute coronary occlusion is the leading cause of cardiac arrest, however, because of limited data, the indications and timing of coronary coronary angiography (CA) and angioplasty (PCI) in this setting are controversial except for ST-elevation in 12-lead electrocardiogram (EKG).

Purpose: The aim of our study is to understand etiology and survival of patients (Pts) admitted to our hospital with return of spontaneous circulation (ROSC) after OCHA and whether a strategy that leads to an urgent CA and PCI, if required, can improve the outcome.

Method: Observational retrospective study.

Results: Between January 2006 and December 2009, 70 Pts with ROSC after OHCA were referred to our hospital. Mean age was 69, 5 ± 13, 9; 63% male gender; 11% previous coronary artery disease (CAD), first rhythm was ventricular tachycardia/ventricular fibrillation (VT/VF) in 62%; in 41% diagnosis was acute coronary syndrome (ACS) based upon EKG and enzyme. Hospital survival rates was 48, 5%. One year survival rates was 76% of dismissed. Postresuscitation neurologic injury (PNI): 32, 8%.

According to the presence of ACS: Pt with ACS are mostly male, without differences in age or previous CAD versus no ACS Pt. VT/VF is the most frequent presentation rhythm in ACS Pt (89% vs 40%; p < 0, 01). Only in 34% of ACS Pt first EKG showed sign of myocardial infarction/ischemia. VT/VF is the first rhythm equally in both STEMI and nonSTEMI. Early sign of PNI generally are associated with underuse of CA and PCI and worst prognosis. Successfull urgent CA and PCI are associated with improved hospital survival in Patient with ACS (equally in STEMI 83% vs 51% p = 0, 003 and NSTEMI 81% vs 55% p = 0, 004); and in FV/TV as first rhythm (90% vs 38% p>0, 001).

Conclusions: In patients survived from OHCA successful urgent PCI is associated with improved in hospital survival for STEMI, NSTEMI and VT/VF as first rhythm.

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The relationship between chest compression quality and end-tidal CO2 tension in cardiac arrest patients

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Introduction: During cardiopulmonary resuscitation, end-tidal CO_2 ($EtCO_2$) is assumed to reflect pulmonary blood flow and overall efficacy of resuscitation. Limited evidence exists about the usefulness of $EtCO_2$ to guide compression depth and rate. This study investigates the relationship between chest compression quality and $EtCO_2$ in out-of-hospital cardiac arrest patients.

Material and methods: During a prospective, observational study of adult patients undergoing out-of-hospital cardiopulmonary resuscitation, $EtCO_2$ and chest compression depth and rate were recorded between October 2010 and October 2011 using a capnometer and an accelerometer on a Zoll E-series monitor-defibrillator (Zoll, Chelmsford, US).

For time intervals of 15, 30, 45 and 60 seconds before every $EtCO_2$ value, mean compression depth, mean compression rate and number of compressions were calculated.

$EtCO_2$ values were log-transformed because they were not normally distributed. To account for multiple measurements within a patient, a mixed effects model was applied with population and subject-specific factors (sex, age, initial rhythm). Data are reported as mean and range or number and percentage.

Results: Seventy-one cardiac arrest patients (mean age 64.5 years (range 20-89), 55 (77.5%) male) were analysed

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(8897 $EtCO_2$ values). The initial rhythm was asystole in 35 cases (49.2%), ventricular fibrillation in 18 (25.4%) and pulseless electrical activity in 18 (25.4%). Return of spontaneous circulation occurred in 24 patients (33.8%).

Regression analysis for individual patients showed a positive relationship between compression depth and $EtCO_2$ in 39 cases (55%), a negative relationship in 14 (20%) and none in 18 (25%). Between compression rate and $EtCO_2$ a negative association was observed in 31 patients (44%), a positive association in 13 (18%) and none in 27 (38%).

According to the Akaike Information Criteria, the mixed effects model with the 15 seconds interval was best, predicting a 3% increase of $EtCO_2$ for every increase in compression depth of 1cm. With this model, a significant relationship with $EtCO_2$ was also found for the number of compressions and sex but not for age, initial rhythm and compression rate. In the subgroup of patients with a positive relationship between compression depth and $EtCO_2$, every cm increase in depth increased $EtCO_2$ with 12%.

Conclusion: During resuscitation, $EtCO_2$ values were influenced by compression depth and by the number of compressions in the preceding 15 seconds. These results suggest that $EtCO_2$ may be useful to monitor the efficacy of chest compressions during resuscitation.

Syncope

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Tilt test is a useful tool to exclude the presence of autonomic failure in patients with syncope of unexplained origin

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Background: Syncope is a frequent complaint in emergency departments. Head-up tilt table test is useful to investigate the cause of recurrent syncope, but the focus has been mainly on neurocardiogenic or neurally mediated syncope. Although syncope is a common complaint of patients with autonomic failure, the role of tilt table testing in the investigation of this specific group of patients is currently unknown. The purpose of this study was to evaluate head-up tilt table test (HUT) accuracy to diagnose autonomic failure.

Methods: Retrospective observational study involving thirty patients who sought medical assistance because of recurrent syncope. They underwent a two-stage, nitroglycerin-potentiated HUT and to autonomic function tests (handgrip, Valsalva maneuver, respiratory sinus arrhythmia, stand-up test and 4-seconds exercise test). During all procedures, 12-lead electrocardiogram and non-invasive blood pressure (Finometer, Finapres, Netherlands) were continuously monitored. HUT was considered positive for autonomic failure when systolic blood pressure (SBP) decreased >20mmHg, without concomitant proportional tachycardia, i. e. $\Delta HR / \Delta SBP < 1$bpm/mmHg. All other responses to HUT (physiological response, neurocardiogenic or neutrally mediated syncope, postural orthostatic tachycardia syndrome) were considered negative for autonomic failure. Abnormal responses to autonomic function tests are the gold standard for the presence of autonomic failure. HUT's sensibility, specificity, positive and negative predictive values (PPV and NPV) to diagnose autonomic failure were calculated from a 2x2 table.

Results: Six patients were excluded (pacemaker = 1; atrial fibrillation = 2; beta-blockers = 3). Thus, the results of the 24 remaining patients (9women, age = 61 ± 20 years-old) were included. Six subjects had autonomic failure and 14 presented a positive HUT response for this condition leading to sensibility of 100%, specificity of 55, 5%, positive predictive value of 42, 8% and negative predictive value of 100%.

Conclusions: Tilt test without a dysautonomic profile is a useful tool to exclude the diagnosis of autonomic failure. This response to HUT is found in autonomic failure, but also in other causes of orthostatic intolerance.

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Predictive value of 24 hour urinary sodium in patients with vasodepressive syncope

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Aim: To correlate 24 hour urinary sodium values with presence of vasodepressive syncope.

Background: Syncope is a common problem in adolescence, with up to one in five experiencing an episode of syncope before adulthood. Vasovagal reflex syncope is the most frequent form of syncope with up to 6% of hospital admissions, 1% of emergency room visits per year 3, 4 and 80% A&E attendees admitted 5 with average length of stay 6.1 days.

Method: Retrospective review of practice relating to patients referred to Syncope clinic. Collection of 24 our urinary sodium and volume and correlation with tilt table test results.

Results: All patients n = 94, 36 (40%) female, 58 (60%) male.

Consecutive patients undergoing 24 hour urinary collection and tilt table testing n = 18.

Urinary Sodium Range From 36-241 mmol, average of 119.4 mmol.

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Out of 18 patients 5 (27.7%) had a negative tilt test and 12 (66.6%) were diagnosed to have vasodepressive syncope with 1 (5.5%) cardioinhibiton.

Amongst the 15 with positive tilt test 9 (60%) had urinary value of < 170 mmol, 4 (26.6%) had Urinary sodium value of above 170 mmol.

Of the 5 with negative tilt test all patients had urinary sodium value of above 170 mmol.

Conclusion: 24 hour urinary sodium of less than 170 mmol has strong correlation with incidence of vasodepressive syncope.

Study was unable to gauge correlation of severity of symptoms with decreasing urinary sodium values due to small number of cases.

A larger study is required to correlate severity with urinary sodium values and it will be interesting to note improvement in symptoms with improvement in urinary sodium value post treatment which will be the second phase of our study.

Thromboembolic venous disease

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We really need more thrombolysis for intermediate-risk pulmonary embolism group. findings from romanian registry for pulmonary trombembolism (RO-TEP)

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Background: Thrombolysis has been show to be life saving for high mortality risk pulmonary embolism (PE), but for the intermediate-risk group is a more restrained attitude. Registries, which are well connected with the real life, show increasing evidence that this position must be reevaluated.

Methods: Romanian Registry for Pulmonary Trombembolism (RO-TEP) enrolled 215 consecutive PE patients (pts) between January 2009 and March 2012, 51.2% woman, aged 63.42+/-15.22, with Wells score 5.10+/-2.21 and revised Geneva score 13+/-3.62.PE with/without thrombolysis was stratified into levels of early risk using clinical, right ventricle (RV) dysfunction and myocardial injury markers. The three risk level groups were studied concerning evolution, need of invasive monitoring and complications.

Results: There are 48 pts (22.3%) receiving thrombolytic therapy with different regimen: streptokinase (SK) (0.25 MU/30 min + 0.1 MU/h, in 24h) in 3 pts (1.4%); SK (1.5 MU/60 min + 0.1 MU/h, in 24h) in 2 pts (0.9%); SK (1, 5 MU/30 min + 0.1 MU/h in 24h) in one patient (0.5%); tPA (100 mg/2h) in 22 pts (10.2%); reteplase (10 mg + 10 mg) in 3 pts (1.4%); tenecteplase (body-weight adjusted dose) in 9 pts (4.2%) and other in 8 pts (3.7%). Echocardiography revealed 12 pts (5.6%) with floating thrombus in the right heart. Correlating the risk stratification according the expected pulmonary embolism-related early mortality rate with/without administration of the thrombolytic therapy highlights: with high risk 14/29 pts (29.2%/17.4%), with intermediate risk 32/113 pts (66.7%/67.7%) and with low risk 2/25 pts (4.2%/15.0%). Only one major bleeding occurred during thrombolytic therapy (0.5%). The mortality was 2.79% in the intermediate risk group receiving thrombolysis and 4.65% in the intermediate risk group received only anticoagulant therapy ($p = 0.015$).

Conclusions: Ro-TEP Registry provide us a range of evidence from real life that we can use more frequently the thrombolytic therapy for intermediate-risk pulmonary embolism group without a further increase of the bleeding and mortality rate.

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Characteristics of patients with acute pulmonary thrombembolism and right heart free-floating thrombi. data from the Romanian registry for pulmonary trombembolism (RO-TEP)

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Background: Right heart free-floating thrombus (RHFT) can be found relatively rare in patients (pts) with pulmonary thrombembolism (PTE). The management of these pts (thrombolysis or anticoagulants) is controversed.

Methods: The Romanian Registry for Pulmonary Thrombembolism (RO-TEP) enrolled 215 consecutive pts with PTE between January 1st, 2009 and March 31st, 2012. In 12 pts (5.6%, aged 64 + 18 years, 6 males and 6 females) RHFT have been found by echocardiography in the right heart.

Results: The Wells score was 5.55+/-2.87 and revised Geneva score 7.33+/-4.53 in the 12 pts. Three pts had a high risk of early mortality and 9 pts an intermediate risk

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according to the specific 2008 European Society of Cardiology Guidelines. The pulmonary embolism severity index (PESI) was class II in 7 pts (58.3%), class III in 2 pts (16.7%), class IV in 1 patient (8.3%) and class V in 2 pts (16.7%). The main symptoms were acute dyspnoea (9 pts – 75%), chest pain (7 pts -58.3%), syncope (2 pts – 16.7%) and hemoptysis (2 pts – 16.7%). Two pts (16.7%) were free of symptoms. The shock index (heart rate divided by systolic blood pressure) was < 1 in 7 pts (58.3%) and > 1 in 5 pts (41.7%). Trombolytic therapy followed by anticoagulants was administered in 5 pts (41.7%) and only anticoagulants in 7 pts (58.3%). Two pts from the thrombolysis group and 2 pts from the anticoagulants group died.

Conclusions:

1. Thrombolysis does not seem to improve the prognosis of pts with PTE and RHFT.
2. The clinically presentation of pts with PTE and RHFT seems to be similar with the one described in literature for PTE pts without RHT.

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Electrocardiogram for the diagnosis of pulmonary embolism when conventional imaging cannot ee utilized a report of Romanian registry for pulmonary tromboembolism RO-TEP

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Objective: The aim of this study was to describe the prognostic value of electrocardiography (ECG) in the initial diagnosis and management of acute pulmonary embolism (PE), as imaging techniques were absent.

Methods: This retrospective study included all patients (pts) who were diagnosed with PE and included in RO-TEP during 2010-2012. The ECG abnormalities investigated were right ventricular strain pattern: a) sinus tachycardia (>100 beats/min); b) ST-segment abnormalities (ST elevation in leads V1 to V3 and in frontal inferior leads); c) T-wave inversion in leads V1 to V3; d) right bundle branch block (RBBB); e) an S1Q3T3 pattern; and e) recent-onset atrial arrhythmia. We analysed the diagnostic relevance of ECG with respect to the presence of effective CT pulmonary angiography (CT) in the diagnostic pathway of these patients.

Results: A total of 215 pts with proved PE (CT, echocardiographic evidence of right ventricular dysfunction, significant movements of "D" – dimers and troponins in clinical context) were included in the study; 152 pts (70.7%) had PE according to CT – group A, and 63 pts (29.3%) had absence of effective radiological imaging – group B. ECG abnormalities were: a) 75 pts /66.9 % group A vs. 37 pts/ 49.3% group B, overal 52 % for sinus tachycardia; b) 17 pts /11.2 % group A vs. 25 pts/ 39.6 % group B, overal 19.4 % for ST segment abnormatilies; c) 69 pts /45.3 % group A vs. 27 pts/ 42.8 % group B, overal 50.7 % for T – wave inversion; d) 33 pts /21.7 % group A vs. 23 pts/ 36.5 % group B, overal 26.05 % for RBBB; e) 45 pts /29.6 % group A vs. 25 pts/ 39.6 % group B, overal 32.5 % for S1Q3T3 pattern; f) 11 pts /7.1 % group A vs. 5 pts/ 7.8 % group B, overal 7.4 % for atrial arrtythmia

Conclusions: Right ventricular strain pattern on ECG adds incremental diagnostic value in patients with PE while imaging techniques cannot be utilized. Among the ECG signs, T wave inversion in leads V1 to V3 and sinus tachycardia is closely associated with PE.

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Pulmonary embolism: Predictive factors of outcome

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Introduction: Few reports have addressed the outcome of patients with pulmonary embolism (PE)

Purpose of work: To determine factors associated with poor outcome in PE.

Materials and methods: It is a single-center retrospective study, covering 145 patients hospitalized in the emergency department of the hospital for pulmonary embolism over a period from January 2000 to January 2008.

Results: Overall in-hospital mortality rate was 11%. The predictive factors of in-hospital mortality were: age over 60 years ($P < 0.001$), history of COPD ($P = 0.006$) or stroke ($P < 0.001$), respiratory rate> 25 cycles per minute ($P = 0.007$), presence of signs of right heart failure ($P = 0.032$) or left ventricular failure ($P < 0.001$), ventricular dilatation ($P = 0.011$), dilatation of the right atrium ($P = 0.003$), presence a paradoxical septum ($P < 0.001$) and finally, a hospital stay of more than 8 days ($P = 0.006$). The occurrence of major bleeding episodes requiring red cell transfusions or discontinuation of treatment was 13.7% of cases. Cerebral hemorrhage was observed in 2% of patients. A hospital stay of more than 8 days was significantly associated with major bleeding ($P = 0.03$). After a median follow-up of 13.1 months, 7 patients (4.8%) had recurrent episodes of VTE. Recurrence was significantly associated with deep vein thrombosis ($p = 0.01$) and shorter duration of anticoagulation ($p = 0.02$) but not with unprovoked thrombotic episodes ($p = 0.18$).

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Conclusion: A better understanding of predictors of outcome in pulmonary embolism is required for therapeutic decision-making. These data must be confirmed by prospective studies.

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Catheter directed thrombolysis and mechanical thrombectomy in the complications of deep venous thrombosis (phlegmasia cerulea dolens, pulmonary embolism)

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Introduction: Percutaneous thrombectomy and catheter directed thrombolysis (CDT) represent well established techniques for treatment of massive deep venous thrombosis (DVT) and submassive pulmonary embolism (SPE). The purpose of CDT is to dissolve thrombus and to restore the lumen without causing distal embolization as fast as possible. Phlegmasia cerulea dolens (PCD) is limb-treating and pulmonary embolism is a life-treating disease and both are frequent complications of a massive iliofemoral thrombosis.

Methods: We have analysed our patients clinical and interventional data treated in 2010 and 2011 with complicated DVT. We have examined retrospectively the efficacy and safety of CDT in the treatment of SPE and PCD. Diagnosis was made by clinical examination, duplex ultrasound and in the case of SPE with computer tomography. The access site for SPE was the femoral, and for PCD the femoral or the popliteal vein. Caval filters were implanted from jugular or from femoral veins. After the sheath advancement, occlusions were passed with a 0.035 guidewire and CDT was started with Alteplase for 24 hours. After 24 hours, control angiography was performed and the CDT was maintained when the thrombus burden was flow limiting. The CDT was stopped when the thrombus disappeared. When the CDT was not successfull, manual thrombectomy was performed. In the case May Turner syndrome, angioplasty was performed and self-expandable stents were implanted. Postoperatively, patients were treated with systemic anticoagulation, compression hose, and interval follow-up.

Results: 18 patients were treated with a mean age of 64 ± 9 years. CDT was successful in all petients (n = 10, 100%) treated with SPE. The CDT time in SPE was 36 ± 12 hour. CDT was successful primarily in 6 patients (n = 6, 75%) but in two patients mechanical thrombectomy and angioplasty was necessary. All patients (n = 8, 100%) had resolution of PCD without the need for open surgery. Venous angioplasty was necessary in 3 patients with 3 of these requiring venous stents. Additional caval filters were implanted in 6 cases (N = 6, 33%).

Conclusion: Percutaneous treatment of complicated DVT has excellent results with catheter directed thrombolysis, however additional mechanical thrombectomy and angioplasty is necessary in several patients.

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Prospective cohort study on the impact of risk factors and comorbidities in mortality in pulmonary embolism

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Background: Accurate and immediate diagnosis of pulmonary embolism (PE) still remains a difficult challenge for clinicians. Without prophylaxis, the incidence of hospital-acquired PE is approximately 10-40% among surgical patients, 40-60% following major orthopedic surgery and 10-40% in medical patients. PE is a life threatening disease and one of the main causes of in-hospital mortality. AIM: The purpose of this study was to determine the relationship between risk factors and comorbidities and in-hospital mortality in patients with PE.

Methods: We conducted a prospective, cohort study, between January 2004 and December 2010.The patients with PE, admitted in the Ist Medical Cardiology Clinic, in "St. Spiridon" University Hospital, Iasi were included. Different risk factors and comorbidities were statistically analyzed to identify the independent predictors of mortality in PE.

Results: The cohort consisted of 362 with PE. The mortality was 21.54% (No = 78 deaths). Multivariate analysis showed that an obesity (OR = 10, 47, CI = 2, 93-37, 32, p = 0, 0003), hyperglycemia (OR = 27, 25, CI = 3, 14-235, 83, p = 0, 0027), shock (OR = 13, 78, CI = 2, 5-75, 95, p = 0, 0026), anemia (OR = 11, 04, CI = 1, 42-85, 045, p = 0, 0214), renal failure (OR = 32, 19, CI = 7, 66-135, 3, p < 0, 0001) and short time between admission and death (OR = 0, 696, CI = 0, 602-0, 805, p < 0, 0001) were the only significant predictors of mortality in PE.

Conclusions: Mortality in patients with PE is high and screening of risk factors and comorbidities is important to identify patients at risk of developing clinically significant thromboembolic events.

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Dyslipidemia and other risk factors of arterial thromboembolism in patients with pulmonary embolism

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Introduction: Dyslipidemia is a well-known risk factor for arterial thromboembolism, but its association with the onset of venous thromboembolism (VTE) and pulmonary embolism (PE) has not received wider attention from the medical professionals. Recent results confirming the role of most frequently used antilipid agents, i. e. statins in the prevention of PE has highlighted the importance of further research on this issue.

Aim: Determining the difference among the values of the conventional risk factors for arterial thromboembolism, such as anthropometric parameters, lipid values and indices, fibrinogen and homocystein in patients with pulmonary embolism compared with the healthy controls.

Methods: We examined the total of 107 patients with pulmonary embolism and 88 examinees of the equivalent control group for the presence of conventional risk factors as well as novel risk factors such as ApoA1, ApoB, Lp (a), lipid indices, homocysteine and fibrinogen. Statistical analyses also included Student-t test.

Results: The patients with PE compared with the control group had significantly ($p < 0, 01$) higher BMI values (28, 48 vs 24, 84), as well as higher levels of homocysteine (13, 48 ± 6, 7vs 11, 12 ± 4, 3 μmol/L) and fibrinogen (5, 09 ± 2, 1 vs 3, 1 ± 0, 83 g/L). HDL (1, 17 ± 0, 5 vs 1, 38 ± 0, 3 mmol/L) ($p < 0, 01$) and ApoA1 (1, 28 ± 0, 4 vs 1, 6 ± 0, 55g/L) ($p < 0, 01$) values were significantly lower in the PE patients than in the controls. The triglyceride/cholesterol ratio was significantly higher ($p < 0, 01$) in the patients with PE than in the controls (0, 35 ± 0, 17 vs 0, 27 ± 0, 14). The Lp (a) values were insignificantly higher in the PE patients than in the controls (0, 37 ± 0, 37g/L vs 0, 33 ± 0, 47g/L).

Conclusion: The elevated levels of triglyceride/cholesterol ratio, fibrinogen, homocysteine as well as BMI, but lower levels of the protective HDL cholesterol and ApoA1 suggest their likely association with PE development. Determining risk factors more precisely may contribute to a better understanding of multifactorial PE etiology and enable a selective approach to the prevention of this life-threatening disease.

Valvular heart disease

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Complications of percutaneous mitral commissurotomy (PMC) and redo PMC

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Background: Compared with surgery, PMC is associated with shorter hospital stays, reduced patient discomfort, and significantly lower costs. The challenge of PMC remains to provide increased safety.

Objectives: This study was designed to evaluate the occurrence rate and the predictive factors for severe complications following PMC and redo PMC using Inoue balloon technique.

Methods: Our study is retrospective enrolling 190 patients, hospitalized in the cardiology department between January 1994 and January 2011 who benefited from a PMC with a clinical and echocardiographic follow-up of more than 10 years.

Results: procedure-related mortality was 0% The incidence of systemic embolism was 2.1%; The incidence of mitral regurgitation following PMC was 27% and severe mitral regurgitation was noted in 10 patients. No clinical, echocardiographic measurements, hemodynamic or procedural variables could predict the development of these severe mitral regurgitations in our study. The most common minor complication was the creation of a small interatrial shunt (12%) without any immediate or long-term complications. The mean follow-up was 60 months ± 32, 7 months. The restenosis was defined in our study by a mitral surface low than 1, 5cm ², it was noted in 35 % of cases. The predictive factors of restenosis identified by the univariate analysis were: history of PMC ($p = 0.017$), mitral valve area before PMC ≤ 0, 8 cms ² ($p = 0.089$), mitral valve area after PMC ≤ 1, 8 cms ² ($p < 0.001$), a high echocardiographic score ($p = 0.028$) and a mean gradient after PMC ≥ 6 mmHg ($p = 0.001$). In our study 40 patients benefited from a redo PMC. A primary failure was observed in 9 patients. Procedure-related mortality was 0%. Embolic stroke has occurred in 2.5% of cases. Pericardial effusion was noted in 1 patient. The mean follow-up was 40, 85 ± 20 months. There were no deaths and restenosis was noted in 42%.

Conclusion: The improved experience of our medical teams, and the systematic use of transoesophageal echocardiography to detect thrombi explain the low incidence of the complications of PMC in our study.

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Subclinical left ventricular diastolic dysfunction in asymptomatic patients with moderate aortic stenosis

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Aim: Left ventricular (LV) diastolic dysfunction is common in severe aortic stenosis. The purpose of this study is to evaluate left ventricular (LV) diastolic function in asymptomatic

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patients with moderate aortic stenosis. Moderate aortic stenosis (AS) is defined by a valve area between 1 and 1.5 cm^2.

Materials and methods: The study population consisted of 30 asymptomatic patients with isolated moderate aortic valve stenosis (mean aortic valve area = 1.26 ± 0.2 cm^2) and 33 age- and sex-matched control subjects. All included subjects had no evidence of hypertension, diabetes mellitus, ischemic heart diseases or chronic pulmonary diseases. Conventional echocardiography and tissue Doppler imaging (TDI) analysis were performed in all patients and healthy controls.

Results: LV ejection fraction, the Tei index and the mitral annulus systolic velocities measured by TDI were similar in both groups. However, mitral annulus early diastolic velocities (Em) measured by TDI were markedly reduced in patients with moderate AS (7.2 ± 1.1 cm/s vs. 12.7 ± 1.8 cm/s, $p < 0.01$) with higher ratio of early diastolic transmitral pulsed Doppler E to Em (E/Em) velocities (14.5 ± 1.7 vs. 8.6 ± 1.5, $p < 0.01$) suggesting impaired diastolic function.

Conclusion: In the presence of normal systolic function, diastolic LV function may deteriorate in asymptomatic patients with isolated moderate aortic stenosis. Tissue Doppler imaging may provide a useful tool to detect early subclinical LV diastolic dysfunction.

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Prosthetic aortic valve thrombosis in octogenarian with cardiogenic shock and elevated INR - Case Report

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Background: Prosthetic valve thrombosis (PVT) is a rare cause of cardiogenic shock and mortality is high. The choice between treatment options (surgery vs. fibrinolysis) is always challenging.

Objectives: We discuss diagnostic and therapeutic modalities for prosthetic aortic valve thrombosis in extremely high risk octogenarian, presented in cardiogenic shock with elevated International Normalized Ratio (INR).

Case Report: An 83 year old woman, with prosthetic aortic valve, was admitted to the coronary care unit in cardiogenic shock. Prosthetic valve clicks were not audible and INR was 3.59.Echocardiography revealed imobile prosthetic aortic valve leaflets with pressure gradients over the valve of 82/41 mm Hg, and moderate aortic regurgitation in central jet. On fluoroscopy, valve leaflets were stucked in the "middle" position. Streptokinase infusion was administered and 3 hours later the patient was hemodynamically stable, valve clicks were audible, and echocardiography showed normal leaflet motion with no significant gradient over the valve. The only adverse event that occurred was minor hematuria. On control fluoroscopy, regular opening of artificial valve leaflets was noted.

Conclusion: To our knowledge, this is the first report of successful fibrinolysis of prosthetic aortic valve thrombosis in octogenarian with cardiogenic shock and elevated INR. Since the patient was at very high risk of bleeding, multimodality imaging (echocardiography and fluoroscopy) had to be used in order to confirm the diagnosis before fibrinolysis was started.

Databases, registries and surveys

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Gender differences in short and mid-term prognosis after acute coronary syndromes: data from an italian registry.

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Purpose: gender differences (GD) are present within most areas of heart disease but the role of sex in Acute Coronary Syndromes (ACS) is still controversial. Our aim was to investigate if a gender bias is present in the setting of ACS management and its impact on short and mid-term prognosis after the acute event.

Methods: our registry included 179 consecutive patients (p), 131 (73.2 %) males (M) vs 48 (26.8%) females (F), mean age 65.6 ± 11.3 years (y) (64-67), admitted for ACS over a 3-month period in 2006 (from April to July 2006). Clinical and demographic characteristics, procedural features and treatment patterns, in-hospital complications and outcomes were analysed. A short and a mid-term telephonic follow-up (FU) was performed at 414 ± 56 and 1268 ± 273 days after the acute event.

Results: F were older than M (mean age 69.9 ± 11.0 vs 64.1 ± 11.1 y, $p = 0.0019$) and had a lower BMI than M (25.4 ± 4.6 vs 26.8 ± 3.5, $p = 0.038$) at admission. Traditional CV risk factors were similarly distributed between sexes; cigarette smoking was more frequent in M ($p = 0.016$). Previous MI was present in 38.1% of p. There were no significant GD differences among ACS presentations at discharge. We didn't find any significant GD for the use of an invasive strategy (IS) ($p = NS$). The likelihood to receive an invasive Tx was age-dependent (OR 0.88 IC95% from 0.82 to 0.94, $p < 0.001$) but not

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sex-related (p = NS). We didn't find any GD neither for mortality for all causes (M 8 vs F 4%, p = 0.58) nor for mortality for cardiac causes (M 6 vs F 2%, p = 0.93), at both short and mid-term FU. Cox regression analysis showed that sex didn't significantly influence survival, while age did (p = 0.001). Mortality was age-related (p = 0.001) but not sex-related (p = NS). Mortality for cardiac causes was not influenced by sex (p = NS) but only by age (p = 0.003). There was no significant GD in cardiac mortality at Cox regression analysis considering age and sex. Logistic regression analysis didn't show a significant influence of sex on cardiac events (CE) recurrence (p = NS) neither on new admissions (p = NS), nor at 1 neither at 3 years after ACS. Considering variables of age and sex, the likelihood of recurrence of CE depended only by age (p = 0.013), while the one of new admissions for cardiac causes during the year following the acute event and during the 3 years after ACS was not influenced by gender neither by age.

Conclusions: our registry confirms the absence of significant GD in total and cardiac mortality after ACS (short and mid-term prognosis after ACS) when using similar management strategies. Further sex-tailored research is needed to better understand these aspects.

Cardiac surgery in ICCU's patients

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Evaluation of the EUROSCORE II as predictor of 30 days mortality in very old age patients (>80) submitted to isolated coronary artery bypass grafting.

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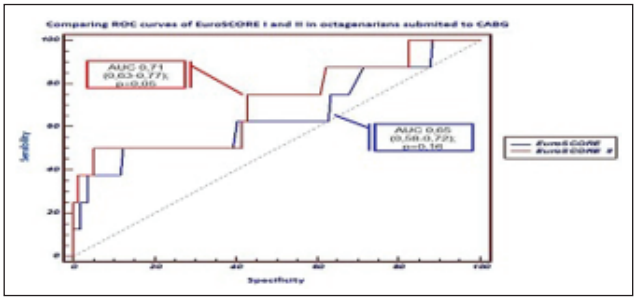
[1]Hospital West Lisbon, Department of Cardiology, Lisbon, Portugal

Purpose: the aim of this study is to evaluate the performance of the EuroSCORE and the EuroSCORE II as mortality predictor at 30 days in very old patients (VOP) that underwent isolated coronary artery bypass grafting (CABG).

Methods: Retrospective analysis from a single centre of 198 patients (pts) with ≥ 80 years of age undergoing CABG between July 2003 and October 2010, mean age 83 ± 2 years old, 62% men. The mean of EuroSCORE I was 11, 4 ± 8, 9 and the mean of EuroSCORE II was 4, 2 ± 3, 4.The area under the ROC curve (AUC), or statistics-C, was used as a measure of the discriminatory power of both scores for predicting mortality to 30 days and the test used to adjust the model was the Hosmer-Lemeshow. It has been calculated through their ROC curves the best cut-off for each respective score.

Results: Of 198 patients 95% have a full follow-up time of 30 days. During this period there were 8 (4%) deaths, of which 6 (3%) have been in-hopsital. The EuroSCORE I is not a good predictor of mortality at 30 days (AUC: 0, 65; 0, 58-0, 72; p = 0, 16; Hosmer Lemeshow: p = 0, 787); the EuroSCORE II showed reasonable discriminatory power (AUC: 0, 71; 0, 63-0, 77; p = 0, 05; Hosmer Lemeshow: p = 0, 231), although when compared to the EuroSCORE I haven't shown superiority (AUC: 0, 05; 0, 08-0, 19; p = 0, 423). Both scores had high negative predictive values (97%), with the best cut-off in this population of 16, 6% and 9, 0% for the EuroSCORE I and II, respectively.

Conclusions: the EuroSCORE I overestates mortality in octagenerians submitted to isolated CABG. The EuroSCORE II approximates to the actual mortality, but showed no higher discriminatory power for 30 days mortality.



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Moderated Poster Session 4
Monday, 22 October 2012 - 14:00 - 18:00

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Risk factors for premature coronary heart disease and predictors of major cardiovascular events after revascularization in patients with less than 40 years old

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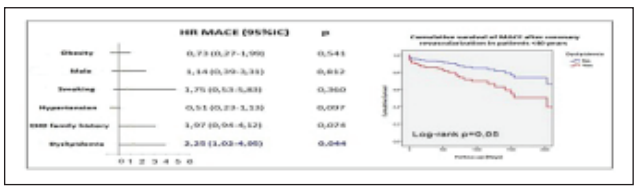
[1]Hospital West Lisbon, Department of Cardiology, Lisbon, Portugal

Purpose: characterize and evaluate the prognosis of premature coronary heart disease (CHD) in patients (pts) treated with coronary percutaneous intervention (ICP).

Methods: from a single centre study with 7198 pts submitted to ICP, between 2003-2010, we have identified the presence of premature CHD (aged < 40 years) in 139 pts – Group A and 2038 pts with CHD (Group B) aged between 55 and 65 years old. We excluded pts with > 65 years old to eliminate the age factor as cardiovascular (CV) risk. We compared between groups the prevalence of risk factors, clinical presentation and major incidence of CV events (MACE): CV death; myocardial infarction (MI); myocardial postoperative period. Multivariate Cox analysis was performed to assess independent predictors of MACE over follow-up.

Results: group A compared to group B, had higher prevalence of smoking (80% vs 56%; p < 0, 001) and family history of CHD (25% vs 13%; p < 0, 001), and lower prevalence of hyperlipidemia (50% vs 67%, p < 0, 001) and hypertension (68% vs 43%; p < 0, 001); in these pts the acute coronary syndrome was the most often clinical presentation (62% vs 42%; p < 0, 001), 32% (43 pts) was in the form of acute ST-segment elevation MI vs 16% (318 pts) Group B (p < 0, 001). Group A had more often a single vessel CHD (57% vs 41%; p < 0, 001). After a median 616 (8427-1208) days of follow-up, the incidence of MACE was similar between groups. In group A, hypelipidemia was the only independent predictor of MACE (HR 2, 26; IC 95% 1, 03-4, 98; p = 0, 043) (Fig. 1).

Conclusions: younger patients with significant coronary disease have a different risk profile, with a higher prevalence of smoking and family history of CHD. In this population, the hyperlipidemia is a predictor of major CV events, and suggests the need for its earlier and more aggressive control.



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Added value of genetic factors related to antiplatelet drug response to a validated risk score for prediction of adverse events after ST-segment elevation myocardial infarction

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Background: Several single nucleotide polymorphisms (SNPs), related to antiplatelet drug efficacy, are known to be associated with adverse events during antiplatelet therapy. However, their added value to clinical risk prediction models is uncertain, limiting their possible clinical application. The current objective was to determine whether genetic variation has added value to a validated clinical risk prediction model for ST-segment elevation myocardial infarction (STEMI) patients.

Methods: The study population included 1, 286 patients presenting with STEMI, treated with primary percutaneous coronary intervention and dual antiplatelet therapy with aspirin and clopidogrel. A validated risk score, containing age, Killip class, culprit vessel, three-vessel disease, troponin T, left ventricular ejection fraction and heart rate, was evaluated with and without two SNPs (COX1 -842A>G and CYP2C19*2), previously associated with antiplatelet drug response. Improvement of the model was determined by change in the c-index of the ROC curves and net reclassification improvement (NRI).

Results: During a median follow-up of 35 months, 84 patients suffered from a primary event (cardiovascular mortality or hospitalisation for heart failure). Using the clinical risk score the event rate of the low risk category (score 0-2, n = 535) was 2.1%, of the intermediate group (score 3-5, n = 609) 5.1% and of the high risk group (score ≥ 6, n = 142) 25.4%. Carriage of two or more risk alleles of the two SNPs was significantly associated with the primary endpoint after adjustment for the clinical parameters with a hazard ratio of 2.3 (95% CI 1.2-4.4), p = 0.01.Addition of the genetic markers to the model resulted in a small shift in the event rates of the different categories, 1.9%, 4.6% and 23.1% respectively. The genetic data did not significantly improve the c-index, from 0.779 to 0.781, p = 0.80. Also, no significant improvement of the reclassification was observed, NRI 0.01, p = 0.71.

Conclusion: Although the SNPs in COX1 and CYP2C19 are significantly associated with adverse events, even after adjustment for clinical factors, they do not provide an added value to a clinical risk score for the risk stratification of STEMI patients.

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Prevalence and prognostic impact of obstructive sleep apnea in patients with acute coronary syndrome: prospective study

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Purpose: Obstructive sleep apnea (OSA) has a strong association with hypertension (HT), diabetes mellitus (DM) and coronary artery disease (CAD). It is an increasingly prevalent condition, affecting 24% of men and 9% of women, although it is underdiagnosed. The purpose of our study was to evaluate the prevalence and prognostic impact of OSA in patients (P) with acute coronary syndrome (ACS).

Methods: Prospective study of P < 70 years of age, admitted for ACS with Killip-Kimball (KK) ≤ 2.Screening of OSA was performed during hospitalization with apnea-link (AL), along with anthropometric, clinical and analytical evaluation. P with positive AL did polysomnography study (PSG) for diagnostic confirmation and onset of treatment with continuous positive airway pressure (CPAP) device. A follow-up (FU) (7.0 ± 4.0 months) regarding MACCE was done.

Results: From a population of 342 P admitted for ACS along 12 months, 19% (n = 65) were included (86% men; age 57.8 ± 8.6 years). AL was positive in 49.2% (n = 32) of P, with the PSG confirming the diagnosis in 65.6% (n = 21) of those. CPAP treatment was started in these P. OSA P more often had DM (34.4% vs 17.1%; p = 0.038) with higher levels of insulin and C-peptide; HT (77.3% vs 53.6%; p = 0.066); previous history of CAD (31.8% vs 12.2%; p = 0.059) with angioplasty (22.7% vs 7.3%; p = 0.080) and chronic heart failure (18.2% vs 2.4%; p = 0.028). OSA P had higher body mass index (31.0 ± 5.5 vs 26.5 ± 3.6; p = 0.002); cervical (42.7 ± 3.7 vs 40.8 ± 12.3; p = 0.003) and abdominal (108.2 ± 14.2 vs 94.9 ± 10.0; p = 0.002) perimeter. No differences were found regarding arterial blood gases, CAD severity or left ventricle systolic function. During FU and after CPAP treatment has been started no differences were found in MACCE incidence (7.3% vs 9.1%; p = 0.804).

Conclusions: OSA has a very high prevalence in P with ACS (32.3%), comparing with the general population. Apnea-link showed to be a good in-hospital screening method due to his high negative predictive value and easy feasibility. OSA association with metabolic syndrome was confirmed and systematic screening should be done in these patients. The treatment with CPAP might improve the prognosis of these patients in an independently way.

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Recurrent acute coronary syndromes: atherosclerotic inflammatory disease paradigm or ineffective prevention

I Rosario[1], R Cale[1], S Carvalho[1], P Sousa[1], J Brito[1], H Dores[1], H Gabriel[1], L Raposo[1], P Goncalves[1], R Teles[1], M Almeida[1] and M Mendes[1]

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Purpose: despite the frequent recourse to the postoperative therapy and advancement in adjuvant pharmacological therapy, readmission rates for recurrent acute coronary syndrome (ACS) remain very high. The aim of this study was to evaluate clinical predictors of recurrent acute coronary syndromes (≥ 3) in patients with a history of prior myocardial infarction and that undergo percutaneous coronary intervention (ICP) by ACS.

Methods: Retrospective analysis of 942 patients (pts) (mean age 66 ± 11, 73 men, 34% with diabetes) with a previous history of myocardial infarction (MI) and that held ICP by new ACS. By logistic regression analysis, have been assessed clinical predictors for occurrence of a new ACS after ICP.

Results: After a median of 529 (426-941) follow-up days after ICP, there were 147 (15, 6%) recurrent MI: type 1 MI in 90 pts, type 2 in 2 pts, type 4b in 54 pts and type 5 in 1 pts. By univariate analyse, pts with recurrent ACS presented more previous history of diabetes mellitus (42% vs 33%; p = 0, 058), of ICP or coronary surgery (68% vs 59%; p = 0, 035 and 35% vs 22%; p = 0, 001, respectively), increased peripheral artery disease frequency (23% vs 12%; p = 0, 001) and multivessel disease (48% vs 37%; p = 0, 013). Figure 1 illustrates the independent clinical predictors of recurrent MI. Pts with recurrent MI have higher rates of global mortality (25% vs 11%; p < 0, 001) or cardiovascular mortality (18% vs 5%; p < 0, 001).

Conclusions: the results obtained pointed out that the pts that present ACS (≥ 3) constitute a particular subgroup with more extensive cardiac and non-cardiac atheromatous disease, with more intervention and with worse prognosis, justifying a more agressively strategy prevention of disease progression.

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Event reduction after intracoronary versus intravenous abciximab in patients with acute coronary syndrome undergoing percutaneous coronary intervention: a meta-analysis of clinical trials

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Successful reperfusion of epicardial arteries not necessarily results in peripheral myocardial perfusion. Local delivery of GP IIb/IIIa inhibitors (GPI) into the infarct related artery has been proposed to achieve further clinical efficacy, with the hypothesis that a higher local concentration can be reached through direct intracoronary bolus administration as compared to standard intravenous application. Clinical trials comparing intracoronary (IC) with intravenous (IV) abciximab bolus have shown conflicting results, with some studies being clearly underpowered for evaluation of hard clinical endpoints. Aim of the present study was therefore the comparison between IC and IV abciximab administration on mortality and MACEs in patients with ACS undergoing PCI, through a meta-analysis of all available clinical trials, including the most recently published large randomized study.

Five studies were selected, reporting clinical outcomes at short term, for a total of 3313 patients, 1762 treated with intracoronary (IC) bolus administration and 1551 treated with intravenous bolus administration (IV). The analysis for the short-term combined clinical endpoint revealed that incidence of MACE was significantly lower in the IC group than in the IV group (OR = 0.66; 95% CI 0.51-0.84; p = 0.001). Interestingly, subgroup analysis showed that most of the benefit observed in the IC group, over the IV group, was coming from those studies with a main baseline LVEF < 50% (OR = 0.33 95%CI 0.18-0.59 vs OR = 0.91 95%CI 0.64-1.29; p = 0.003).

Analysis of studies reporting long-term outcome confirmed that incidence of MACE was significantly lower in the IC group than in the IV group (OR = 0.52; 95% CI 0.30-0.91; p = 0.023). Interestingly, subgroup analysis showed that most of the benefit observed in the IC group, over the IV group, was coming from those studies with a main baseline EF < 50% (Eitel/Thiele 2008, Iversen 2011) (OR = 0.38 95%CI 0.23-0.63 p < 0.001).

In conclusion, the present work provides evidence of a clinical benefit of abciximab administration through intracoronary bolus, as compared to intravenous bolus. This results are confirmed at both short-term and long-term outcome analysis. Of note, our data indicate that a still major benefit from IC abciximab bolus over the IV route is obtained in high risk patients, as those with more depressed baseline LVEF. Moreover, no relevant differences were found in terms of bleeding complications between the two administration routes.

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Comparative validation of three contemporary bleeding risk scores in acute coronary syndromes

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Background: Hemorrhagic complications are strongly linked with subsequent adverse outcomes in acute coronary syndrome (ACS) patients. Various risk scores (RS) are available to estimate the bleeding risk in these patients.

Aims: To compare the predictive accuracy of the three contemporary bleeding RS in ACS.

Methods: We studied 4500 consecutive patients with ACS. For each patient, the ACTION, CRUSADE, and Mehran et al bleeding RS were calculated. We assessed their performance either for the prediction of their own major bleeding events or to predict the TIMI serious (major and minor) bleeding episodes in the overall population, in patients with non-ST elevation ACS (NSTEACS) and in those with ST-elevation myocardial infarction (STEMI) patients. Calibration (Hosmer-Lemeshow test) and discrimination (c-statistic) for the three RS were computed and compared. We used the concept of net reclassification improvement (NRI) to compare the incremental prognostic value of using a particular RS over the remaining scores in predicting the TIMI serious bleeding.

Results: The best predictive accuracy was obtained by the CRUSADE score either for the prediction of its own major bleeding events (c-statistic = 0.80, 0.791, and 0.81 for the entire sample, for STEMI, and for NSTEACS patients, respectively) or to predict the TIMI serious bleed occurrence (c-statistic = 0.741, 0.738, and 0.745 for the whole population, for STEMI and NSTEACS patients, respectively). The lowest bleeding rates observed in patients classified as low risk corresponded to the CRUSADE RS. All scores performed modestly in patients who did not undergo coronariography (all c-statistic < 0.70). The CRUSADE score was significantly superior to the ACTION model in predicting the TIMI serious bleeding occurrence in terms of NRI overall and by ACS subgroups (p < 0.05). Overall, the CRUSADE RS exhibited better calibration for predicting the TIMI serious bleeding compared to the ACTION and Mehran et al scores (Hosmer-Lemeshow p-values of 0.26, 0.13, and 0.07, respectively).

Conclusion: The CRUSADE score represents, among the more contemporary bleeding RS, the most accurate and reliable quantitative clinical tool in STEACS and STEMI patients. We encourage the utilization of the CRUSADE index for bleeding risk stratification purposes in daily clinical practice and in ACS outcome studies. The performance of the three more contemporary bleeding RS is modest in those patients who received conservative management.

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Post-cooling fever in cardiac arrest patients after rewarming of therapeutic hypothermia

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Purpose: Therapeutic hypothermia (TH) plays an important role in the treatment algorithm of sudden cardiac arrest, but incidence and characteristics of fever in the post-cooling phase are less known. In this study we analyzed temperature courses and inflammatory characteristics after TH.

Methods: During a 1 year period a data analysis was made of adult (age>18 years) non-traumatic cardiac arrest patients admitted to our emergency department with a return of spontaneous circulation (ROSC) and treated with therapeutic hypothermia (TH) during 24 hours. Cooling was done by an intravascular or a surface technique using the Coolgard 3000® or Arctic Sun® system respectively. Rewarming was done by 0.3°C/hr until 36.6°C core oesophageal temperature. A core oesophageal temperature of 33.0°C and exceeding 37.7°C was defined as TH and post-cooling fever (PCF) respectively. Temperature was measured hourly, laboratory taken daily. Patients who survived at hospital discharge are described as survivors. Descriptive statistics and a Wilcoxon Signed Ranks Test were used for analysis.

Results: In total 36 patients were included. The mean age was 68 years (range 37-91) and 9 (25%) were female. Eighteen patients (50%) were survivors. Two patients died of refractory cardiac shock within the first 24 hours, 16 patients died due to massive irreversible post-ischemic brain damage. In 25 patients (72%) we observed PCF after the end of rewarming. Core temperature was statistical significant higher in the non-survivors between 54 and 72 hours after hospital admission (mean core temperature 37, 9°C) ($p < 0.05$). In 31 patients (86%) white blood cell count (WBC) on admission was above normal levels (mean WBC 15500/mm3). One patient had a severe leucopenia and didn't survive. The initial elevated WBC decreased in the following 7 days, reaching normal levels (4500-11000/mm3) within 3 days after admission without any statistical significant difference between survivors and non-survivors. Whereas C-reactive protein (CRP) only increased after 2-3 days, there was in the non-survivors a higher statistical significant increase after 4 days against admission values (mean increase of 20, 99 mg/dl) ($p < 0.05$).

Conclusions: There is a high incidence of post-cooling fever associated with ending of rewarming in cardiac arrest patients treated with TH probably due to excessive pro inflammatory activation. The presence of PCF between 54 hours and 3 days accompanied by an enormous increment of CRP at day 4 seems to correlate with a bad outcome. To our knowledge no other literature reached statistical significance on outcome related to PCF.

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Poster Session 4
Monday, 22 October 2012 - 14:00 - 18:00

Acute coronary syndromes: STEMI

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Benefit of transferring ST-segment elevation myocardial infarction patients for percutaneous coronary intervention compared with direct-arrival patients does not decline until one-year

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Purpose: Primary PCI is recommended even if the patient is to be transported from non-primary PCI-capable hospitals. Transport is associated with an increased treatment delay. Quality improvement strategies have reduced door-to-balloon (DTB) times for direct-arrival patients with ST-segment elevation myocardial infarction (STEMI) undergoing primary PCI. However, STEMI patients requiring inter-hospital transfer for primary PCI are often excluded from performance assessment. The aim of this study was to evaluate the impact of transferring STEMI patients for primary PCI compared with direct-arrival patients on long-term clinical outcomes.

Methods: A total of 3, 576 STEMI patients with less than 12 hours of symptom onset-to-door time from the Korea Acute Myocardial Infarction Registry were compared according to transfer (n = 2, 176) or direct-arrival (n = 1, 400). The primary outcome was the composite of major adverse clinical event (MACE), defined as death, non-fatal myocardial infarction, and revascularization, at one-year.

Results: In transfer group compared with direct-arrival group, symptom onset-to-first medical contact was significantly shorter (114.8 ± 125.8 vs. 135.5 ± 143.0 min, $p < 0.001$), but symptom onset-to-door time at the PCI-capable hospitals was significantly longer (233.5 ± 149.0 min vs. 144.7 ± 142.5 min, $p < 0.001$). DTB time was significantly shorter in transfer group than in direct-arrival group (89.1 ± 52.2 vs. 108.9 ± 63.4 min, $p < 0.001$). Total death and the composite of MACE were not different significantly during hospitalization (5.1 vs. 3.9 %, p = 0.980; 5.4 vs. 4.8%, p = 0.435, respectively) and at one-year (8.2 vs. 6.6%, p = 0.075; 13.7 vs. 13.9%, p = 0.922; respectively).

Conclusions: Transferring STEMI patients to PCI-capable hospitals with modest increase of ischemia time did not affect clinical outcomes at one-year. This study suggests that inter-hospital transfer should be encouraged for STEMI patients requiring primary PCI in the area of geographic accessibility similar to South Korea.

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Early outcome and prognostic factors among elderly patients with ST-segment elevation myocardial infarction treated with primary coronary angioplasty.

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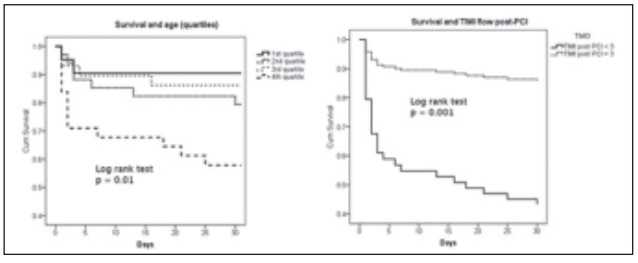
Background: Elderly patients are at high risk of mortality when they present with ST-elevation myocardial infarction (STEMI).

Objective: To assess early outcome and predictors of mortality at 30-days among patients aged ≥ 80 years with STEMI treated with primary percutaneous coronary intervention (PCI).

Methods: We evaluated 116 patients (aged 86.3 ± 4.2 years), 49 (42.2%) males, admitted to our hospital between August 2008 and December 2011, with diagnosis of STEMI who underwent urgent PCI.

Results: There were no gender differences in cardiovascular risk factors, left ventricular ejection fraction (LVEF) at admission, Killip class, infarct related artery or presence of multivessel disease. Overall mortality at 30 days was 26/116 (22.4%). No gender difference on mortality was observed. Successful reperfusion (TIMI flow = 3) was achieved in 94 (81%) patients. At univariate analisys, older age (p = 0.01), LVEF < 40% (p = 0.005), failure of PCI (TIMI flow < 3, p = 0.0001), systolic blood pressure < 100 mmHg (p = 0.016), and no history of myocardial revascularization (p = 0.027) were associated with higher mortality at 30 days. Multivariate Cox proportional hazards analysis identified impaired LVEF (< 40%) at admission (HR 2.40, 95% CI 1.01-5.69, p = 0.047), age (1 year step, HR 1.14, 95% 1.05-1.24, p = 0.002) and failure of PCI (HR 3.93, 95% CI 1.68-9.1, p = 0.002) to be independently associated with increased risk of mortality at 30 days. There was a trend toward higher PCI success rate in male patients (13.2% vs 23.8%, p = 0.08).

Conclusions: Our data show that elderly patients with STEMI have a considerably high risk of mortality at 30 days. LVEF < 40 % at admission, older age and failure to achieve complete reperfusion (TIMI flow 3) were independent predictors of early mortality in our population.



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Care of acute myocardial infarction in the coronary care units of piedmont: the 2007 prima_ sweet regionwide survey

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Background: The treatment of Acute Myocardial Infarction (AMI), both with ST-segment elevation (STEMI) and without (NSTEMI), is evolving in Piedmont, with an increase in interventional procedures and hub-and-spoke networks. This new regionwide survey provides updated assessment of the management of STEMI, and unprecedented data on NSTEMI.

Methods: In 30 Coronary Care Units of Piedmont all patients with AMI < 48h between January and March 2007 were included.

Results: Of 921 patients, 447 had STEMI and 474 NSTEMI. Diabetes was present in 35%, and chronic kidney disease in 38%. Hospital mortality was 4.7% (95% CI 3.3-6.1%): age >75y, Killip class>1, known diabetes or abnormal blood glucose on admission were multivariate predictors. Thrombolysis and primary angioplasty (pPTCA) were used in 17.6% and 53.1% of 391 patients with STEMI < 12h, and 29.3% had no reperfusion therapy (RT), notably: 52% of patients >75y and 51% of those reaching non-24/24h interventional centres. Mortality after pPTCA was 2.5%, and on-site door-to-balloon time was < 90 min in 67.5%. Overall mortality after STEMI was 5.4% (95% CI 3.2-7.6%). In NSTEMI, use of anti-thrombotic treatments was extensive, but invasive treatment < 72h was limited to 8% of cases in centres without facilities, and was irrespective of patient risk profile. Mortality after NSTEMI was 4.0% (95% CI 2.2-5.8%), and was predicted by both the GRACE Risk Score and diabetes.

Conclusions: There is room for improvement in the treatment of STEMI and NSTEMI in our region, with more extensive use of RT, especially in the elderly, and of early revascularisation and optimal medical treatment in higher-risk NSTEMI.

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Added prognostic value of inflammatory biomarkers in acute myocardial infarction

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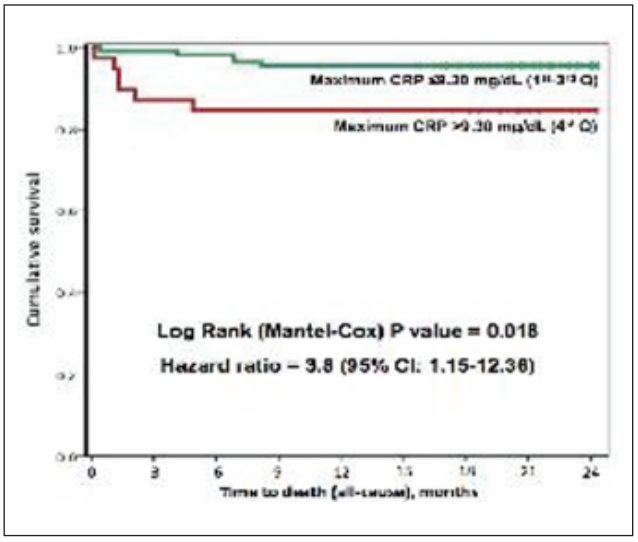
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Purpose: Inflammatory biomarkers (IB) are elevated early in the course of acute myocardial infarction (AMI) and seem to influence prognosis. We sought to characterize the systemic inflammatory response in patients (pts) with ST-segment elevation AMI (STEMI) and to evaluate its prognostic value.

Methods: Consecutive pts with STEMI submitted to primary angioplasty were enrolled. IB were serially quantified during the initial 72 hours and their prognostic impact was assessed. The following endpoints were considered:1. cardiogenic shock or death during hospitalization;2.any cause mortality during follow-up;3.death, reinfarction or rehospitalization due to cardiovascular causes during follow-up.

Results: We studied 172 pts (75% male, 62 ± 12 years, follow-up 20 ± 6 months). Endpoints occurred in 10, 8, and 25% of pts, respectively. Baseline white blood cells (WBC) ($p = 0.001$), neutrophils (NT) ($p < 0.001$) count, interleukin (IL) -6 ($p = 0.004$) and maximum WBC ($p < 0.001$), NT ($p < 0.001$) and C-reactive protein (CRP) ($p < 0.001$) levels were associated with the short-term endpoint. Maximum counts of NT and CRP level during the initial 72 hours were associated with long-term any cause mortality ($p = 0.028$ and 0.017, respectively), and maximum counts of NT were also associated with the risk of death, reinfarction or rehospitalization due to cardiovascular causes after 30 days ($p = 0.042$). Long-term all cause mortality was significantly higher in pts with CRP>9.30 mg/dL (HR:4.6, 95% CI 1.1-19.4, $p = 0.037$), which was identified as an independent prognostic factor after STEMI (figure).

Conclusion: In pts with STEMI, WBC and NT count, CRP and IL-6 obtained at the beginning of primary angioplasty and during hospitalization, showed short and long-term prognostic value. Maximum CRP is an independent predictor of adverse long-term prognosis.



Survival curves according to CRP levels

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Prognostic significance of new-onset atrial fibrillation in patients treated with successful primary percutaneous coronary intervention

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Purpose: To determine prognostic significance of new-onset atrial fibrilation (AF) on 1-year overall mortality and major adverse cardiovascular events–MACE (comprising cardiovascular mortality, reinfarction and ishemic stroke) in patients with ST-elevation myocardial infarction (STEMI) treated with successful primary percutaneous coronary intervention (pPCI).

Methods: We analyzed 1972 patients with no medical history of AF. Successful pPCI was defined as postprocedural TIMI 3 flow through infarct related artery. Patients presenting with cardiogenic shock were excluded.

Results: New-onset AF occured in 103 of 1972 patients (5.2%). Among patients with AF 29 patients (28.1%) presented with AF and 74 patients (71.9%) developed AF after pPCI at a median time of 5h (interquartile range 1-25h). Median duration of AF was 17h (interquartile range 5.5-30h). Compared with patients without AF, patients with AF were older and presented more often with heart failure (HF) and systolic blood pressure < 100mmHg; they had more often diabetes, baseline creatinine clearance (CrCl) < 60ml/min/m2, lower left ventricular ejection fraction (LVEF) and 3-vessel coronary disease on initial angiogram. The incidence of 1-year overall mortality and MACE was significantly higher in patients with AF compared with patients without AF (15.8% vs 4.3%, and 23.7% vs 4.5% respectively). In Cox regression model new-onset AF was an independent predictor of 1-year overall mortality and MACE: overall mortality- HR 2.36 (95%CI 1.42-3.87), p = 0.0006; MACE-HR 2.06 (95%CI 1.22-2.82), p = 0.0035.Other independent predictors of 1-overall mortality and MACE were age, HF at admission, CrCl < 60ml/min/m2, LVEF < 40% and 3-vessel coronary disease (for overall mortality only). Conclusion: In patients with STEMI who underwent succsseful pPCI the occurence of new-onset AF was associated with more than 2-fold increase in 1-year overall mortality and MACE.

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Activation of blood coagulation system in ST elevation acute myocardial infarction: what prognostic implications?

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Background: Recent studies suggest that patients (pts) with ST elevation acute myocardial infarction (STEMI) have changes in theblood coagulation system that modify the pattern of clotting at the sites of vascular injury.

Aim: To determine the short- and long-termprognostic implications of blood coagulation system activation during STEMI.

Methods: Prospective observational study of ptswith STEMI undergoing primary angioplasty. The activity of factors (F) II, V, VII, VIII, antithrombin III (ATIII), protein C and S was determined. Echocardiographic assessment was performed 24 to 72 hours post-angioplasty, withdetermination of ejection fraction (Simpson biplane method). To assess the short-termprognostic value, we defined the composite endpoint of cardiogenic shock orin-hospital death. The long-term prognosis was determined by the composite endpointof death, reinfarction or rehospitalization for cardiac causes duringfollow-up.

Results: We included 157 pts (78% men, 61 ± 12years, mean follow-up: 572 ± 178 days), 14% of which evolved in Killip-Kimballclass (KK) ≥ III. Mean EF was 52 ± 12%, ≤40% in 17% pts. Twenty six percent ofpts had a coronary subocclusion. These patients showed a significant decreasein F II activity (90 ± 15% vs 98 ± 20%, p = 0.041). ATIII activity variedsignificantly with KK, being lower in pts who evolved in Killip class ≥III (p = 0.015). Patients with EF ≤ 40% had higher basal activity of F VII (93 ± 36% vs 80 ± 25%, p = 0.034) and F VIII (149 ± 47 vs 123% ± 54%, p = 0.012). Ten percent of pts (n = 17) evolved intocardiogenic shock or death during hospitalization. Basal F V activity showedmoderate accuracy in predicting this endpoint (AUC ROC: 0.66, p = 0.036). Withregard to long-term follow-up, 33 pts (22%) evolved into death, reinfarction orrehospitalization for cardiac causes. The risk of unfavorable outcome was twotimes higher in pts who had higher levels (>3rd tertile) of F V activity (HR: 2.01, 95% CI 1.01-4.01, p = 0.004). In multivariate Cox regression analysis, only F V activity (> 3rd tertile) and EF ≤ 40% were independent predictors of long-termadverse outcome.

Conclusions: The activity of blood clotting system isrelated to structural and hemodynamic consequences of STEMI, having short andlong-term prognostic value.

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ECG prior to triage can reduce D2B times in STEMI

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Introduction: Current reperfusion guidelines from the European Society of Cardiology (ESC) recommend that First Medical Contact to Balloon times (FMC-B) should not exceed 120 minutes.

Many factors can cause delay in door to balloon times for patients suffering from ST elevation myocardial infarction (STEMI). Previous studies have found that longest times for FMC-B occur if the patient presents initially to a non-percutaneous intervention (PCI) capable hospital. As a non-PCI capable site with approximately 55-70 patients with STEMI presenting per year to the Emergency Department, we looked at ways of reducing FMC-B times. Audit revealed that registration to electrocardiogram (ECG) times were sometimes prolonged due to undertriage, long waiting times and lack of space and staff to record an ECG, resulting in some prolonged FMC-B times.

Methods: To address this, we have changed the system so that patients bypass triage and go directly to a dedicated investigation cubicle for an ECG. The patient books on at reception with chest pain and is immediately directed to the investigation cubicle. The ECG is reviewed immediately and the patient is either kept in the department for further management or allowed back to the waiting room to await triage if the ECG is non-diagnostic and history not worrying.

Results: Data on patients presenting with STEMI on the initial ECG were collected for 1 year pre-intervention (n = 22) and 1 year post-intervention (n = 19). The median FMC-B time for the pre-intervention group was 112.5 minutes (IQR 90.5 - 131). Median FMC-B time for the post-intervention group was 82 minutes (IQR 68.5 - 95.5).

Conclusion: this is a simple, low-cost intervention which could be transferable to other sites who have an interest in reducing FMC-B times. It is necessary to have a key person to carry out audit of all potential areas of delay, and a collaborative, multidisciplinary approach to making change to improve quality of care.

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Door-in to door-out time among patients transferred for primary percutaneous coronary intervention in a district general hospital with invasive capabilities

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Background: Door-In to Door-Out (DIDO) time is a new clinical performance measure introduced in 2008 by the American College of Cardiology/American Heart Association with a benchmark of 30 minutes or less to expedite reperfusion care. Patients with STEMI who present initially to a spoke hospital are frequently transferred with substantial delays resulting in longer door-to-balloon (D2B) time and worse prognosis.

Methods and results: To characterize time to reperfusion and patient outcomes in STEMI patients undergoing inter-hospital transfer, we analyzed 158 patients transferred from our referral hospital to our receiving cath lab between September 2009 and November 2011. The two institutions are approximately thirty kilometers apart. All patients received adjunctive antithrombotic treatment with Clopidogrel 600 mg orally, chewable Aspirin 250 mg and unfractionated heparin (UFH) 4000 U bolus. Mean D2B time was 118 ± 81 minutes with a DIDO time of 40 ± 54 minutes. Mean symptom-onset-to-balloon time was 305 ± 293 minutes. Median age was 63 years (range 36-89); female were 29%; mean BMI was 29.7 ± 3.9. Risk Factors consisted of: hypertension 56%; cigarette smoking 37%; hypercholesterolemia 58%; diabetes 23%. Past cardiovascular history included: previous MI 3%; previous PCI 3%; previous CABG 1%; previous TIA/Stroke 1%. Primary PCI was performed off hours in 65% of cases. Pre-procedural TIMI grade 2/3 flow was present in 39% of cases, whereas a TIMI flow ≥1 was present in 48% of cases. TIMI major and minor bleeding were both around 1%. Cardiovascular mortality at 12 months was 3.2% whereas total mortality was 3.8%. The burden of DIDO time on D2B time was 33.8%. At multivariate analysis pre-procedural TIMI flow grade 2-3 was an independent predictor of one-year survival ($p < 0.05$). No difference in mortality was detected at one year between patients transferred from our referral hospital and patients arriving from Accident and Emergency of our institution.

Conclusions: DIDO time of our referral hospital is only slightly above the recommended benchmark time of 30 minutes and doesn't affect cardiovascular mortality at one year.

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The predictors of in-stent restenosis in patients with ST-elevation myocardial infarction

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[1]Research Institute for Complex Issues of Cardiov. Dis. - Siberian Branch RAMS Institution Scientific, Kemerovo, Russian Federation

The purpose: determination the relationship of clinical, angiographic and laboratory factors with in-stent restenosis within a year in patients with myocardial infarction with ST-elevation (STEMI).

Methods: 122 patients with STEMI after emergency percutaneous coronary intervention (PCI) with BMS implantation were studied. Group I (n = 20) included patients with in-stent restenosis was confirmed by the data of coronary

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angiography during the repeated hospitalization. In group II (n = 102) there were patients without adverse coronary events. The levels of interleukines (IL) -6, the tumours necrosis factor (TNF) -α were defined on the 1st day of disease.

Results: First stage identified numerous statistically significant prognostic factors by one-factorial analysis, such as initial levels of TFN-α 5, 66 (4, 66; 8, 7) pg/ml (p = 0, 038) and IL-6 6, 4 (3, 2; 7, 9) pg/ml (p = 0, 021), smoking history (p = 0, 02), stenosis left anterior descending artery (LAD) proximal segment degrees (p = 0, 019), stenosis length of acute infarction responsible artery (AIRA) (p = 0, 031). Second stage estimated the impact of each of the factors by a step-by-step discriminant analysis. The final discriminant function included four parametres. The most significant signs turned out to be high levels of TFN-α (p = 0, 00001). Smoking history (p = 0, 0008) and stenosis length of AIRA (p = 0, 008) were less significan for the in-stent restenosis development. The initial level of IL-6 had the least prognostic value in the model (p = 0, 043). The probability of the correct classification of the model made up 94, 5% with a significance level equal to p < 0, 00001. The stenosis LAD proximal segment degrees stenosis was not included in the model because it had not prognostic significance on the development of the in-stent restenosis (p = 0, 519).

Conclusion: The in-stent restenosis in patients with myocardial infarction with ST elevation often develops in smokers in combination the high expression of TNF-α and IL-6 in the first day of the disease and stenting the length stenosis of acute infarction responsible artery.

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Predictors of successful reperfusion with thrombolysis using streptokinase in a Tunisian population: Results from the MIRAMI registry

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Background: Despite the superiority of primary angioplasty in the management of ST elevation myocardial infarction (STEMI), thrombolysis remains more frequently used worldwide particularly in developing countries.

The aim of this analysis was to identify predictors of thrombolytic therapy success in STEMI patients.

Methods: Among 1353 patients included in our MIRAMI (MonastIR Acute Myocardial Infarction) registry between January 1995 and April 2011, 436 patients received thrombolysis. Streptokinase was the only lytic agent used. Multivariate logistic regression was used to determine predictors of thrombolysis success.

Results: Thrombolysis success, defined as chest pain relief below 5 in a scale from 1 to 10 and ST elevation resolution over 50% from baseline, was obtained in 306 patients (70%). Time to treatment less than 3 hours (p = 0.001; OR = 2.13), smoking (p = 0.001, OR = 2.1), and inferior location (p = 0.009, OR = 1.83) were identified as independent predictors of thrombolysis success. Inversely, severe heart failure (Killip III and IV classes) were found to be predictors of thrombolysis failure (p = 0.006, OR = 0.13 for class III, p = 0.003, OR = 0.15 for class IV).

Conclusion: In our MIRAMI Registry, short time to treatment (< 3 hours), smoking and inferior location of STEMI were predictors of thrombolysis success, whereas severe heart failure was a predictor of its failure.

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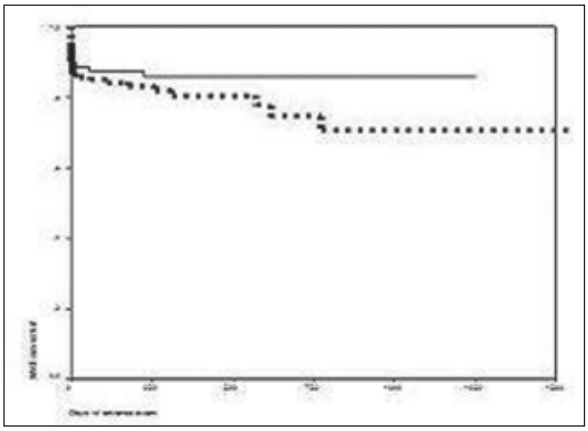
Impact of drug-eluting stents in long-term survival after rescue angioplasty.

J Valencia[1], P Perez-Berbel[1], JM Ruiz-Nodar[1], J Pineda[1], P Bordes[1], V Pardo-Correcher[1], V Mainar[1] and F Sogorb[1]

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Purpose and Methods: there is a lack of information about long-term results of drug-eluting stents (DES) after rescue angioplasty (RA). We sought to determine efficacy of DES compared with bare metal stents (BMS) in a long-term follow-up prospective registry. Consecutive patients undergoing RA in our institution in the period August 2004-August 2009 were included. A more detailed description of the registry has been previously reported. DES and BMS groups were compared by Chi-square, Fisher and T-Student tests. Long-term survival was evaluated with Kaplan-Meier and long-rank methods.

Results: 361 patients were enrolled. Of them 137 received DES (37.9%) and 203 BMS (56.2%). In DES group there were significantly more women (55.4 vs 37.3%), hypertension (47, 3 vs 34.7%) and diabetes (66.3 vs 30.6%), fewer



MACE cum survival

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stent diameter (3.1 vs 3.4 mm), longer stent length (28.8 vs 23.4 mm) and less smoking (33.1 vs 47.9%), angiographic thrombus (30.6 vs 48.6%), complete revascularization (33.1 vs 45.8%), percutaneous thrombectomy (32 vs 43.6%) and direct stenting (31.1 vs 52%). Procedural success was similar between both groups (82.5 vs 79.3%, p = ns). After a mean follow up of 356 days (rank 0-1543) incidence of adverse events were (DES vs BMS): death 9.2 vs 12.5% (ns), myocardial infarction 5.3 vs 3.8% (ns), OLR 26.7 vs 17.3% (ns), TLR 1.5 vs 6.5% (p = 0.03), MACE 12.5 vs 18.7% (ns). Kaplan-Meir curves of MACE free survival are shown in fgure 1 (DES continuous line, BMS dot line). Log-rank test did not show statistical differences between both groups (statistic 1.98, p = 0.15).

Conclusions: DES were safe after RA and did not have any influence in long-term survival, although they significantly improved rate of TLR compared with BMS.

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ST-segment elevation acute myocardial infarction in patients over 65 years - therapeutic strategy, complications and mortality

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Purpose: To evaluate the therapeutic strategy, complications (C) and mortality (M) in patients (P) aged ≥ 65 years (Y) admitted for ST segment elevation myocardial infarction (STEMI).

Methods: We conducted a retrospective, descriptive and correlational study, based on a prospective registry, involving P with STEMI between January/2006 and September/2010. Were evaluated according to age groups, the baseline characteristics, treatment strategies, in-hospital C (IHC) -reinfarction (RE-MI), stroke (SKE), major bleeding (MB) and M (IHM); complications during an average follow-up (FU) of 38 ± 15 months-acute coronary syndrome (ACS), SKE, cardiovascular (CM) and overall mortality (OM).

Results: Of the 1039 P admitted for STEMI, 475 P had≥65 Y. The≥65Y P showed a mean age of 72 ± 6Y, with a predominance of male gender (68%). Anterior AMI were 51% and 83% were in Killip-Kimball class 1 on admission. Reperfusion therapy was performed on 310 P and of these, 90% underwent 1ª PCI. The RE-MI rate was 1, 5%, SKE 0, 2%, MB 2.3% and IHM rate was 4.4%.

During FU, the rate of ACS was 8.7%, SKE 5.1%, CM 12.7% and OM 19.2%. Differences relating to age are described in Table (TB) 1.

Conclusions:

1-The preferred reperfusion strategy in STEMI≥65Y P was 1ª PCI with P presenting a low rate of IHC and IHM.

2-With the advancing age there was a lower rate of reperfusion, with more often left ventricular dysfunction and stroke, but no significant differences in IHM.

3-In FU the older P had a higher frequency of ACS, CM and OM.

Table 1.

	65-74Y n = 229	75-84Y n = 200	≥85Y n = 46	p
Reperfusion therapeutic, %	76	57	48	< 0, 001
1ª PCI, %	89	90	96	NS
LVEF < 30%, %	6	8	17	0, 045
SKE, %	0	0	2, 2	0, 009
RE-MI, %	0, 4	3	0	NS
MB, %	2, 2	3	9	NS
IHM, %	4, 4	5, 5	0	NS
FU				
ACS, %	5	8	28	< 0, 001
OM, %	13	22	34	0, 003
CM, %	6	17	24	0, 001

TB 1–Treatment strategy, complications and mortality during hospitalization and FU.

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Characteristic features of acute myocardial infarction course in patients with metabolic syndrome

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Aim of the research: to reveal the specific features of acute period of myocardial infarction (MI) in patients with metabolic syndrome (MeS).

Research Methods: 173 patients with the diagnosis of Q-wave MI aged 55 (range 51-61 years) were examined. 109 MI patients with MeS were included into the main study group. MI patients without MeS (n = 64) comprised a comparison group. The examination of cardiovascular system included the use of electrocardiography, echocardiography, multisliced computed tomography with coronary calcium screening, coronary arteries contrast study as well as selective coronary angiography. Laboratory tests were performed and psychological status was assessed. The obtained data were processed with Statistica 6.0 software.

Results: The course of MI in patients with MeS is characterized by high complication rates reaching 75% in the acute phase of the disease. In the acute MI phase patients with MeS compared with MI patients without MeS exhibited greater expression of left ventricular dilatation processes (the proportion of patients with the end diastolic size of the left ventricle ≥5.7 was 43% and 14%, respectively). In the

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presence of increased level of markers of neuroendocrine activation (brain natriuretic peptide: 5.8 (2.5-9.2) ng/ml, 4.5 (1.3-6.0) ng/ml, atrial natriuretic peptide: 0.99 (0.74-1.25) ng/ml, 0.84 (0.68-0.98) ng/ml; cortisol: 205 ± 12 ng/ml, 164 ± 8 ng/ml; leptin: 14.5 (8.0-21.0) ng/ml, 8.0 (3.5-13.0) ng/ml) it contributes to the development of dysadaptation type of post MI left vertricular remodeling process.

There was a greater scale of the atherosclerotic process revealed in the coronary arteries of MI patients with MeS compared to MI patients without MeS accompanied by frequent detection of hemodynamically significant stenosis atherosclerotic lesions, multivessel and occluding coronary disease, greater extension of stenosed areas in the coronary arteries (21 ± 3 mm, 8 ± 1 mm), increased total number of stenosed areas as well as coronary arteries stenosis with complicated morphology.

Conclusion: The most important features determining the development of prognostically significant MI complications in the presence of MeS during the acute phase of the disease include: myocardial fatty-acid-binding protein, concentrations of D-dimers and atrial natriuretic peptide, fasting glucose level, myocardial left ventricular mass index, local myocardial contractility index, levels of reactive and personal anxiety and depression.

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Facilities of antiplatelet, antithrombin and fybrinolytic therapies in reduction of in-hospital mortality in patients with acute coronary syndromes

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The aim of the study was to analyze the results of antiplatelet, antithrombin and fybrinolytic therapies prescribed to patients with acute coronary syndromes (ACS) in a Regional Center of Cardiology (xx) according to ESC Guidelines (2007 and 2009) on the management of this category of patients.

Patients and Methods: From 2009 in a Regional Center of Cardiology the application of the last ESC Guidelines for the management of patients with ACS was started. Antithrombin therapy consisted of Xa factor inhibitor Fondaparinux, antiplatelet agents were Clopidogrel in addition to Aspirin. All cases of ACS in the period 2008-2010 years were analyzed. ACS were identified in case of anginal episodes lasting 20 minutes or more with or without the Q wave formation, and increased levels of markers of myocardial necrosis (CK, CK-MB, troponin I), and any combination of clinical symptoms, allowing to suspect developing Myocardial Infarction (MI). Pharmacological reperfusion was administered within the first 12 hours after symptom onset, or even after 12 hours (according to the anamnesis) in case of clinical and/or electrocardiographic evidence of ongoing myocardial ischaemia. Streptokinase was a fybrinolytic agent used. Antiplatelet and antithrombin therapies conducted in patients with ST-segment elevation ACS who had underwent thrombolysis consisted of aspirin, clopidogrel, and fondaparinux. Similar prescription of antiplatelet and antithrombin therapies was used in the management of ACS without ST-segment elevation.

Results: As a result of the active application of modern antithrombin and antiplatelet therapies during the period from 2009 to 2011 years in Vitebsk Regional Center of Cardiology revealed a positive trend of in-hospital mortality rate reduction in patients with ACS (unstable angina and acute myocardial infarction) from 3.9% in 2008 to 2.9% in 2010. ($p < 0.05$).

In-hospital mortality from acute myocardial infarction and acute coronary insufficiency decreased to 7.7% in 2010, as compared with 2008, where it was 9.4%.

Conclusion: The result of the application of ESC Guidelines on management and treatment of patients with ACS was reduction of the in-hospital mortality from acute coronary syndromes, acute myocardial infarction and acute coronary insufficiency in the Regional Center of Cardiology.

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Predictors factors of success of thrombolysis in STEMI patients: Results from MIRAMI registry

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Background: Despite the superiority of primary angioplasty in the management of ST elevation myocardial infarction (STEMI), thrombolysis remains more frequently used worldwide particularly in developing countries.

The aim of this analysis was to identify predictors of thrombolytic therapy success in STEMI patients.

Methods: Among 1353 patients included in our MIRAMI (MonastIR Acute Myocardial Infarction) registry between January 1995 and April 2011, 436 patients received thrombolysis. Streptokinase was the only lytic agent used. Multivariate logistic regression was used to determine predictors of thrombolysis success.

Results: Thrombolysis success, defined as chest pain relief below 5 in a scale from 1 to 10 and ST elevation resolution over 50% from baseline, was obtained in 306 patients (70%). Time to treatment less than 3 hours ($p = 0.001$; OR = 2.13), smoking ($p = 0.001$, OR = 2.1), and inferior

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location (p = 0.009, OR = 1.83) were identified as independent predictors of thrombolysis success. Inversely, severe heart failure (Killip III and IV classes) were found to be predictors of thrombolysis failure (p = 0.006, OR = 0.13 for class III, p = 0.003, OR = 0.15 for class IV).

Conclusion: In our MIRAMI Registry, short time to treatment (< 3 hours), smoking and inferior location of STEMI were predictors of thrombolysis success, whereas severe heart failure was a predictor of its failure.

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Quality assessment of STEMI care

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Objectives: The aim of the study was to evaluate the quality of acute myocardial infarction care during the 2008-2011 years.

Background: ST-segment–elevation myocardial infarction (STEMI) presents a true medical emergency, where the relationship between treatment (reperfusion) and mortality is measured in minutes. Despite effective pre- and in-hospital reperfusion strategies becoming standard over the past 2 decades, time-to-admission and time-to-treatment remain longer than recommended in the guidelines in many countries. We reviewed temporal trends in these times in one of the biggest Cardiology centers in our country during the 2008-2011 years.

Methods: In a single-center retrospective study 619 patients with STEMI were enrolled during 2008-2011. The data regarding reperfusion therapy (including pre-hospital one), its timing and in-hospital mortality among STEMI patients has been collected.

Results: The majority of the patients has received thrombolytic within 3 hours from onset of symptoms (61, 4%). The number of patients delivered to the Cardiac Care Unit (CCU) within 1 hour from onset of symptoms has decreased from 1, 3% to 0, 6% as well as in the group delivered within 3 hours (52, 7% vs. 48%). But more patients arrived to the CCU within 6 hours (38, 4% vs. 45, 4%) and less within 12 (6, 3% vs. 5%) or 24 hours (1, 3 vs. 0, 9%). The in-hospital mortality rate was higher in patients having anterior wall myocardial infarction (5, 7% vs. 0, 6% with posterior wall infarction in 2008-2009 and 4% vs. 1, 2% in 2010-2011). The reperfusion rate was higher in the group of in-hospital thrombolysis versus pre-hospital thrombolysis in spite of the time of onset of symptoms (for tPA 100% vs. 83, 1% in 2008-2009 and 100% vs. 69, 6% in 2010-2011, for recombinant pro-urokinase 81, 5% vs. 63, 4% in 2008-2009 in 2008-2009 and 78% vs. 65% in 2010-2011).

Conclusions: During the years 2008-2011 many patients with STEMI were not treated within the recommended times. Delays may be reduced by reorganizing pre- and in-hospital systems of care for patients with STEMI to ensure adequate delivery of reperfusion therapy.

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Role of anemia on admission in ST elevation myocardial infarction patients treated with primary coronary angioplasty in clinical practice

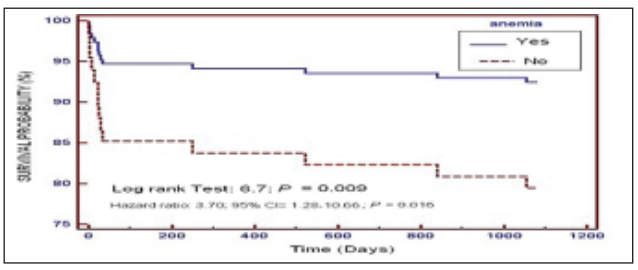
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Background and aims: anemia, a primary extra-cardiac condition, is associated with a poor prognosis in ST elevation myocardial infarction (STEMI) patients. There are few data on the role of anemia at admission in STEMI patients treated with primary percutaneous coronary intervention (PCI) in clinical practice. We investigated in-hospital and long-term follow-up results of STEMI patients with and without anemia on admission treated with primary PCI.

Methods and results: in a cohort study of 178 consecutive STEMI patients treated with primary PCI, anemia on admission (Hb < 13g/dl in men, < 12gr/dl in women) were diagnosed in 29 patients (16.3%). Anemia was predominant among females (27.9 vs 13.0%; p < 0.05). Cardiovascular risk factors distribution were similar in both anemic and non anemic patients. Anemic patients were older (66.79 ± 11.54 vs 61.06 ± 11.58 years; p < 0.02), they had higher TIMI (4.85 ± 2.62 vs 3.10 ± 1.98; p < 0.01) and GRACE (180, 85 ± 56, 36 vs 144, 05 ± 33, 25; p < 0.05) risk scores, and higher proportion of killip class>2 (36.0 vs 13.4%; p < 0.01). Anemic patients received in-hospital treatments in similar proportion than non-anemic patients except in the use of diuretics (34.5 vs 14.9%; p < 0.02) and inotropics drugs (31.0 vs 9.2%; p < 0.02). Drug-eluting stents were more frequently used in non anemic patients (75.8 vs 51.9%; p < 0.02). Along the hospitalization, the rates of severe heart failure, and major cardiac events were similar in both groups. However, anemic patients showed higher in-hospital and long-term mortality (see figure).

Conclusions: Anemia on admission in STEMI patients treated with primary PCI is associated with higher in-hospital mortality and worse long-term prognosis.



Kaplan-Meier long-term survival curves

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Acute coronary syndromes: Non STEMI

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Does gender difference still exist in long-term clinical outcome of patients with ST-segment elevation myocardial infarction treated with thrombolytic therapy

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Purpose: There is still controversy concerning gender difference in long-term clinical outcome of patients with STEMI (ST-segment elevation myocardial infarction) treated with thrombolytic therapy. The objective of this study is to determine whether female gender is an independent predictor of mortality during long-term follow-up of patients with STEMI treated with thrombolytic therapy.

Method: Study group consisted of 1112 pts (20.5% female and 79.5% male) with STEMI who survived to hospital discharge. All pts were treated with thrombolytic therapy and followed-up to 12 years (median 6.8 y). Women were older (60 vs. 54 years, p = 0.000), had more frequently diabetes (24 % vs. 16 %, p = 0.008), hypertension (62 % vs. 48 %, p = 0.000), and longer time to presentation (171 vs. 144 min, p = 0.038). They had a tendency for being less often in Killip class I (75.9% vs. 81.3%, p = 0.065). In contrast, women had less frequently two- or three-vessel coronary artery disease (50.7 v. 65.2%, p = 0.019) and better echo parameters: EDV (149 ml vs. 159 ml, p = 0.007; ESV (68 ml vs. 76 ml, p = 0.009); LVEF (55 % vs. 53 %, p = 0.03) on discharge.

Results: During follow-up 58/228 women and 196/884 men died (25.4% vs. 22.2%, p = 0.295). Kaplan-Meier curves comparing survival were no different significantly (log rank = 2.11, p = 0.146). Cumulative probability of survival after 12-year follow-up was 68.7 ± 3.8% for women and 69.7 ± 3.2% for men. Multivariate Cox regression analysis adjusted for age, hypertension, diabetes, time to presentation, Killip class, severity of coronary artery disease, and echo parameters showed that significant gender difference in long-term mortality was no likely to observe (odds ratio 0.90; 95% CI 0.52 to 1.55; p = 0.710).

Conclusion: Although women with STEMI treated with thrombolytic therapy are older and have more comorbidities, there is no gender difference in long-term clinical outcome. Female gender is not an independent predictor of long-term mortality.

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Is there benefit in invasive theraphy in patients with acute coronary syndrome over the age of 85 years?

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Purpose: Patients (P) admitted for acute coronary syndrome (ACS) aged more than 85 years (ACS >85 Y) will have a high rate of mortality and complications in short term, raising the doubt of the benefit of an invasive strategy. The aim of this study was to evaluate if there was benefit in the invasive strategy in ACS >85Y P admitted in a Cardiology Department (CD).

Methods: We conducted a retrospective, descriptive and correlational study encompassing P with ACS>85Ys, admitted to a CD since January 2006 to September 2010. We evaluated baseline characteristics, treatment strategies, complications (stroke, major bleeding) and mortality (cardiovascular and overall). Was made a mean follow-up (FU) of 39 months by a cardiologist (FU rate of 88%). Statistical analysis was performed using SPSS 13.0.

Results: Of the 146 P admitted for ACS>85Y, 102 P (70%) underwent coronary angiography (CAT) and of these 76% underwent angioplasty (PCI).

Presented ST segment elevation acute myocardial infarction (STEMI) 46 P and of these 80% underwent CAT and 46% primary PCI.

Patients that performed CAT were predominantly male (51% vs 31.8%, p = 0, 033), showed a better left ventricle ejection function (LVEF) on echocardiogram (53, 8% vs 35, 7%, p = 0, 023), and a lower LVEF < 30% incidence (10, 5% vs 26, 2%, p = 0, 019).

Regarding the in-hospital complications, P who underwent an invasive strategy had fewer strokes (0% vs 4, 5%, p = 0, 03) and lower rate of major bleeding (1% vs 6, 8%, p = 0, 047). There was no difference in the in-hospital mortality rate (1% vs 2, 3%, p = 0, 538).

During the FU, P who underwent an invasive strategy had a lower cardiovascular mortality (16, 1% vs 37, 5%, p = 0, 007) and lower overall mortality (39, 8% vs 60%, p = 0, 032).

Conclusions

1 - In our CD, most P with ACS>85Y were subject to an invasive strategy. About one third of this P presented with STEMI and of these almost half performed primary PCI.

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2 - Patients that performed an invasive strategy presented a lower rate of stroke and major bleeding during hospitalization with no impact on the in-hospital mortality rate.
3 - During medium term FU, P subjected to a conservatively strategy had higher overall mortality rate due to a higher cardiovascular mortality.

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A new faster diagnostic strategy for the evaluation of chest pain combining high-sensitivity troponin T and CCTA. The TRUE pilot study.

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Background: Acute chest pain is one of the most common complains of patients presenting to the Emergency Department (ED). The main challenge in patients with chest pain and non-diagnostic electrocardiogram (ECG) is to identify those with an acute coronary syndrome (ACS) in order to deliver effective treatment and at the same time discharge safely those with non-ischaemic chest pain, as soon as possible.

Purpose: We sought to evaluate the diagnostic performance of a new diagnostic strategy combining high-sensitivity troponin T (hsTnT) and cardiac computed tomography angiography (CCTA) and compared it to our standard protocol, in the evaluation of chest pain with non-diagnostic electrocardiogram (ECG) in the ED.

Methods: We conducted a randomised, open clinical trial that enrolled patients admitted to the ED for chest pain with non-diagnostic ECG. One group of patients (fast strategy) underwent hsTnT determination (Roche Diagnostics) and, if negative, a subsequent CCTA (Philips iCT 256) was performed. The other group of patients (standard strategy) underwent TnT determination using a 4th generation essay (Roche Diagnostics) and, if negative, a subsequent exercise stress test. If either the CCTA or the exercise stress test were negative the patient was discharged. Conversely with a positive result the patients were scheduled for an invasive coronary angiography (ICA).

Results: A total of 36 patients were included in the study; 58 % were male with an average age of 58, 1+/-12, 1 years, 30% were smokers, 48% were hypertensive, 20% were diabetics, 57% had abnormal lipid profiles, 5% had peripheral artery disease and no patients were in chronic renal failure. In the fast strategy group, a total of 6 patients were diagnosed as ACS needing ICA: 4 patients were diagnosed by abnormal values of hsTnT and 2 patients were diagnosed by significant obstruction (>70% stenosis) on CCTA. All the patients diagnosed in the fast strategy group underwent percutaneous coronary intervention (PCI). In the standard strategy group there were no patients diagnosed by TnT, only 2 patients were diagnosed as positive ACS by exercise stress test and the follow up ICA did not show significant lesions needing PCI. Mean time to diagnosis time was 15h25' ± 8 h in the fast strategy group, while in the standard strategy group was 24h47' ± 13h. ($p = 0.02$).

Conclusion: The evaluation of patients presenting to the ED with chest pain by use of hsTnT and CCTA strategy decrease the time to diagnosis, allowing for a faster clinical decision making process.

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Mortality predictors in women with non-ST elevation acute myocardial infarction

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Introduction: Despite recent advances in the treatment of non-ST elevation acute myocardial infarction (NSTEMI) differences remain in mortality and morbidity between men (M) and women (W).

Purpose: The aim of this study was to determine, in a population of W admitted with NSTEMI, the mortality predictors and if they have a higher in-hospital and after discharge mortality and events rate.

Methods: We conducted a retrospective, descriptive and correlational trial, encompassing W admitted to a cardiology department (CD) with the diagnosis of NSTEMI between January 2006 and October 2010. We evaluated baseline characteristics, admission data, treatment strategy, in-hospital and after discharge mortality and events. A telephone follow-up was conducted by a cardiologist. Statistical analysis was performed using SPSS 13.0.

Results: 1086 patients were admitted, 33.4% of which were W, they were older (72.78 vs. 66.26 years, $p < 0.001$), more frequently hypertensive (79.9% vs. 65.7%, $p < 0.001$), diabetic (37.7% vs. 30.4%, p 0.016) and less often smokers (5.8% vs. 26.4%, $p < 0.001$). W most often had a history of angina (60.9% vs. 51.6%, p 0.004), and lower incidence of peripheral arterial disease (3.3% vs. 9.4%, $p < 0.001$) and previous myocardial infarction (25.3% vs. 32.0%, p 0.025), when compared with men.

No differences were found between groups in relation to left ventricular function, cardiac catheterization (CAT) (p 0.144) and angioplasty (PTCA) (p 0.145).

W didn't have a higher in-hospital mortality rate (1.7% vs. 1.4%, p 0.728) or other events.

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The median follow-up was 40.7 ± 15.8 months; W had a higher overall and cardiovascular mortality rate, respectively, (23.0% vs. 16.2%, p 0.01) and (11.2% vs. 6.0%, p 0.005), as well as ischemic stroke (CVA) (7.2% vs. 2.6%, p 0.002).

In the multivariate analysis were predictors of overall mortality in women: age (p 0.007), obesity (p 0.049) and previous stroke (p 0.038). It was observed that preserved left ventricular function was a protective factor (p 0.007).

Conclusions:

1. When compared to men women were older, more hypertensive and diabetic, but less often smokers.
2. The in-hospital mortality rate was not significantly different between men and women, but was higher during follow-up.
3. Age, obesity and previous stroke were predictors of mortality in women. The presence of preserved left ventricular systolic function was a protective factor.

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Complications of vascular access after coronary angiography in patients with acute myocardial infarction without ST segment elevation in intensive care unit

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Purpose: To study the prevalence of vascular access complications after coronary angiography in patients with Acute myocardial infarction without ST segment elevation (NSTEMI) admitted in our Intensive Care Unit (UCU). We also evaluated the safety and efficacy of vascular closure devices use in this setting.

Methods: Retrospective analysis (between January 2011 and April 2012) of patients with NSTEMI who were admitted to our UCU. We recorded clinical and demographic characteristics of the patients, vascular access and their complications after coronary angiography. The CRUSADE score was performed. The major bleeding was defined by Gusto´s criterian.

Results: We included 122 patients, mean age 66, 50 (41-85) years: 35 (28.7%) women, 41 (33.6%) diabetic, 78 (63, 9%) had hypertension, 37 (30.3%) were smokers and 58 (47.5%) had dyslipidemia. Previous coronary artery disease was present in 23% and 5% presented with heart failure. The majority of patients (91.8%) were under double antiagregation and 14 patients (11.5%) received platelet glycoprotein IIb-IIIa inhibitors.

The most prevalent vascular access was the radial one (60.7%) although in 10.7% of the patients crossover to femoral access was necessary. All femoral access sheath were 6F size. The haemostatic method for radial access was manual compression in all cases. In 6 cases of femoral approach manual compression was applied. Vascular closure devices for femoral access were Angioseal (7.4%) and StarClose (38.5%). The risk distribution based on their CRUSADE bleeding score was 35.3% very low risk, 19.3% low, 26.1% moderate, 13.4% high and 5.9% very high.

After the procedure, we did not detect any femoral access complication nor major bleeding. In radial access there were six (4.9%) patient who presented superficial bruising (conservatively managed). None of the death observed (3.3%) were related to vascular access complication.

Conclusions: The results of this study suggest that the overall incidence of access site complications is low probably due to major use of radial access, improvement and refinements in the diameter of the sheath, vigilant monitoring of adjunctive anticoagulant therapy, and careful patient selection. Also, the use of femoral closer devices reduces the access site complications in all risk categories.

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Mortality and overall complications in patients over 65 years admitted with non-ST segment elevation acute coronary syndrome

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Purpose: Evidence based therapeutics, pharmacological or coronary angioplasty, used in the acute coronary syndromes, has brought evident benefits in reducing mortality at the expense of an increase in hemorrhagic complication, particularly in elderly patients (P). The aim of this study was to define if the subgroup of P with non-ST segment elevation acute coronary syndrome (NSTACS) over 65 years (>65Y) was less treated by PCI and whether this lead to an increase of ischemic/hemorrhagic or mortality rates.

Methods: We conducted a retrospective, descriptive and correlational study, based on a prospective registry, involving P admitted with NSTACS >65Y in a Cardiology Department between January/2006 and September/2010. We evaluated the baseline characteristics, admission data, treatment strategies, complications (Killip Kimball – KK, classes 3 and 4, ventricular fibrillation (VF), complete atrioventricularblock (BAVC), re-infarction (RE-MI), and major bleeding - MB) and the in-hospital mortality. Statistical analysis was performed using SPSS 13.0.

Results: Of the 1086 P admitted for NSTACS, 64.5% (700 D) had more than 65 years. Of these, 59% were men, 75% had hypertension, 47% dyslipidaemia, 8% were smokers, 20% had obesity and 36% had diabetes mellitus.

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At admission 69% of NSTACS>65Y P had left ventricle ejection fraction (LVEF) >50% on echocardiogram. During hospitalization 79% underwent coronary angiography and 53% performed PCI.

Regarding the in-hospital complications 7, 1% had KK 3 and 4, 1, 6% had VF, 2, 4% had BAVC, 0, 9% had RE-MI and 1, 9% presented MB.

The in-hospital mortality rate was 1, 4%.

Conclusions

1. Most patients admitted with NSTACS > 65Y performed an invasive strategy during hospitalization.
2. The rate of ischemic and hemorrahagic events were low in this population.
3. The in-hospital mortality rate was very low probably due to the low rate of ischemic and hemorrhagic events.

Acute heart failure

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Direct comparison of midregional pro-atrial natriuretic peptide with n-terminal pro-b-type natriuretic peptide in the management of patients with atrial fibrillation and dyspnea

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Background: Due to different release mechanisms, mid regional pro-atrial natriuretic peptide (MR-proANP) may be superior to N-terminal pro-B-type natriuretic peptide (NT-proBNP) in the diagnosis of acute heart failure (AHF) in patients with atrial fibrillation (AF).

Methods: This prospective study included 632 consecutive patients presenting with acute dyspnea to the emergency department (ED). NT-proBNP and MR-proANP plasma levels were determined in a blinded fashion. The diagnosis of AHF was adjudicated by two independent cardiologists using all available data. Patients received long-term follow-up.

Results: AF was present in 151 patients (24%). MR-proANP and NT-proBNP levels were significantly higher in the AF-group compared to the sinus rhythm-group (SR) (385 [258-598] vs. 201 [89-375] pmol/l for MR-proANP, $p < 0.001$ and 4916 [2169-10285] vs. 1177 [258-5166]pg/ml, $p < 0.001$ for NT-proBNP). Diagnostic accuracy in AF-patients was similar for MR-proANP (0.90, 95% CI 0.84 to 0.95) and NT-proBNP (0.89, 95% CI 0.81 to 0.96). Optimal cut-off levels in AF-patients were significantly higher compared to the optimal cut-off levels for patients in SR (MR-proANP 240 vs. 200pmol/l; NT-proBNP 2670 vs. 1500pg/ml respectively). After adjustment in multi-variable Cox proportional hazard analysis, MR-proANP strongly predicted one-year all-cause mortality independently of NT-proBNP (HR = 1.13 (1.09-1.17), $P < 0.001$).

Conclusion: In AF-patients NT-proBNP and MR-proANP have similar diagnostic value for the diagnosis of AHF. The rhythm at presentation has to be taken into account because plasma levels of both peptides are significantly higher in patients with AF compared to SR, which requires the use of higher diagnostic cut-off levels.

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In-hospital mortality predictors in a composite population of acute heart failure syndromes

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Purpose: The aim of the study is to evaluate in-hospital mortality of new onset AHF with/ without ACS; predictors of in hospital mortality in a composite population of different classes of AHFS; comparison of in hospital mortality between subgroups of AHF.

Methods: we studied a composite AHFS population of 502 patients (pts) from 2010 to 2011 divided in four groups: 186 pts with new onset AHF in ACS, 87 pts with AHF without ACS, 101 pts with acutely decompensated ischemic chronic HF (DICHF), 128 pts with acutely decompensated non-ischemic chronic HF (DNCHF). Clinical data were collected and follow-up extended to three weeks. Variable were compared using t test, Mann-Whitney U test and ⌋2 between dead/alive groups. Binary logistic regression was used to determine independent predictors of in hospital mortality of the composite population and Kaplan-Meier with Log-rank test to compare survival between the four groups.

Results: Between dead and alive pts groups there were differences in: age (71.04 ± 11.02 vs 65.7 ± 11.42; $p < 0.0001$), new onset AHF (74.3% vs 46.9%, $p < 0.0001$), occurrence of acute pulmonary edema (80.1% vs 46.7%, $p < 0.0001$), creatinine on admission (2.04 ± 1.6 vs 1.4 ± 0.9, $p = 0.02$), cardio-renal syndrome I (67.7% vs 30.4%, $p = 0.0001$), ejection fraction (0.35 ± 0.15 vs 0.45 ± 0.11, $p = 0.001$), important (moderate to severe) mitral regurgitation (74.2 vs 44.9%, $p = 0.007$), NYHA≥III (96.7% vs 68.1%, $p = 0.0001$); no significant differences in sex ($p = 0.065$), stroke ($p = 0.33$), ACS ($p = 0.47$), diabetes ($p = 0.31$), anemia ($p = 0.19$), BBB

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(p = 0.83), RDW (p = 0.052), systemic congestion (p = 0.85), glicemia on admission (p = 0.146), max daily diuretic dose (p = 0.08). independent predictors for in-hospital mortality on multivariate analysis were new onset AHF, age, CRS, EF, acute pulmonary edema, diabetes, creatinine on admission, NYHA class. From KM curves new AHF without ACS resulted with significant difference in survival compared with new AHF in ACS (p = 0.02), DICHF (p = 0.01), DNCHF (p < 0.01). Log-rank test 0.0001.

Conclusions: new onset AHF appears to be the strongest independent predictor of in-hospital mortality in AHFS. The inverted survival relationship between new AHF with and without ACS in our clinical experience is mainly based on restricted admissions of new AHF without ACS cases (mostly pulmonary embolism, acute aortic syndromes, cardiac tamponade, myocarditis, severe acute valvular dysfunction, only a minority of hypertensive crisis).

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Acute myocardial infarction complicated by cardiogenic shock in: what has changed in the last 10 years?

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Aim: To compare two cohorts of patients (pts) admitted with acute myocardial infarction (AMI) complicated by cardiogenic shock (CS) in a 10-years time span.

Methods: Retrospective analysis of two populations of pts admitted between 1998-2001 (Group A, N = 28) and 2008-2011 (Group B, N = 42) in a cardiac ICU. Baseline demographic and clinical characteristics, treatment modalities and overall mortality at 30 days and 6 months were compared.

Results: The incidence of CS was similar in the two studied periods (4.1% in the first vs 4.8%). Baseline demographic and clinical characteristics were similar in both groups, except for the proportion of pts admitted within 6h after symptom onset (26% vs 55%, p = 0.018). Invasive procedures, reperfusion and revascularization strategies are depicted in the Table. The use of pulmonary artery catheterization was significantly reduced and there was a significant increase in the use of dialysis. No significant differences were observed in the rate of reperfusion or myocardial revascularization but the use of PCI increased significantly. Mortality at 30 days (35.7% in both groups) and at 6 months (42.9% in both groups) was identical.

Conclusions: In the last 10 years, despite the earlier arrival of patients to the hospital, the more frequent use of support to renal failure and PCI, short- and middle-term mortality did not change. These results probably reflect the influence of pathophysiologic mechanisms in the natural history of cardiogenic shock, which are not considered in the current treatment.

Table 1.

Variables (%)	Group A	Group B	p value
Pulmonary artery catetherization	46.4	19.0	0.014
Intra-aortic baloon pump	67.9	69.0	0.916
Mechanical ventilation	78.6	88.1	0.283
Dialysis/Hemoperfusion	3.6	28.6	0.008
Reperfusion < 12h of symptoms	53.6	66.7	0.270
- Fibrinolysis	46.7	21.4	0.086
Myocardial revascularization	89.3	95.2	0.343
- Coronary angioplasty	66.7	92.9	0.005
- Coronary surgery	32.1	7.1	0.007

Table 1. Mean LOS (number of days)

		Pulmonary Edema	Decomp. HF		Pulmonary Edema	Decomp. HF		Pulmonary Edema	Decomp. HF
Clinical	BP (mmHg)			CPAP			Inotropic and Vasopressor Drugs		
	< 90	–	11.5	Yes	9.27	–	Yes	15	21.25
	>180	8.11	8.3	No	8.24	8.93	No	8.29	8.22
Biological	BNP (pg/ml)			Serum Sodium (mEq/l)			GFR (ml/min/1.72)		
	400-2000	9.3	9	< 135	6.5	9.3	< 30	8.67	8.8
	>2000	9	9.32	>135	8.86	8.92	30-60	8.53	10.26
							>60	8.72	8.3
Ultrasound	EF (%)			PAAT (msec)			E-wave DT (msec)		
	< 30	10	13.3	< 90	8.4	10.25	< 120	8.2	10.75
	30-40	8.92	8.8	>90	10.95	6.7	>120	9.6	7.22
	>40	8.42	7.89						
EKG	AFib			LBBB			QRS length (msec)		
	Yes	7.71	8.44	Yes	9.5	10.76	< 100	8.69	8.3
	No	9.12	9.71	No	8.25	8.38	100-120	8.35	7.78
							>120	10.2	8.36
							>160	–	14.89

(Abstract 448)

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High prevalence but no prognostic importance of diabetes mellitus among 1267 patients with acute cardiogenic pulmonary edema

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Background: acute cardiogenic pulmonary edema (ACPE) is the life - threatening condition, the worst form of retrograde left ventricular insufficiency and inadequately studied entity.

Patients and methods: We analyzed homogenous group of 1267 ACPE patients, hospitalized from 1995-2002, without acute myocardial infarction. Shock was not the exclusion criterion. Patients were divided in the groups without (681, 53.75%) and with diabetes mellitus (DM) (586, 46.25%).

Results: Females were statistically significantly more prevalent among DM patients (55.80% vs 44.85%, $p = 0.000099$). Arterial hypertension (AHT) was more common in DM patients (80.78% vs 60.42%, $p < 0.000001$). Coronary artery disease (CAD) was also more prevalent in DM group (56.97% vs 40.47%, $p = 0.001047$), as well as previous myocardial infarction (MI) (43.88% vs 34.23%, $p = 0.014657$). Serum potassium concentration was higher in DM group (4.65 ± 0.83 vs 4.45 ± 0.73 mmol/L, $p = 0.004160$), and sodium level was lower 138.82 ± 4.16 vs 140.00 ± 4.55 mmol/L, $p = 0.00289$). Unexpectedly, there was no statistically significant difference in: mortality, systolic, diastolic, mean and pulse pressure, serum urea and creatinine concentration, as well as in the most of laboratory parameters. Moreover, atrial fibrillation, left bundle branch block and ECG left ventricular hypertrophy were similarly distributed among groups with and without DM.

Conclusion: Diabetes mellitus is highly prevalent in patients with acute cardiogenic pulmonary edema: half of our ACPE patients had DM. They had more often AHT, CAD, including previous MI. Surprisingly, DM was not related to in-hospital death rate.

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Mean platelet volume and it's prognostic value in acute myocardial infarction complicated by cardiogenic shock.

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Purpose: Elevated mean platelet volume (MPV) is discussed recently as a predictor of death in patients with acute coronary syndrome (ACS), but the cut-off point of MPV in relation to poor prognosis has not been estimated so far. The aim of this study was to evaluate the MPV and it's prognostic value in ACS complicated by cardiogenic shock (CS). Such an analysis in patients with the most serious and fatal complication of ACS has not been performed in previously published research.

Methods: 53-patients with ACS complicated by CS (age 68, 9 ± 11, 4, 49% women, 92% STEMI, 55% fatal CS) and 53 age- and gender-matched patients with uncomplicated ACS as a control group (age 69, 1 ± 10, 6, 49% women, 92% STEMI, 0% fatal) were included in our prospective study from 2010 to 2012.All patients underwent successful primary percutaneous coronary intervention. MPV was determined on admission and in consecutive two days of hospitalization. The blood sample was analyzed at once after collection in EDTA tubes using an automatic blood counter.

Results: MPV at admission was similar in both groups ($8,91 \pm 1$, 11 fl vs $8,57 \pm 0$, 74 fl, NS). Mean MPV was significantly higher in patients with CS in comparison to control group only in the second day after onset of symptoms ($9, 19 \pm 0$, 8 fl vs $8, 84 \pm 0$, 86, $p < 0, 05$). Further, there were no statistically significant differences in MPV value in fatal and nonfatal CS ($8, 90 \pm 1$, 18 fl vs $8, 93 \pm 1$, 05 fl, NS).

Conclusions: The above results suggest that MPV could not be considered as a predictor of poor in-hospital outcome in patients with ACS complicated by cardiogenic shock.

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Measurement of heart rate variability and heart rate by a novel device in participants with heart failure while monitoring exercise patterns

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Background: At rest heart rate (HR) can indicate levels of fitness or the presence of disease. Heart rate variability (HRV) is a non-invasive measure that examines autonomic influence on the heart. The autonomic nervous system makes itself visible through HRV indicating how the body is trying to preserve its equilibrium. Thus HRV has the potential to monitor the autonomic response to exercise volume on a daily basis. In literature a reduced level of HRV was demonstrated to be a significant predictor of cardiac event and death.

Purpose: The aim of this study was to determine the feasibility of HRV measurements using a new personal heart rate variability monitor (Ithlete) while estimating the normal pattern for HRV in participants with heart failure using this device.

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Methods: Eighty-five participants were tested, of which 59 were male and 26 were female. Each participant received a device to take home for daily measurement first thing in the morning of HRV and heart rate (HR) in the seated position for at least 28 days. Participants were also asked to fill in a daily exercise diary which included exercise intensity and duration.

Results: In the present study, 49.3% of the 85 participants took correct measurements for at least 50% of the time they had the Ithlete device. The average HRV measurement found in this study was 48.6 ms (rMSSD). The relationship between HRV and HR was found to be negatively correlated.

Discussion: At rest HRV (rMSSD) was lower than that recorded in the literature for the healthy population. Participants with heart failure varied in their level of use of the device. Some found the device very easy to use while others cited problems. The relationship between HRV and HR was similar to other studies findings.

Conclusion: This study is the first to look at measurements of HRV in heart failure patients using the Ithlete device. This study could be a springboard for more research into what HRV measurements are to be expected in this population and how they can be used to benefit the health and care of heart failure patients.

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Clinical, biological, transthoracic echocardiographic and therapeutic determinants of hospitalisation

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Purpose: The average length of stay (LOS) in the hospital has an important value in determining the risk profile of the patient. We identified clinical, laboratory, echocardiographic and therapeutic data with predictive value for the LOS in a group of patients with AHF.

Methods: We analyzed 125 patients with AHF admitted consecutively to our clinic from June 2011 to March 2012. 54.4% male, 45.6% female, with an average age of 71.54 years old. We assessed clinical, paraclinical and therapeutic data according to clinical forms at presentation. Mean LOS was 8.74 days.

Results: A longer LOS was found for patients with EF < 30% in all clinical forms of presentation and also for the patients who received inotropic support ($p < 0.001$), a dose of iv loop diuretic >140 mg ($p < 0.001$) and for those with QRS length > 160ms ($p < 0.05$) and/or LBBB (See Table 1). The linear regression equation revealed that the need for vasopressor amines ($t = 3.371$, $p < 0.001$), QRS length ($t = 2.959$, $p < 0.05$) and hyponatremia ($t = 2.195$, $p < 0.05$) on admission represent independent factors of prediction of LOS. Patients with decompensated CHF and PAAT (Pulmonary Artery Acceleration Time) < 90ms or E-wave Deceleration Time < 120ms had a longer LOS. Paradoxically, the same association is not true for patients with acute pulmonary edema, probably because of the parameters being dependent on acute hemodynamic conditions of ventricular filling and preexistent pathological substrate.

Conclusions: LOS is influenced by numerous parameters, some of which are well known, others such as hyponatremia and PAAT, studied to a lesser extent. Some of the factors are specific to certain clinical forms while others are independent. Assessment on a larger group of patients is necessary.

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Adrenomedullin: additional prognostic value in decompensated heart failure?

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Background: Along with NT-proBNP, mid-regional pro-adrenomedullin (MR-proADM) has been asserting itself as a biomarker of increasing importance in heart failure (HF), with prognostic value for mortality. However, published studies are scarce and the prognostic value of MR-proADM in relation to rehospitalization for decompensated HF had never been evaluated.

Aim: To assess the long term prognostic value of MR-proADM in patients (pts) with decompensated HF.

Methods: Prospective study of consecutive pts admitted to a tertiary hospital with the diagnosis of systolic and/or diastolic decompensated HF [Framingham plus echocardiographic (echo) criteria]. At admission, clinical, biochemical (including levels of plasma MR-proADM and NT-proBNP), electrocardiographic and echo evaluation was performed. Another evaluation was done before hospital discharge. Clinical follow-up was performed at 3, 6 and 12 months. The primary endpoint was the occurrence of death or rehospitalization for decompensated HF. The prognostic potential of MR-proADM was evaluated by Kaplan-Meier survival curve and Cox regression analysis.

Results: Thirty six pts were included, 70 ± 13 years old, 56% male, 67% in NYHA class III, 16 (53%) with ischemic cardiomyopathy. Ejection fraction (EF) was $31 \pm 11\%$ (< 30% in 49% patients). During hospital stay, 1 pt died and the remaining were discharged from hospital after 12 ± 9 days. MR-proADM basal levels

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(1.81 ± 0.92 nmol/L) correlated with NT-proBNP levels on admission (9817 ± 18728 pg/mL, R = 0.67, p < 0.001) and at discharge (R = 0.55, p = 0.001), and showed a trend to increase with the severity of HF decompensation [1.68 ± 0.78 (NYHA class III), 2.25 ± 1.10 (class IV)]. Basal MR-proADM also correlated with left ventricular filling pressure assessed by E/E' ratio (R = 0.49, p = 0.005), but did not differ according to EF. During a mean follow up of 157 ± 144 days, 14 pts (39%) evolved unfavorably. The event-free survival was lower in pts with higher values of MR-proADM (3rd tertile) (119 ± 29 vs. 266 ± 31, p = 0.044) and the risk of unfavorable outcome was 3 times higher (HR: 3.0, CI95% 0.98-9.52, p = 0.05). No correlation was observed between NT-proBNP values at admission or discharge and long term prognosis.

Conclusion: In decompensated HF, MR-proADM on admission is a marker of prognosis (morbidity and mortality), demonstrating superiority over NT-proBNP in identifying patients at increased risk for adverse events in the long term.

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Acute coronary syndrome in young patients.

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Purpose: to determine incidence and causes of myocardial infarction in patients younger than 35 years old.

Methods: The study population consisted of 298 patients hospitalized from 2010 to 2011 yy. All patients admitted to hospital due to acute coronary syndrome. 13 (4.3%) patients were under 35 years old. 10 patients from young population had myocardial infarction (including 1 patient with emboly of coronary artery as a consequence of mitral valve thrombosis and 1 patient with the LV aneurysm formation.

Results: 4 patients showed atherosclerotic lesions on coronary angiography, 1 patient - embolic thrombosis of coronary artery. 5 patients showed slowing of blood flow in coronary arteries and marked vasospasm during injection of contrast media (in 2 of them marked tortuosity of the coronary arteries was revealed). In three patients coronary angiography had not showed any coronary artery disease (CAD). 5 from 13 patients had increased level of troponin T on admission to hospital. Patients with myocardial infarction had common dynamic on the ECG.

One patient with no CAD on angiography had ischemic changes in form of ST-segment depression up to 3 mm during exercise test (patient had tobacco abuse - more than 30 cigarettes/day). One 18-years-old patient, had non-STEMI with elevated level of troponin after alcohol and energy drinks abusing. During coronary angiography no any atherosclerotic lesions of coronary vessels have been identified, only vasospasm was registered. Angioplasty and stenting was performed in 4 patients, in 1 case we used aspiration catheter. All patients were discharged in satisfactory condition.

Conclusions: We found that in the pathogenesis of myocardial infarction in young patients vasospasm due to mental or physical stress, alcohol or nicotine abuse apparently plays an important role. The cause of myocardial infarction in young people may be local dismetabolic disturbances in the miocardium or embolism of the coronary artery with emboli of platelets with the ability to rapid lysis.

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Levosimendan in hospitalization ward: a safe and effective friend

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Fifteen millions of people suffers Heart Failure in Europe. In decompensated heart failure, right ventricular failure is an independent prognostic marker of mortality.

Levosimendan improves myocardial contractility without increasing oxygen requirements. It also produces peripheral and coronary vasodilatation. Levosimendan is recommended in patients with severely impaired systolic function and signs of low cardiac output. The bigger experience with this drug is in critical care units.

Purpose: Evaluate perfusion efficacy and safety of levosimendan, as well as protocol perfusion used in hospitalization ward.

Methods: Retrospective review of consecutive levosimendan perfusions used in hospitalization ward under ECG monitoring in the last three years.

Data collected from 43 patients with severe decompensated heart failure (31 men and 12 women).

Mean age: 64 years old. Mean left ventricular ejection fraction: 14.59%.

Mean systolic blood pressure: 96 mmHg. 24 patients present resynchronization therapy.

Etiology of heart failure: 19 idiopathic, 17 chronic ischemia, 5 alcoholic, 2 valvular disease.

Levosimendan was used 67 times in 43 patients: 34 patients once, 8 patients twice and 1 patient × 17 times. Interval between perfusions ≥ 3 weeks.

Protocol used in all of patients: continuous perfusion up to 0, 2 μg/kg/min without initial bolus and variable time. Mean perfusion time was 40.29 hours.

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Adverse events reported during perfusion: 2 headache, 2 low systolic blood pressure. No arrhythmic events. 3 late deaths several weeks after last perfusion non related to the drug.

Results: registered 24 h after end of perfusion clinical, analytical and echocardiographic markers (NYHA functional class, NT-pro BNP and TAPSE, respectively). Significant improve in all of these parameters was observed (see table below).

Conclusions:

1. Levosimendan perfusion is effective and safe in acute heart failure in hospitalization ward.
2. Levosimendan perfusion longer than recommended in perfusion protocol seems effective and safe and it maintain benefits without adding complications when we use repeatedly.

Table 1. Results

	basal	24h after	p
NYHA	3, 89 (SD 0, 3)	2, 53 (SD 0, 6)	< 0, 001
NTproBnp	6400 (SD 8140)	2380 (SD 2984)	< 0, 001
TAPSE	20, 71 (SD 6, 99)	25, 57 (SD 4, 83)	0, 023

TAPSE-Tricuspid annular planne systolic excursion

Arrhythmias

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Percutaneous closure of the left atrial appendage in patients with atrial fibrillation: a safe option for patients with contraindications to oral anticoagulation

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Purpose: In non-valvular atrial fibrillation (AF) 90% of thrombi originate from the left atrial appendage (LAA). Percutaneous closure of the LAA (LAApc) proved to be non-inferior to warfarin for thromboembolism prophylaxy (TEp), emerging as an alternative to oral anticoagulation (OAC) in not suitable patients (P). This study aims to evaluate the initial experience of a single center in LAApc for TEp in patients (P) with AF and contraindication to OAC.

Methods: P with non-valvular AF, CHADS2 score ≥ 2 and contraindications to OAC were submitted to LAApc with a dedicated device (Dv: 16 P using Amplatzer Cardiac Plug device and 2 P using WATCHMAN Left Atrial Appendage System) according to the standard technique: IV heparinization, transeptal puncture, transesophageal echocardiogram (TEE) and fluoroscopic guidance. After the procedure P maintained dual anti-platelet therapy during 3 months (M), followed with simple anti-aggregation indefinitely. P were followed with transthoracic echocardiography (TTE), which was performed the day after the procedure and at 3, 6 and 9 M, and also with transesophageal echocardiography and clinical evaluation at 12M or when needed.

Results: Eighteen P with non-valvular AF (16.7% paroxysmal, 16.7%) persistent and 66.7% permanent) underwent to LAApc: 70 ± 9 years, 33.3% with age ≥75 years, 61.1% male, 88.9% hypertensive, 61.1% diabetic, 38.9% with history of stroke/ TIA and 66.7% with clinical heart failure. The mean CHADS2 score was 3.3 ± 0.9 and the CHA2DS2-VASC 4.9 ± 1.4.The LAA had a base of 19.6 ± 2.3mm. The diameter of the implanted Dv was 22.8 ± 2.2mm, with a success rate in LAApc of 100%. An intraprocedure replacement of the Dv was needed only in the first patient due to oversizing. Minor puncture complications occurred in 1P, and minor oropharyngeal bleeding related to intubation was found in 2P, and solved with local supportive care. There were no other peri-procedural complications, including stroke, Dv embolization or need for surgery. P were followed for 9 ± 6M. In 1P, a thrombus adherent to the Dv was identified by TEE at the 1st M, and resolved after 3M under enoxaparin. No displacement or migration of the Dv, incomplete LAA closure, TIA or stroke were observed during follow-up. The rate of TIA-stroke/year was lower than the expected according to the CHADS2 score (0 vs 7.1 ± 2.3%).

Conclusions: In our initial experience, the LAApc proved to be feasible, safe and effective in AF patients with contraindications to OAC. We identified only peri-procedural complications of low severity. The TIA/stroke rate observed was lower than the expected.

Basic science

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Preconditioning mesenchymal stem cells with caspase inhibition and hyperoxia prior to hypoxia exposure decreases apoptosis and increases cell survival and proliferation

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Myocardial infarction is a leading cause of disability and death worldwide. Severe ischemia produces myocardial necrosis downstream from occluded arteries leading to left ventricular (LV) remodeling and heart failure. It is thought that the hypoxic environment following a myocardial infarction may also result in apoptosis of transplanted stem

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cells when attempting cardiac tissue regeneration. We analyzed in vitro the effects of preconditioning mesenchymal stem cells (MSC) with hyperoxia (100% oxygen), pan-caspase inhibitor Z-VAD-FMK (CI), or the combination, prior to hypoxia exposure in order to mimic the low oxygen environment seen in myocardial tissue post-myocardial infarction. Preconditioning therapy alleviates the need to continuously provided apoptotic inhibition during stem cell transplantation in which the long-term effects may be harmful. MSCs preconditioned with hyperoxia, CI, and particularly the combination, significantly decreased apoptosis as evident by TUNEL assay and Annexin V analysis using fluorescence assisted cell sorting; gene expression of caspases 1, 3, 6, 7 and 9 were found to be significantly down-regulated. Further, preconditioned MSCs had a significant increase in the survival markers Akt1, NFkB, and Bcl-2.These changes ultimately resulted in a significant increase in MSC proliferation under hypoxic conditions as determined by BrdU assays when compared to no preconditioning therapy. Decreasing apoptosis and promoting cell survival of transplanted stem cells exposed to hypoxia (i. e. myocardial ischemia/infarction) may attenuate left ventricular remodeling and improve cardiac function post-myocardial infarction. Future studies area warranted to investigate these findings in vivo using animal models.

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Detailed characterization of amyloid protein depositions in patients with cardiomyopathies

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Background: Alterations in protein turnover, autophagia process and functions of the proteasome-ubiquitine system have been shown to be important in myocardial demerge and deterioration of cardiac function in heart failure patients. Amyloidogenic protein aggregates were described first in connection to desmin-related cardiomyopathy in several models of desmin transgenic mice. Further, such misfolded protein aggregates were described in myocardial tissue of patients with various types of cardiomyopathies. The aim of our study was to investigate the prevalence of amyloidogenic protein aggregates in myocardial samples from patients that had died from heart failure of various etiologies, and to characterize these protein aggregates at the biophysical and molecular level with a novel class of optical probes called luminescent conjugated oligothiophenes (LCOs). LCOs selectively stain various types of protein aggregates and the interaction gives rise to conformation dependent emission spectra.

Material and Methods: Paraffin-embedded cardiac samples from patients with heart failure of the following etiology have been studied: hypertrophic cardiomyopathy (n = 9), dilated cardiomyopathy (n = 10), and arterial hypertension with metabolic syndrome (n = 5). Samples were stained by conventional techniques (hematoxilin-eosin, congo red, Sirius red) as well as with the LCOs p-FTAA and h-HTAA.

Results: Spectral analysis of myocardial samples stained with p-FTAA or h-HTAA revealed the presence of protein aggregates in patients with heart failure caused by hypertrophic cardiomyopathy (n = 6/9), dilated cardiomyopathy (n = 5/10), or arterial hypertension with metabolic syndrome (n = 2/5). Hence, heart failure of various etiologies might be connected to the deposition of amyloid in myocardial tissue.

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Plasma levels of soluble receptor for advanced glycation end products (sRAGEs) and oxidized low density lipoprotein (oxLDL) in pediatric heart failure: relationship to the severity of diseases.

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Purpose: Advanced glycation end products (AGEs) are created by non-enzymatic glycation or after their interaction with exact receptors. Facts of the role of the soluble receptor's of advanced glycation end products (sRAGE) in pediatric heart failure (HF) resulting from either idiopathic dilated cardiomyopathy (IDCM) and chronic renal failure (CRF) in children are very limited on the contrary to numerous investigations in adults.

We hypothesized the relationships between plasma levels of sRAGE in IDCM and CRF as well as plasma levels of oxidized low-density lipoprotein (oxLDL), as a marker of oxidative stress and serum levels of high sensitivity C-reactive protein as a marker of inflammation (hsCRP) compared to healthy controls (HC).

Methods: Sixty HF children (aged 4–14 years) were recruited [30 child with IDCM were compared to 30 child with CRF, will be prospectively included in the study, advancing New York Heart Association functional class score (NYHA) will be defined for all patients] and 20 healthy controls HC]. Plasma Levels of sRAGE and ox LDL were measured by ELISA and serum hsCRP levels were determined by a nephelometry, arterial blood gases and hemodynamic data were also obtained.

Results: Plasma levels of sRAGE, oxLDL and serum levels hsCRP values were significantly higher in children with CRF compared to HC ($p < 0.0001$). CRF patients had significantly elevated sRAGEs levels compared

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IDCM patients [1617 (1456-1678); 1226 (982.5 –1263); $p < 0.0001$], respectively. IDCM patients had significantly elevated sRAGEs levels compared HC[1226 (982.5 –1263); 820.5 (678 –987); $p < 0.01$], correspondingly. There were significantly higher plasma level of oxLDL and serum levels of hsCRP in CRF and IDCM compared to HC subjects ($p < 0.0001$). No significance difference in plasma levels of oxLDL in CRF compared to IDCM (p = NS). Significant correlations (Spearman's rho) were evident between sRAGE and serum level of creatinine in CRF ($r = 0.50$; $p < 0.05$).

Conclusions: Abnormal levels of all indices were supposed to be a predictor of HF severity. Findings from these studies will assist clinicians in formative the significance of targeting advanced glycation as a therapeutic approach for reducing cardiovascular diseases complications, which may reflect relative roles in the biology of HF.

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Withdrawn

Small-size circulating microparticles in acute coronary syndromes: relevance to fibrinolytic status, inflammation and outcome

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Background: Recent data suggest that circulating microparticles (MPs) contribute to inflammation, coagulation and vascular repair. Most studies have focussed on relatively large MPs due to technological limitations and scarce data are available on small-sized MPs. The aim of our study was to assess changes, relevance to markers of cardiovascular repair and prognostic value of small size-MPs of different origin in patients with acute coronary syndromes (ACS).

Methods: In a cross-sectional study we compared levels of small size-MPs between subjects with stable coronary artery disease (CAD, n = 40), and patients admitted with ST-segment elevation myocardial infarction (STEMI, n = 50) and non STEMI (NSTEMI, n = 47). Circulating markers of cardiovascular repair (endothelial progenitor cells [EPCs], monocyte expression of scavenger receptors and a marker of their activation (NFκB) was performed by flow cytometry. Annexin V-MP (AnV-MPs, apoptotic MPs), platelet CD42b+ MPs (PMPs), endothelial CD144+ MPs (EMPs) and monocyte CD14+ MPs (MMPs) were quantified using a high resolution Apogee A50 flow cytometer. Fibrinolytic factors were measured by ELISA. In STEMI these parameters were measured repeatedly during one month follow-up. In a separated study, prognostic value of MPs were assessed in a bigger population of patients with non ST-segment elevation acute coronary syndrome (NSTE-ACS, n = 160).

Results: Apoptotic MP and EMP levels were significantly lower in STEMI patients ($p < 0.001$ and $p = 0.025$, respectively) than in stable CAD. EMPs significantly correlated with fibrinolytic markers (uPA or tPA) in acute phase, while apoptotic MP inversely correlated with them as well as with EPCs in NSTEMI. Baseline EMPs and PMPs levels were independently predictive for future hospital admissions related due to heart failure ($p = 0.012$) and major bleeding events ($p = 0.014$), respectively.

Conclusions: Circulating small size-MPs in the acute phase might be alternative markers of a worsening state adding to the evidence for small size-MP involvement in cardiac reparative processes and highlighting underpinnings of pathophysiology.

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Cardiac hypertrophy in human newborns with congenital heart disease modifies maturational changes in cardiac energy metabolism and negatively affects post-surgical functional recovery.

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Background: Despite drastic improvements in surgical techniques, ischemia-reperfusion injury (IRI) with reduced ventricular functional recovery remains a major predictor of morbidity and mortality among newborns with congenital heart disease (CHD). Modulation of energy substrate metabolism positively affects IRI in adult patients undergoing cardiac surgery. However, these findings cannot be extrapolated to newborns with CHD who may undergo obligatory maturational changes. We sought to determine age-related changes in major fatty acid (FA) and carbohydrate metabolism enzymes and their regulation at the transcriptional level in human newborns with CHD undergoing corrective surgery. We also determined the difference in maturational changes in patients displaying hypertrophy and its possible consequences on functional recovery capacity.

Methods: Right ventricular (RV) specimens were collected from newborns (age 0-200 days) undergoing corrective surgery. Patients were stratified into 3 age groups: group 1 (0-20 days), group 2 (21-100 days) and group 3 (101-200 days) and, each group was further classified as non-hypertrophied (NH) or hypertrophied (H), based on a z-score

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developed for RV free wall thickness. Western blot analysis for major FA and glucose metabolism enzymes, and transcriptional regulatory proteins was performed. Clinical outcomes including post-surgical right and left ventricular (LV) functional recovery were also assessed.

Results: Samples from 59 patients qualified for inclusion: 23 patients in age group 1 (12 NH and 11 H); 17 patients in age group 2 (10 NH and 7 H) and 19 patients in age group 3 (12 NH and 11 H). Since shortly after birth, neonates displayed an age-related increase in the expression of enzymes involved in FA oxidation. On the other hand, a decrease in carbohydrate oxidative capacity was evident in the same patient population. Hypertrophied patients displayed an overall reduced expression of key proteins involved in the transcriptional regulation of cardiac energy metabolism at the mitochondrial level, in this way suggesting a more vulnerable energetic state. In support with this hypothesis, following surgery, patients displaying a hypertrophy presented with a worse ventricular functional recovery. The effects of hypertrophy on clinical outcomes remained significant when entered into the multivariate analysis.

Conclusions: In line with previous animal studies, human newborns with CHD undergo obligatory age-related metabolic maturational changes that are modulated in the setting of hypertrophic response and can be responsible for worse peri-procedural outcomes.

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Innate immunity factors may be involved in pathogenesis of acute coronary syndromes

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Background: The role of factors of innate immunity are not well investigated in patients with acute coronary syndromes (ACS). Mannose-binding lectin (MBL) is a key component of humoral innate immunity that starts one of the ways of complement activation. There are controversial data on MBL influence on progressing of atherosclerosis. Neutrophil activity is an indicator of cellular innate and acquired immunity status. We tested whether MBL level and factors of neutrophil activation associate with risk of acute coronary syndromes.

Methods and materials: Serum MBL and neutrophil activation factors were determined in 45 patients with acute coronary syndromes (ACS) - with and without ST-segment elevation. Control group - 20 age-matched healthy persons. Additionally levels of BNP, CRP were measured at admission.

Results: MBL level was higher in all categories pts with ACS in comparison with control: 129.2 ng/ml vs 52.7 ng/ml (odds ratio 2, 45, P = 0.07). The difference was statistically significant in patients NSTEMI patients (164, 9 ng/ml vs 52, 7 ng/ml, P = 0, 03). No difference between STEMI and NSTEMI patients was found. MBL level in ACS patients with concomitant diabetes mellitus is higher than in patients without diabetes (227, 3 versus 100, 9 (odds ratio 2, 25, P = 0, 03). MBL level was lower in patients with low (< 40%) ejection fraction (EF) - 54, 3 vs 130, 3 in patients with EF≥40% (P = 0, 19). No difference for factors of neutrophils activation between ACS patients and control was observed (phagocytic activity of neutrophils 74, 5% in ACS group vs 74, 3% in control, phagocytic number 3, 34 vs 4, 36, phagocytic reserve 88, 0% vs 85, 5%). There are no significant correlation between MBL and factors of neutrophil with well-known risk factors (BNP, CRP).

Conclusions: Our results show that factors of humoral innate immunity (MBL) are involved in the pathogenesis of ACS especially in NSTEMI and diabetes pts. High level of MBL may predict risk of ACS. We didn't find association between phagocytic activity of neutrophils and ACS risk.

Biomarkers

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Admission B-type natriuretic peptide retains prognostic value in patients with acute coronary syndrome and preserved left ventricular ejection fraction

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Purpose: Admission BNP has been identified as a marker of increased risk of adverse events in patients with acute coronary syndrome (ACS) and reduced left ventricular ejection fraction (rLVEF). Whether it confers prognostic value in patients with ACS and preserved LVEF (pLVEF) is unclear.

Methods: We enrolled 1698 patients with ACS. LVEF and BNP levels at admission were measured. pLVEF was defined as an LVEF ≥55%. The endpoint was a composite of all-cause mortality and new ACS at one year.

Results: 73% of patients were male, mean age was 67.9 ± 12.7 years, 34% were diabetics, 84% were in Killip class I and 30% had STEMI. Ninety-four percent of patients underwent coronary angiography, 41% had angioplasty and 4% coronary artery bypass. Mean LVEF was 48.7 ± 12.5%: 44% had pLVEF and 56% had rLVEF. Patients with rLVEF had worse clinical (Killip class), biochemical (renal function, troponin peak, glycosylated hemoglobin, fasting blood sugar, high sensitivity C-reactive

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protein and BNP) and echocardiographic (LVEF) profile. The endpoint occurred more frequently in rLVEF than in pLVEF (10.0% versus 7.9%, p = 0.052); death was twice as frequent in rLVEF than in pLVEF (5.3% versus 2.8%, p = 0.003). Patients with BNP >150 pg/ml had higher probability of presenting the primary endpoint (p = 0.008, with the log-rank test). On multivariate analysis, only admission BNP proved to be independently associated with adverse events: OR 1.001 (95% CI: 1.000 to 1.002, p = 0.018), after adjusting for age, sex, Killip Class, troponin peak, fasting glucose, renal function and LVEF.

Conclusions: In patients with ACS, BNP retains its prognostic value, regardless of LVEF. Patients with ACS and a BNP on admission >150 pg/ml had significantly higher probability of presenting adverse events during follow up.

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Hypovitaminosis d and outcome of patients with acute myocardial infarction

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Background: Vitamin D deficiency is an emerging risk factor for development of atherosclerosis and acute myocardial infarction. Furthermore, is known that low serum vitamin D predicts a higher cardiovascular risk in the general population.

Aim: The relation between the plasma level of vitamin D3, the main metabolite of vitamin D, and the outcome of patients survivors of myocardial infarction, was investigated.

Methods: Vitamin D status (by measuring 25-dihydroxyvitamin D (25-OH D) levels) was determined in 354 patients admitted in Cardiology ICU with diagnosis acute myocardial infarction (mean age 66.8 ± 11 years, BMI 27 ± 4 kg/m2, GFR 92.2 ± 40 ml/min/m2, LVEF 53 ± 11%). Hypovitaminosis D was defined as a serum 25-OH D concentration less than 20 ng/ml.

Results: The median serum 25-OH D concentration was 14.7 [7.6-22.9] ng/ml. Two hundred fourty seven patients (69.8%) had hypovitaminosis D. Patients with hypovitaminosis D had higher plasma levels of inflammatory markers such as C reactive protein (CRP), fibrinogen and alkaline phosphatase. There were no difference regarding left ventricular dimensions and function, neither regarding treatment medication between patients with and without hypovitaminosis D. At multivariate regression analysis, hypovitaminosis D was independently predicted by BMI (p = 0.004), CRP (p = 0.04) and alkaline phosphatase (p = 0.02) levels, after adjustment for other pertinent clinical and instrumental variables (p = 0.04). Total mortality and cardiac mortality at one year follow-up did not differ between patients presenting or not hypovitaminosis D.

Conclusions: Hypovitaminosis D is highly prevalent among patients with myocardial infarction and is independently associated with markers of systemic inflammation. However, hypovitaminosis D was not associated with worse outcome at one year follow-up.

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Prognostic value of proinflammatory markers in patients with documented coronary artery disease

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Background: In some recently studies have been reported that osteopontin and osteoprotegerin as markes of systemic inflammatory response are dramatically increased in blood in patients after Q-myocardial infarction (MI).

Aim: To investigate interrelations between plasma level of osteopontin and osteoprotegerin with clinical outcomes in patients with angiographic documented coronary artery disease during 1 year after Q-MI.

Methods: 85 patients (male and female) with angiographic documented CAD were observed during 1 year after hospitalization period. In has been identified total hard end-point that included all fatal and non-fatal atherotrombotic events, new cases of both urgently ballon angioplastic and bare-metal stent implantation procedures, all newly diagnostic cases of heart failure and hospitalization due to cardiovascular events. Osteopontin, osteoprotegerin and high-sensetive C-reactive protein plasma level were measured by ELISA.

Results: ROC-analysis of obtained outcomes have been shown that plasma level increase of osteopntin over cut-off value 161 pg/ml and osteoprotegerin over cutt-of value 5302 pg/ml associate positively with 1-year mortality risk (RR = 1.26; 95% CI = 1.03-1.79; P = 0.0026 and RR = 1.18 95% CI = 1.01-1.90; P = 0.0034), hospitalization ratio, severity of coronary atherosclerosis and calcium score index. Positive prognostic value of combination osteopontin and osteoprotegerin plasma level over cut-off values mentioned above riches up 64% prognostic sensitivity and specify are 86% and 82% respectively). At the same time, circulating C-RP level less 9.2 mg/l does not have prognostic potential for this patient's cohort during 1 year. There were no significant interrelations between proinflammatory cytokines and requirement for invasive coronary intervantion.

In conclusion, we predisposed that combination of both proinflammatory markers could be considered as potentially perspectively indicators of unfavorable clinical outcomes onset in patients with documented CAD during 1 year after Q-MI.

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C-reactive protein as predictive factor in patients with non ST-elevation acute myocardial infarction during one-year follow-up

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Background: Recent reports suggest that C-reactive protein (CRP) and markers of myocardial necrosis like troponin I (TnI) are useful for risk stratification in patients with non ST-elevation acute myocardial infarction (NSTEMI) during one-year follow-up.

Aim: The aim of the study is to investigate weather analysis of hsCRP provides independent prognostic information in predicting one-year mortality and rate of new ST-elevation myocardial infarction (MI).

Methods: We prospectively included 522 consecutive patients with diagnosis of NSTEMI admitted to Coronary Care Unit. Inclusion criteria were: dynamic ECG changes and TnI > 1, 0 ng/ml. HsCRP was analysed within 72 hours. Cut-off value for hsCRP was defined >3mg/l (n = 234; 44, 83%).

Results: Mean age of patients was 59+/-11 years, M/F ratio was 335/187, mean BMI was 26.12+/-2.19kg/m2. The one-year rate of death was 39 (7, 47%) and one-year rate of MI was 83 (15, 90%). Patients with hsCRP > 3mg/ml showed higher rate of death at one-year (11, 11% vs 4, 51%) and higher rate of MI at one-year (23, 08% vs 10, 07%), p < 0, 01.In the multivariate analysis death one-year was related to hsCRP > 3mg/l (OR 3, 3; p = 0, 02), and MI one year was related to CRP > 3mg/l (OR 2, 5; p = 0, 02) and Tn I > 1, 0ng/ml (OR 2, 4; p = 0, 02).

Conclusion: HsC-reactive protein is useful and independent risk factor for mortality and MI in patients with NSTEMI during one-year follow-up.

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BNP relationship with systolic function and end-diastolic left ventricular pressure in acute myocardial infarction submitted to primary angioplasty

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Background and objectives: Early detection of heart failure in acute myocardial infarction has prognostic implications. BNP detection has proved to be useful in the diagnosis of heart failure in other situations demonstrating a high negative predictive value. We evaluated if BNP determination is associated with end-diastolic left ventricular pressure (EDLVP) and left ventricular ejection fraction (LVEF) in the setting of ST-elevation myocardial infarction (STEMI).

Methods: 51 patients (pts) (mean age 63.8 ± 13.9; 64% men) with STEMI that were treated with primary angioplasty from July 2008 through June 2010 with invasive determination of LVEDP and LVEF determined by echocardiography were included. BNP determination by quick test was made at admission and epidemiologic (age, sex, risk factors), laboratory tests (creatinine and peak troponin and CK), and clinical (time between symptom onset and arrival to the hospital, complications, and mortality) data were obtained. Results were analyzed using two cut-off points for BNP (100 and 150 ng/ml).

Results: A statistically significant relationship between BNP and LVEF was observed. Pts with a BNP >100 ng/ml had a lower LVEF at admission: OR 0.93, CI 95% (0.034-0.82), p = 0.04.Pts with a BNP >100 ng/ml had a higher LVEDP than those with a BNP < 100 ng/ml, although this association was not statistically significant (23.6 ± 10.4 vs 19.7 ± 6.7 mmHg; p = 0.24). With a cut-off point of 150 ng/ml statistically significant differences were not observed either. Logistic regression analysis didn´t demonstrate a significant relationship in any of the studied cut-off points: 100 ng/ml OR 0.92, CI 95% (0.24-3.98), p = 0.91 and 150 ng/ml OR 4.18, CI 95% (0.67-81.21), p = 0.19.A tendency that was not statistically significant towards a slightly better clinical evolution in pts with BNP < 100 was seen.

Conclussions: In STEMI, BNP level at admission is associated with systolic function but not with invasive determination of LVEDP. This finding could be explained by the peptide's kinetics which probably needs a larger time interval for its elevation.

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Postprocedural level of soluble CD40 ligand and clinical restenosis after percuteneous coronary intervention in patient with coronary artery disease

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Background: Inflammation plays a key role in the development of atherosclerosis and its complications. Percutaneous coronary intervention (PCI) and stent implantation lead to local and systemic inflammatory responses as a "response to injury". PCI directly cause platelet activation, and activated platelets form the basis for complications after intervention. Almost 95% of soluble CD40 ligand (sCD40L) is derived from activated platelets.

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Aim: To assess the relationship of sCD40L, as a marker of platelet activation and C-reactive protein (CRP), with clinically manifest restenosis and major adverse cardiac events (MACEs-patients with restenosis and patients with complications on non-culprit artery) in patients who were treated with PCI.

Methods: sCD40L and CRP serum concentrations were measured before and 24h after PCI with bare metal stent implantation. Followed-up was one year. End points of the study were clinically manifest restenosis and MACEs (death, myocardial infarction, stable angina pectoris, and unstable angina). Physical examinations and stress tests were done on third and sixth month, and according to results, control coronary angiography was done. Pharmacological treatment was according to current guidelines according to guidelines, including dual antiplatelet therapy.

Results: In 52 patients with PCI without postprocedural creatine kinase elevation (17 patients with stable angina pectoris and 35 with unstable angina - 22 urgent and 30 elective PCI) there were 8 (15.4%) patients with clinical restenosis and 14 (26.9%) patients with MACEs (1 death, 1 myocardial infarction, 5 with stable angina, and 7 with unstable angina). Patients with restenosis had a significantly higher posprocedural sCD40L vs. patients without [median (IQR), 2.89 (2.41-5.35) ng/L vs 1.66 (0.94-2.87) ng/L, $p < 0.01$]. Patients with MACEs had significant postprocedural increment of CRP [ΔCRP, 9.2 (1.94-15.8) mg/L vs 2.75 (0.67-5.75) mg/L, $p = 0.034$)], while there is no significant difference in concentration of soluble CD40L [ΔsCD40L, -0.33 (-5.83-1.92) ng/ml vs -0.32 (-1.93-0.88) ng/ml, $p = 0.91$].

Conclusion: In studied group of patients, elevated sCD40L level may be of prognostic value in patients after PCI and identify a subgroup of patients with high risk of clinical restenosis, but not for MACE.

Coronary reperfusion

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Bleeding complications and in-hospital mortality of patients with ST-segment elevation myocardial infarction treated by primary percutaneous coronary intervention: impact of transradial access

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Background: Transradial (TR) primary percutaneous coronary intervention (PCI) is a safe alternative, with more comfort for the patients, than that transfemoral (TF) access.

Purpose: The purpose of the present study was to evaluate the role of TR on the bleeding complications and in-hospital mortality in patients with ST-segment elevation myocardial infarction (STEMI) treated with primary PCI.

Methods: Between October 1, 2010, and October 1, 2011, 1336 patients with STEMI were included in a national multicenter registry. We studied 912 patients with STEMI treated by primary PCI. Patients were divided into 2 groups in dependence on vascular access: patients with TR and patients with TF. We compared in the 2 groups age, gender, cardiovascular risk factors, history of chronic renal failure and bleeding, in-hospital antiaggregatory and anticoagulant therapy, baseline hemoglobin value and minimum value, ejection fraction (EF) and in-hospital mortality. Was defined as in-hospital bleeding complications the presence of at least one of the following: severe or life-threatening GUSTO Bleeding Classification or need for blood transfusion.

Results: The presence of TR access was 51.9% (473 patients). The patients with TR access were younger (62.1 ± 13.2 vs. 63.8 ± 13.5 years; $p = 0.048$) and more often male (80.8 vs. 73.3%; $p = 0.008$). There were no differences in cardiovascular risk factors, history of chronic renal failure and bleeding and EF in the 2 groups. The patients were TR access was used received less therapy with glycoprotein IIb/IIIa inhibitors (48.0 vs. 58.5%; $p = 0.001$), unfractionated heparin (36.2 vs. 64.9%; $p < 0.001$) and enoxaparin (42.0 vs. 54.2%; $p < 0.001$). The TR access was associated with a hemoglobin minimum value higher (13.0 ± 1.8 vs. 12.3 ± 2.0 g/dL; $p < 0.001$), with less blood transfusion (1.1 vs. 3, 2%; $p = 0.024$) and lower in-hospital mortality (2.1 vs. 8.2%; $p < 0.001$). The baseline hemoglobin value and the incidence of major bleeding (severe or life-threatening, GUSTO classification) were similar in the 2 groups.

Conclusions: Our results suggest that access radial for primary PCI is associated with lower in-hospital mortality, less blood transfusion and smaller reduction of hemoglobin, constituting as the preferred vascular access in STEMI.

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Age related treatment strategy and long-term outcome in acute myocardial infarction patients in the PCI era

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Aims: To analyze age-related differences in treatment strategies, results of PCI procedures and both in-hospital and long-term outcomes of consecutive patients with acute myocardial infarction. Methods: Retrospective multicenter analysis of 3814 consecutive acute myocardial infarction patients divided into two groups according to age (1800 patients ≤ 65 years and 2014 patients > 65 years). Significantly more older patients had a history of diabetes mellitus and previous myocardial infarctions.

Results: The older population had a significantly lower rate of coronary angiographies (1726; 95.9% vs. 1860; 92.4%, $p < 0.0001$), PCI (1541; 85.6% vs. 1505; 74.7%, $p < 0.001$), achievement of optimal final TIMI flow 3 (1434; 79.7% vs. 1343; 66.7%, $p < 0.001$) and higher rate of unsuccessful reperfusion with final TIMI flow 0-1 (46; 2.6% vs. 78; 3.9%, $p = 0.022$). A total of 217 patients (5.7%) died during hospitalization, significantly more often in the older population (46; 2.6% vs. 171; 8.5%, $p < 0.001$). The long-term mortality (data for 2847 patients from 2 centers) was higher in the older population as well (5 years survival: 86.1% vs. 59.8%). Though not significantly different and in contrast with PCI, the presence of diabetes mellitus, previous MI, final TIMI flow and LAD, as the infarct-related artery, had relatively lower impact on the older patients. Severe heart failure on admission (Killip III-IV) was associated with the worst prognosis in the whole group of patients, though its significance was higher in the youngers (HR 6.04 vs. 3.14, $p = 0.051$ for Killip III and 12.24 vs. 5.65, $p = 0.030$ for Killip IV). We clearly demonstrated age as a strong discriminator for the whole population of AMI patients.

Conclusions: In a consecutive AMI population, the older group (> 65 years) was associated with a less pronounced impact of risk factors on long-term outcome. To ascertain the coronary anatomy by coronary angiography and proceed to PCI if suitable regardless of age is crucial in all patients, though the primary success rate of PCI in the older age is lower. Age, when viewed as a risk factor, was a dominant discriminating factor in all patients.

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Contrast induced nephropathy is not a predictor for in-hospital death in patients with acute coronary syndrome without cardiogenic shock

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Purpose: Contrast induced nephropathy (CIN) is a serious and deadly disease complicating the hospital course of patients with acute coronary syndrome (ACS) undergoing percoutaneous coronary intervention (PCI). According to the American society of nephrology CIN is defined as an acute decline in renal function following administration of intravenous contrast in absence of other causes. Cardiogenic shock and thereby hypotension are per se reasons for acute kidney failure. Therefore we aimed to investigate the incidence of CIN and it's outcome after adjustment for cardiogenic shock.

Methods: 543 consecutive patients with ACS who underwent PCI were investigated. CIN was diagnosed according to the acute kidney injury network (rise of serum creatinine ≥0.3mg/dl within the first 48 hours after contrast media application).

Results: CIN occurred in 46 patients (8.5%). Patients who developed CIN were significantly older (71.3 ± 13.6 vs. 61.8 ± 13.1, $p>0.0001$) and displayed more co-morbidities (chronic kidney failure, peripheral and cerebrovascular atherosclerotic disease, congestive heart failure and previous myocardial infarction) compared to those who did not develop CIN (No-CIN n = 487). Remarkably, the frequency of diabetes was not significantly different between groups. In-hospital death was significantly higher in the CIN group compared to the No-CIN group (13.0% vs. 3.2%; OR = 4.49, CI 1.66-12.11; $p = 0.003$). Furthermore renal replacement therapy was significantly more needed in CIN patients compared to No-CIN patients (6.5% vs. 1.2%, OR = 5.68, CI 1.37-23.54 $p = 0.035$). After adjustment for cardiogenic shock, in-hospital death was not significantly different between groups (OR = 1.1, CI 0.80-15.15; $p = 0.943$) and renal replacement was not needed more frequently any more (OR = 1.17, CI 0.16-8.09; $p = 0.876$).

Conclusion: Contrast induced nephropathy is a frequent complication of patients with ACS undergoing PCI. However, contrast induced nephropathy is not a predictor for in-hospital death in patients without cardiogenic shock.

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Territorial strain imaging using automated function imaging and tissue Doppler imaging in assessment of left ventricular function & viability in patients undergoing coronary revascularization

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Background: Speckle tracking echocardiography (STE) allows calculation of segmental strains. STE is integrated for automated evaluation of LV function i. e. Automated Function Imaging (AFI).

Aim: Evaluation of the use of strain imaging by AFI and Tissue Doppler Imaging (TDI) in relation to dobutamine echocardiography to detect myocardial viability before percutaneous revascularization of coronary arteries.

Methods: The study included thirty patients with anterior wall MI, having LV EF≤45%, preserved myocardial viability

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tested using low dose dobutamine echocardiography & single vessel (LAD) disease amenable for PCI. Patients underwent strain imaging by AFI & TDI before PCI which were used to assess LV function at rest, with dobutamine dose (20μg/kg/min) and then 3 months after PCI to LAD.

Results: Mean LAD territory 2D strain by AFI at rest showed a cutoff value of -4 % (AUC = 0.913, 95% CI: 0.752-0.985) with sensitivity (84%) & specificity (75%).

Mean LAD territory TDI strain at rest showed a cutoff value of -8.4% (AUC = 0.923, 95% CI: 0.765-0.988) with sensitivity (92%) & specificity (100%).

Stepwise binary logistic regression analysis showed that mean AFI value regarding LAD territory at rest was the most correlating value with post PCI LV functional recovery (Odds ratio = 0.6611, 95% CI: 0.4574-0.9555).

Conclusion: Territorial strain imaging (AFI or TDI) is comparable to dobutamine echocardiography in detection of myocardial viability.

Invasive imaging - Cardiac catheterisation and angiography

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Minimally invasive approach of bifurcations lesions at high risk acute coronary syndromes

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Background: Bifurcations are implicated up to 20% of Acute Coronary Syndrome (ACS), increasing the risk of stent thrombosis (ST) and overall complications. The Szabo Technique (SzTc), allow delivering of a Stent just at the carina in bifurcated lesions (ls), but SzTc has not been tested in the context of ACS. We want to show the results of SzTc in this setting.

Methods and result: We retrospectively reviewed the SzTc performed from January 2008 to January 2011 in 36 (4%) patients (pts) (36 ls, 88% men and mean age 66 ± 11 years old) of a total of 952 pts admitted due to Acute Myocardial Infarction (AMI) or No Q wave AMI and chess pain within 12 hours after onset of symptoms. Inclusion criteria were at the discretion of the operator. Thrombus aspiration was undertaken in 22 pts. Of the forty Stent implanted, 15 (38%) were in Ostial Lesions (OL) (4 aorto-OL in RCA, 8 OL in LAD and 3 OL in Cx) and the rest at bifurcations (Medina classification) 0.1.0 (14 ls, 35%) and 0.0.1 (7 ls, 17%) of infarct-related artery. Eleven ls (30%) were thrombotic total occlusion. One "T" Stent and 1 "V" Stent were performed with SzTc help. The 84% of Stent implanted were DES (mean diameter and length 3 ± 0.5 and 16 ± 12 mm). Procedure successful rate was of 100% (94% success of SzTc, two failures: one unsolved guide wire twist [GWT], and one Stent dislodged). Follow up was reached at 100% of pts (mean time of 13 ± 6 month). Three TVR and 2 No Q AMI (Total MACE: 13.8%) were reported. There were 2 ST (one acute, after IVUS during procedure and the other late), both of them in Stent diameter of 2.5 mm. The GWT occurred in 17% of procedure.

Conclusion: SzTc can be used in selected pts with ACS with high successful rate. The technical difficulty more frequently found is GWT. MACE rate at follow up is according with the reported in pts with high risk ACS. It is recommended some experience and skill before to attempt SzTc in ACS. A large series is required to demonstrate if SzTC has any advantage when bifurcations ls are involved in ACS.

Non invasive imaging - Echocardiography, CMR, CT and nuclear techniques

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Are morphological features of patent foramen ovale related to the extension of cryptogenic stroke?

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Purpose: The association between patent foramen ovale (PFO) and cryptogenic stroke (CS) is already established, but the meaning of PFO anatomical features in this association and its impact on the extent of ischemic lesions (ExtCS) is not known. This study aims to assess the impact of PFO morphological features (PFO-MF) in ExtCS.

Methods: Cross sectional study among 90 consecutive patients (P) with PFO and CS who were referred to percutaneous closure of PFO. Were selected 33 who performed cranial CT scan (CCT) and transesophageal echocardiography (TEE) at our center: 42.4% males, 51 ± 13 years. In TEE was evaluated: PFO size/microbubbles Nr: < 10-small (Ps), ≥ 10-medium (Pm), shower effect-large (Pl); tunnel length (long if >10mm) and width (large if >3mm); atrial septal: excursion (ASE), aneurysm (ASA: ASE ≥ 15mm) and thickness (AST); Eustachian valve (EV), its length (Evl) and the presence of directed flow from EV into the PFO (DirectFlow). CCT images were reviewed by neuroradiologist to evaluate the ExtCS: number of ischemic lesions (NL: 1, > 1 or multi-infacts/MI), size of the vessel (Vs-small, Vm-medium, Vl-large), vascular territory (T) affected (Tpost: posterior, Tant-anterior, 2T-both).

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Results: Pl showed a trend to fewer: MI (6% vs 32%, p = 0.06) and posterior location (12.5% vs 48%, p = 0.07). For Pm the trend was for more frequent MI (35% vs 7.7%, p = 0.07). Large tunnels were associated with lesions of 2T (28.6% vs 3.8% 1T, p = 0.045), while long tunnels were associated with a lower NL (N = 1: 22.3 ± 5.2mm vs NL>1: 18.5 ± 5.8mm, p = 0.006). The EV length was higher in Vl lesions (13.7 ± 11.7mm vs 6.1 ± 7mm, p = 0.05). The DirectFlow was present in all lesions of 2T (100% vs 23.3% 1T, p = 0.006) and in half of P with NL> 1 (50% vs 15.8% NL = 1, p = 0.035). The Vl lesions had higher ASE (15 ± 6.5mm vs 9.3 ± 5.2mm, p = 0.039) and higher prevalence of ASA (40% vs 7.1%, p = 0.038). The AST was higher in P having lesions from the Tpost (6.7 ± 2mm vs 4.1 ± 1.3mm, p = 0.001).

Conclusions: PFO size and AST appear to influence lesion location. The commitment of larger vessels (Vl) was associated with ASA and longer EV. The presence of DirectFlow, larger and shorter tunnels seem to be markers of a greater ExtCS. These features may help in stratifying risk of P with PFO.

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Silent cirrhotic cardiomyopathy: role for diastolic stress test?

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Introduction: Diastolic stress test has been useful evaluating patients with impaired myocardial relaxation, in whom a rise in filling pressures is needed to maintain proper left ventricular (LV) filling and stroke volume during exertion. In liver cirrhosis, the hyperdinamic state, with central hypovolaemia and reduced left ventricular load, can mask a limited functional cardiac reserve, with blunted ventricular response to physiologic and pharmacologic stress, a clinical condition known as cirrhotic cardiomyopathy (CMC). Even though CMC is being recognized as an important morbidity and mortality cause in unstable cirrhotic patients, firm diagnostic criteria are lacking and its prevalence remains unknown.

Objective: Evaluation of diastolic function by dobutamine echocardiographic stress test in a population of cirrhotic patients, defining raised LV filling pressures during stress as an eventual predictor of CMC.

Methods: Twenty-six patients with documented liver cirrhosis, with normal basal left ventricular function and no cardiovascular disease or risk factors were included. All medication was suspended in the previous 24h. Echocardiographic LV filling pressures, using the ratio of transmitral flow velocity to the mitral annular early diastolic average velocity (E/e') at rest and after a maximum dobutamine dose perfusion of 40 μg/Kg/min, were evaluated. A raise in E/e' ratio during pharmacologic stress test was defined as an eventual predictor of CMC.

Results: 26 patients were included, with mean age of 55 (± 10), 22 (85%) male, 17 (65, 4%) in CHILD A class, 8 (30, 8%) in CHILD B and 1 (3, 8%) in CHILD C, with mean MELD score 9 (± 5). When evaluated at rest, all of them had normal LV filling pressures. At dobutamine peak dose, eight (31%) had a significant raise in E/e' ratio (rest E/e' 6, 88 ± 2 to stress E/e' 9, 12 ± 2, 75, p = 0, 034). In the remain, a decrease in E/e' was observed (8, 91 ± 1, 87 to 6, 79 ± 2, 32, p = 0, 0001).

Discussion: Although a long-term follow-up is neaded, cardiovascular complications, namely acute pulmonar oedema that often occurs after transjugular intrahepatic portosystemic shunt or liver transplantation in cirrhotic patients, can be related to sudden changes in LV loading conditions, in patients with impaired myocardial relaxation not diagnosed at rest. Therefore, pharmacologic dobutamine diastolic stress test, with tissue doppler LV filling pressures evaluation, appears useful in identifying CMC risk patients.

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Sedation with propofol during transesophageal echocardiography

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Purpose: To assess the safety of of sedation with propofol-during transesophageal echocardiography (TEE).

Material and methods: We included a consecutive cohort ofpatients referred to TEE from October 2010 to October 2011. Sedation wasadministered at the discretion of the responsible physician: propofol at dosesof 1 mg / kg in 60 seconds and maintenance with 5 mg / min or midazolam atdoses of 2.5-5 mg IV over 3-5 minutes.

Results: A total of 269 consecutive patients (63 ± 15years, 61% male), of which 15 (5.6%) had renal failure and 20 (7.4%) had COPDcriteria. Sedation was used in 221 (82%) patients: propofol in 189 (70.2%) witha total dose of 110 [90-150] mg and midazolam in 32 (11.9%) with a dose 3.9 ± 1.5 mg. The duration of the procedures with sedation was significantly highercompared to those without it (14.3 ± 4.5 minutes vs 11.7 ± 5.5 minutes, p = 0.005). There were 7 complications: 4 (1.5%) transitional O2 desaturations resolvedspontaneously (1 without sedation, 2 with

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propofol and 1 with midazolam), 2desturations (0.7%) with propofol in which the responsible physician decided tostop the test (it was resolved without sequelae) and 1 (0.4%) mild laryngospasmwith propofol. Patients with propofol had a significant asymptomatic decrease ofsystolic and diastolic blood pressure during the test of 17 ± 21 mmHg and 8 ± 16 mmHg ($p < 0.001$), without affecting heart rate. In patients treated withmidazolam there was no significant change in these parameters. Overall therewas no difference in the complication rate in terms of use and type of sedationadministered, drug dose or personal history.

Conclusion: The use of propofol during TEE is safe, with alow complication rate, mainly O2 desaturations in 0.7% of cases that involvethe interruption of the procedure.

Miscellaneous

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Significance of epicardial fat thickness in patients with acute coronary syndrome

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Purpose: Recent investigations have shown that epicardial fat may play a determining role at the beginning of the atherogenesis of coronary epicardial vessels. We analyzed the relationship of epicardial fat, measured by echocardiography, to the presence of extensive coronary disease (ECD), and to metabolic alterations in patients with acute coronary syndrome (ACS).

Methods: We included 53 consecutive patients admitted to our Coronary Unit because of ACS. Echocardiography was made blinded to the coronary angiography. Patients with normal coronary arteries were excluded. We measured epicardial and pericardial fat thickness by echocardiography in parasternal long-axis (epiPL, periPL) and short-axis views and in subcostal long-axis view. We defined ECD as the presence of severe stenosis in the left main artery or the three coronary arteries. Receiver Operating Curves were analyzed to investigate the relationship of epicardial or pericardial fat thickness to ECD. We also analyzed its relationship with anthropometric and biochemical parameters (lipidic profile, insulinemia, C-peptide).

Results: Mean age was 59 ± 10 years, female 25%. 29 Patients had ST-segment elevation ACS and 24 non-ST-segment elevation ACS. Twenty (38%) patients were diabetics, 24 (45%) smokers, 31 (58%) had hypertension. Body Mass Index (BMI) was 29.4 ± 4.7 kg/m2. Twenty patients had 1 vessel-disease, 14 had 2-vessels disease, and 19 had ECD. The best area under the curve was obtained with epiPL (0.79 [0.66-0.92]; $p < 0.01$). A thickness of epiPL > 7.5 mm had a specifity of 0.88 [0.73-0.96] for ECD, with a sensibility of 0.48 [0.24-0.71]. A logistic regression analysis was performed, including epiPL, sex, age, hypertension, diabetes and ST-segment elevation, and we found that epiPL was an independent predictor of ECD (OR 6.3 [1.2–32.4]; p 0.03). We found a significant correlation of epiPL with very-low-density lipoprotein (VLDL) ($r = 0.36$, $p < 0.01$), triglycerides (TG) ($r = 0.39$, $p < 0.01$), high-density lipoprotein (HDL) ($r = –0.40$, $p < 0.01$), C-peptide ($r = 0.36$, $p = 0.01$) and BMI ($r = 0.40$, $p < 0.01$). A multivariate linear regression model was made with HDL, VLDL, C-peptide and BMI, which found a significant correlation between epiPL and VLDL ($p = 0.03$).

Conclusions: The measurement of epicardial fat thickness by echocardiography was a significant and independent predictor of extensive coronary disease. It can be useful in the early management decision-tree of ACS. Besides, our findings suggest a metabolic link between epicardial fat and coronary disease.

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Does age really matters? clinical and prognostic features of endocarditis in the elderly

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Background: In recent years there has been an increase in the mean age of patients with infective endocarditis. Studies that have attempted to define the characteristics of endocarditis in the elderly have generated conflicting data regarding the existence of an atypical form of endocarditis in these patients. The aim of this study was to define clinical, echocardiographic and prognostic features of endocarditis in the elderly and to compare them with those of younger adults.

Methods: We performed a retrospective analysis of patients with infective endocarditis (definite or possible according to the modified Duke criteria) admitted to the same hospital from January /2002 to November/2011. Patients were separated into three age groups and these were compared to their clinical, echocardiographic, microbiological and therapeutic features. It was determined the prognostic value of age in endocarditis.

Results: We identified 82 patients with endocarditis: 28 joined group A (age less than or equal to 57 years), 28 group B (aged >58 and < 72 years) and 26 group C (age greater than or equal to 72 years). In group C definitive endocarditis was tendentiously less frequent ($p = 0.044$). The number of intracardiac devices did not differ between

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the groups. Intravenous drug users were exclusively identified in group A; in this group previous liver disease was also more prevalent. Staphylococcal endocarditis was the most prevalent (33%). Enterococci were only identified in group B. The overall frequency of negative blood cultures was 26% and wasn't different between the groups. Vegetations were identified in most patients; their frequency did not differ between the gps. The aortic valve was the most affected. The tricuspid valve was most affected in group A. There were no cases of prosthetic endocarditis in group C. The cardiac and extra cardiac complications (defined in the latest recommendations as criteria for surgery) did not differ between the groups. No patients in group C received surgical treatment. Hospital survival was tendentiously lower in group C. Overall, age was a predictor of in-hospital death ($p = 0.031$).

Conclusions: In this study elderly patients had fewer diagnoses of definite endocarditis. Despite the frequency of complications have not differed between the groups, elderly patients were less operated, which may have contributed to their higher in-hospital mortality. Optimizing the referral of these patients to surgery may improve the prognosis of endocarditis in the elderly.

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V-V interval optimization in CRT using QRS width in surface ECG in comparison with Echocardiography

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Introduction: CRT had become a standard of treatment for patients with heart failure, the presence of many cases of Non-responders raises the need for device optimization Echocardiography is an established tool used to optimize CRT programming, but it is time-consuming. It was not yet defined whether a QRS width-based strategy may be a helpful tool for device programming.

Aim of study: to compare an optimal interventricular delay interval (v-v interval) obtained by echo with that obtained by QRS width in surface electrogram.

Methods and Results: 20 patients who implanted CRT were enrolled. All patients underwent echocardiographic optimization of the (A-V interval) after which 5 different vv-intervals (LV+30, LV+60, RV+30, RV+60, L+R0) were compared in measures of Aortic flow velocity as a surrogate for ejection fraction. A 12-lead electrocardiogram was recorded and QRS duration was measured in the lead with the greatest QRS width. The ECG-optimized VV interval was defined according to the narrowest achievable QRS interval among 5 VV intervals. A 12-lead electrocardiogram was recorded and QRS duration was measured in the lead with the greatest QRS width. The electrocardiographic (ECG) -optimized VV interval was defined according to the narrowest achievable QRS interval among 5 VV intervals. The echocardiographic optimized VV interval was left ventricle + 30 ms in 2 patients, left ventricle + 60 ms in 8 patients, simultaneous in 8 patients, right ventricle + 30 ms in 2 patients. ECG results had 85% coincidence with the Echocardiographic method using QRS width as an indicator of the most optimized v-v delay interval ($\kappa = 0.906$), ($r = 0.81$ $P < 0.001$).

Conclusion: significant correlation appeared to exist during optimization of CRT between VV programming based on the shortest QRS interval at 12-lead ECG pacing and echocardiographic-guided VV-interval optimization. A combined ECG- and echocardiographic approach could be a more convenient solution in performing optimization.

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Contrast induced nephropathy in patients undergoing PCI

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Purpose: Contrast induced nephropathy (CIN) is the third leading cause of hospital acquired acute kidney injury (AKI). In high-risk groups such as patients undergoing PCI for acute coronary events, it is found that up to 50% of people will develop AKI, with pre-procedural renal impairment being the strongest predictor for CIN. An audit was conducted to establish the efficacy of the current protocol at a regional Cardiology Centre in preventing post PCI AKI in high risk patients.

Methods: A retrospective audit was undertaken with notes obtained for all patients with an eGFR < 60, undergoing elective and emergency coronary procedures between January - March 2011.PrimaryPCI cases were excluded as these patients' renal function could not be determined at that time. The notes were reviewed to determine if actions specified in the trust renal protocol were followed. All patients with an eGFR < 60 are expected to have all nephrotoxic drugs stopped on the day of procedure; Visipaque used as the contrast medium of choice and renal functions repeated 3 days post procedure. Patients with an eGFR < 30 are recommended to receive pre and post procedure intravenous hydration. Patients with eGFR < 15 require a review by a renal consultant.

Results: 80 people were identified with an eGFR < 60 with 1 person having an eGFR < 15.

Only 60% of all patients with an eGFR < 30 were treated with peri-procedural hydration. Of the patients with drug

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charts available to view, only 45% had all nephrotoxic medications stopped on admission. Visipaque was used as the contrast medium of choice in all procedures. It was seen that 54% of patients did not have their renal function checked 3 days post procedure; the majority of these were elective patients. Of all patients who had their renal function repeated, 19% developed AKI.

Conclusion: Although Visipaque was used as contrast medium of choice, major failings in compliance with the remainder of the renal protocol were identified.

A significant number of patients failed to receive peri-procedural hydration or have their nephrotoxic medications stopped. In addition, a large number of patients' renal function was not repeated post procedure and, of those which were monitored, a significant number developed acute kidney injury.

Actions planned from this re-audit included the need for a standardised proforma for use across the regional hospitals, in order to effectively identify and treat all patients with renal impairment undergoing coronary procedures. Further staff training and awareness of preventative measures is required if we are to reduce the risk of CIN.

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Predictors of hemorrhage in acute coronary syndrome

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Purpose: Hemorrhagic risk evaluation is a cornerstone in treatment and strategy decision for patients admitted for acute coronary syndrome (ACS).

Methods: Retrospective study of 568 consecutive patients, admitted for ACS between October 2009 and October 2011.We defined major hemorrhage (hemorrhagic stroke and/or hemorrhage with need of transfusion support) and non-major hemorrhage (hemorrhagic complications with >3g fall in hemoglobin value), both non-related with coronary artery bypass graft (CABG). We divided them into two groups: patients with hemorrhagic complications (group H; n = 21; 3, 7%) and without hemorrhagic complications (group NH; n = 547; 96, 3%). We evaluated demographic and clinical characteristics, type of ACS, symptoms-to-door and door-to-coronary unit times, blood analysis, coronaryography, angioplasty, antiplatelet therapeutics and inhospital complications (total mortality (TM); mortality in patients >75 years (M>75)).

Results: There were no differences in the type of ACS (non-STEMI: H = 76, 2% vs NH = 64, 2; p = ns). The H group presented a more advanced age (mean: H = 70, 0 (interquartile = 15, 5) years and NH = 66, 0 (interquartile = 20, 0) years; p < 0, 001), lower body mass índex (mean: H = 25, 7 (interquartile = 3, 7) and NH = 27, 4 (interquartile = 5, 6); p < 0, 001), more diabetics (H = 47, 6% vs NH = 28, 9%; p = 0, 05), sedentary style of life (H = 33, 3% vs NH = 18, 1%; p = 0, 07), more renal insufficients (H = 23, 8% vs NH = 5, 8%; p = 0, 001); higher hospital admission to coronary unit time (mean: H = 4, 56 (interquartile = 7, 38) hours and NH = 2, 49 (interquartile = 6, 23) hours; p < 0, 001), lower door-to-needle time in STEMI (mean: H = 0, 45 (interquartile = 6, 4) hours and NH = 1, 19 (interquartile = 1, 54) hours; p < 0, 001), higher Killip-Kimbal (KK) Class (KK>1: H = 46, 7% vs NH = 16, 2%; p = 0, 007), higher BNP (mean: H = 667, 0 (interquartile = 1709) pg/ml and NH = 309 (interquartile = 653) pg/ml; p < 0, 001), higher creatinine (mean: H = 1, 22 (interquartile = 0, 86) mg/dl and NH = 1, 1 (interquartile = 0, 5) mg/dl; p < 0, 001) and lower Ejection fraction (mean: H = 40 (interquartile = 18) % and NH = 50 (interquartile = 10) %; p < 0, 001). There were no differences in antithrombotic therapeutics and in invasive strategy. H gropu also presented a more serious coronary (CD) (3 vessel CD: H = 56, 3% vs NH = 27, 8%; p = 0, 018). There were no statistically significant differences in inhospital mortality (TM (H = 9, 5% vs NH = 5, 5%; p = ns) and in M>75 (H = 25% vs NH = 11%; p = ns).

Conclusions: Hemorrhage is associated with an adverse clinical profile (older age and chronic renal disease), higher door to coronary unit time, higher KK class, higher BNP and creatinine, worst ejection fraction and a more serious coronary disease.

Nursing

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Effects to cardiologic rehabilitation in pz over 80 after acute event.

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Background: In the last years the aging of the general population and the consequent aging of hospital population have focused attention on elderly patients and on their different responses after medical treatment programs.

Purpose: We wanted to determine whether, in a subgroup of ultra-elderly (over 80 years) inpatients admitted to our Cardiology Department after an acute event, a individualized physiotherapy treatment, set out according to the of fragility degree at the Hospital admission, can improve physical functional capacity, disability and autonomy degree at the Hospital discharge.

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Methods: we evaluated a subgroup of 56 patients over 80 years (83 ± 3 years) hospitalized in our Cardiac Rehabilitation Department, 34 man and 22 woman: 20 pts posts valvular heart surgery, 5 pts after coronary artery bypass graft, 19 after Heart failure instabilization, 11 post acute myocardial infarction or recent PTCA). At the hospital admission we assessed the disability degree (Barthel scale), the fragility degree (FRA1) (see Arch Chest Dis 2007; 68: 36-43) and the subjective perception of health status (Euroqual)

We formulated our physiotherapy-program based on the assessment of patients' fragility. They performed a 6 minute walking test (WT) at the Hospital admission and at discharge.

At discharge we re-valuated the residual disability and frailty.

Results: Showed statistically significant differences in: in Barthel scale (3, 14-3, 68 p 0.001) and in admission-Euroqual (EQ1: 41, 97-71, 87 p 0.01). Not all patients have made the wt admission.

After our physiotherapy program based on the fragility grade, functional capacity (number of meters during WT1 207 ± 96 m vs WT2 = 280 ± 90 m, p 0.0003) and the Euroqual score (EQ1 42 ± 24, EQ2 72 ± 21; $p < 0.001$) improved from Hospital-admission to discharge. We reduced the degree of disability (Barthel between admission and discharge: BART1: 3.143 ± 1.2 vs BART2: 3.68 ± 1.1, p 0001)

Conclusions: A individualized physiotherapy program based on the fragility degree in ultra-elderly patients with heart disease allowed a discrete functional recovery and reduced the degree of frailty and disability.

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TAVI treated patients what kind of specialised nursing do they need ?

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Background: Rising age results in increasing incidence of aortic stenosis (AS) due to the calcification of the aortic valve. Approximately 2% over the age of 75, and 4% over the age of 85 develop AS. This effects their quality of life. Until 2002 valve surgery was the only option of treatment. For the group of elderly + 80 years this option was too high a risk, especially if they have comorbidities. Since 2002 Transcatheter Aortic Valve Implantation became an option for this group of elderly. At Rigshospitalet Denmark, this intervention started in November 2007 and until now approximately 200 patients have been treated. Mean-age is 81. Specialised nursing for this group of patients is hardly described internationally. It is necessary to investigate how this group of patients are.

Method: A descriptive analysis of qualitative and kvantitative data are processed statistically. 54 patients are consecutively included in the study. Two different kind of datacollection is used:

1. Data from interview guide applicated for the patients using Numeric Rang Scale 0-10.
2. Data from a structured validated observation chart applicated for the nurses each shift at Cardiac Intensive Care Unit. 54 patients are consecutively included in the study.

Results: Results from CICU showed that nursing themes concerning dyspnea, arrhythmias, bleeding, discomfort from the groin, nausea, pain, troubled miction, disturbance in sleeping pattern and inactivity appeared.

Conclusion: The presentation will focus on the descriptive analysis of qualitative and kvantitative data from observation chart and interviewguide and the consequences of the result so far.

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Effects of phisical training and personal counseling after an acute cardiac event.

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Background: The benefits of physical training in cardiac rehabilitation are documented and regular physical activity has a significant effect on the quality of life. After an acute cardiac event, patients should be brought back to life all the more so if it is still of working age. In our Unit has long been in place a program of physical training and personal counseling.

Purpose: we wanted to determine if an individualized physiotherapy treatment and Counseling strengthened by regular checks were programmed, maintains the effects of physical performance, in patients admitted in our cardiac rehabilitation departement, after 1 year. METHODS: we evaluated the physical performance of 98 patients in working age (mean age 50 ± 8.5 years; 39 Pzs after cardiac surgery, 59 Pzs recent post-infarction or post-PTCA) by VICTOR tests (see Monaldi Arch Chest Dis 2005; 64: 8-18). There was an initial test VITTORIO, before the first cycle of physical training, a second test at the conclusion of the DH and other 2 tests during the programmed follow-up (at 6 months and one year after the acute event). Every patients during hospitalitation were submitted a personalized physical training with stretching exercises, breathing exercise, strength training and aerobic training.

Results: there was evidence of a good improvement in test scores between VITTORIO Test in patient admission (T1) and at the end the cycle of intensive training at the

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end of hospitalization in DH (T2). (T1 score: 0.5 ± 4.3 vs T2 scores: 3 ± 3.8, p < 0.0001) and maintaining a good result at 6 months (T3) (score vs. T3 T4 score: 3.1 ± 3.9, P = 0.9) and one year of Follow up (T4) (score score T4 vs. T2: 2.9 ± 3.9, P = 0.7). There were no statistical differences in scores at various times between the FU subpopulation of patients no cardio-operated (non-59pz CCH) and the subpopulation of cardiac surgery (CCH 39pz): (no T1-score 0.6 ± 4 CCH, vd CCH 2 0.2 ± 4.8, P 0.63), (T2 score no-CCH CCH vd 2.7 3.2 ± 3.8 ± 3.8, P 0.52), (T3 score no-CCH 2, 9 ± 4.2 3.2 ± 3.4 vd CCH, P 0.77) and (T4 score no-vd CCH CCH 2.96 ± 3.9 2.8 ± 4.2, P 0.87).

Conclusions: a program of physical training and personal counseling, reinforced by planned checks after an acute cardiac event in age working patients improves performance also a year away.

Pre-hospital care

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Factors influencing the use of ambulance in Turkish patients with acute coronary syndrome

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Purpose: For patients with acute coronary syndrome (ACS), urgent referal to hospital is important in order to start reperfusion theraphy immediately. In our country ambulance service for emergencies is getting widespread day by day. We aimed to investigate the factors that may influence the use of ambulance among Turkish patients with ACS.

Methods: The data of 330 patients with ACS (with a mean age of 55 ± 12) were collected from two hospitals (a state hospital without the capability of PCI and an education and research hospital with tha capability of PCI) with the use of a questionnaire form.

Results: Univariate analysis of socio-demographic characteristics, clinical history and sypmtoms related to use of ambulance was shown in table 1.Only 29% of the patients went to hospital by ambulance. Sixty-eight percent of the patients indicated that they knew the emergency number, 112.There were no differences regarding age, gender and marital status between the patients calling for an ambulance and those who did not. A higher education level was present in the group of patients calling for an ambulance. According to the patients' sypmtom-experience; presence of vertigo, syncope/near syncope, nausea, vomitting and having more severe chest pain were found to be related to the use of ambulance. Presence of STEMI, konwledge of risk factors for CAD and knowledge of chest pain related to heart attack and the importance of quickly seeking for medical care were higher in the patients calling for an ambulance. In multivariate analysis vertigo (OR: 0.47, p = 0.04), vomitting (OR: 0.37, p = 0.02), knowledge of risk factors for coronary artery disease (OR: 5.73, p < 0.01), knowledge of chest pain related to heart attack and the importance of quickly seeking for medical care (OR: 0.35, p < 0.01) and presentation with STEMI (OR:2.18, p = 0.01) appreared as independent predictors of ambulance use. Among patients who did not use ambulance, 37% were given a lift, 14% drove own car, 26% took a taxi, 12% chose public transport and 11% walked to the hospital.

Conclusions: The ambulance service is still underused among Turkish patients with ACS and most patients transport to hospital in unsafe conditions. Educational and information programs about the characteristics of chest pain related to heart attack and the importance of calling for an ambulance for such conditions may increase the use of ambulance.

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Study of whole blood patient samples using point-of-care cardiac troponin I assay based on Magnotech technology

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Introduction: Cardiac troponin I (cTnI) testing is a key element in the evaluation of patients with chest pain and suspected acute coronary syndromes with a recommended turnaround time (TAT, time from blood draw to reporting of result) of ≤1 hour. Point-of-care (POC) testing for cTnI in the emergency setting may offer a solution when central lab testing does not meet the 1-hr TAT requirement. We are developing a novel cTnI POC test using Magnotech technology on a handheld device that allows testing from a single droplet of whole blood in less than 10 minutes. The objective of this study is to show that full recovery of cTnI is obtained using whole blood compared to its plasma in patient samples.

Methods: The cTnI POC test is a one-step sandwich immunoassay that is completed in a compact plastic disposable cartridge with on-board dry reagents and superparamagnetic nanoparticles. With this Magnotech technology the amount of bound nanoparticles, proportional to the amount of cTnI in the sample, is optically detected [1]. A filter (to remove red blood cells) has been incorporated into the cartridge and signals from fresh cTnI positive patient

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samples (whole blood and plasma) have been compared with and without filter. This study has been performed using 40 patient samples from 3 different sites. All samples (whole blood with filter, plasma with filter, plasma without filter) were tested in 5 replicates. Cartridge filling time was measured and related to patient hematocrite values. In addition, whole blood stability was studied for 24 hours on a subset of patient samples.

Results: cTnI positive patient samples were measured on cartridges with filter. The average recovery percentage between whole blood and plasma was close to 100%. Cartridge filling time increased with patient hematocrite value but time-to-result remained below 10 minutes. It was also found that whole blood samples can be stored for several hours before testing without significantly impacting the observed TnI concentration.

Conclusions: The current development status of the Magnotech technology-based cTnI POC assay shows high recovery of cTnI in patient blood samples. The development of this rapid (< 10 min) bedside assay for emergency care is ongoing, and future steps will be to obtain similar performance to a cTnI assay on a central lab system.

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Urgent electrocardiostimulation in common hospitals by mobile teams

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Background: After Chernobyl disaster we fully refused of x-rays control for electrocardiostimulation [ECS]. Recent events on the Japanese atomic power-station supported this decision. The withdrawal of bulky equipment as x-rays machines permit to bring the treatment on the spot instead of transferring patients to the cardiac centre.

Methods: Instead of fluoroscopy we use pericardioscopy with rigid autoclavable endoscope. Its 2 cm bore and subxyphoidal extrapleural access permit to screw electrodes to all heart chambers. The pacemaker was placed into the sheath of M. rectus abdominis. We organized mobile teams of skilled specialists for ECS on the spot in usually remote [up 170 Km] general hospitals of two regional cities - Dnepropetrovsk and Kirovograd. The personnel of the common hospitals deprived of ECS activity could not provide the patients with stable temporary ECS and adequate supervision during prolonged transportation. ECS on the spot enabled to avoid these problems.

Results: *Since 1986 we performed electrode implantations to the walls of the following heart chambers: RV 1187, LV 115, RA 13.Our total experience now 1315 operations. We had very low percentage of complications [0.08%] occurred early at the learning curve and no electrode dislocations at all [0%]. *The mobile teams performed 151 procedures on the spot [every 9 patient] on urgent calls from common hospitals. Partiicularly the procedures included ECS for untranspotrable patients with AMI complicated by AV block [4 cases]. The judgement of AMI only by tracings of ECG and blood analyses scarcely reflects the live pictures of pericardioscopy with gory oedematous akinetic palm size injured areas. The electrodes were implanted in the viable border spots. *The experience of mobile teams ensured success of the next innovation: the part of CRT procedures, namely implantations of LV electrodes, were recently performed endoscopically [17 patients] in Odessa by the group from Kirovograd. Generally this study was directed to assess endoscopic ECS for fixing failures of transvenous electrode implantations and to make a bridge towards completely pericardioscopic CRT procedures. The technique significantly reduced general and screen times of the interventions and provided absolutely stable position of the electrodes in visually chosen avascular zones of LV.

Conclusions: Operative pericardioscopy Is safe, available and effective method of implantation of electrodes for ECS without x-rays control in elective and urgent situations adding or improving several important possibilities of ECS treatment.

Sudden death / Resuscitation

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Non-invasive cerebral oxygenation during therapeutic hypothermia after cardiac arrest

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Purpose: Induced mild hypothermia improves survival and neurological outcome after cardiac arrest (CA). Using near-infrared spectroscopy (NIRS), we were able to provide a non-invasive continuous monitoring of absolute cerebral tissue oxygen saturation (SctO2). Four wavelengths of laser light determine levels of oxygenated and deoxygenated haemoglobin in the cerebral microvasculature. In this study, SctO2 was measured during the first 36 hours after CA to assess cerebral oxygenation during induction, maintenance and recovery of therapeutic hypothermia (TH). Better insights in cerebral oxygenation during this period could reveal more about the optimal neuroprotective strategy in the early hours after CA.

Methods: Data were collected from 24 patients admitted after CA. Cold saline (30 ml/kg) was administered as soon

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as possible after hospital admission. Coronary angiograms were performed, percutaneous coronary intervention followed when indicated. TH (esophageal temperature of 33°C) was induced by endovascular or surface cooling and maintained for 24 hours. All patients were sedated (propofol/remifentanil) for the duration of TH. NIRS-sensors were applied before start of TH. Data are presented as median with interquartile ranges. Wilcoxon Signed Rank Test was used for analysis.

Results: On ICU-admission, temperature was 34.8°C (34 - 35). Target temperature was reached in all patients. Values for cerebral oxygenation started at 69% (68-73). Three hours later, SctO2 decreased 10%. This was associated with a decrease in PaCO2. At the start of SctO2 monitoring, PaCO2 was 47.8 mmHg (39.2 – 51.1), but decreased to 38 mmHg (35.8 – 45.3) within three hours. There was no major change in mean arterial pressure (MAP start: 87 mmHg (78 – 99), 3h: 81 mmHg (75 - 90)) or cardiac output (CO start: 3.6 l/min (3.4 – 3.7), 3h: 3.1 l/min (2.8 – 4.3)). 24 Hours after the start of TH, SctO2 values reached starting levels again (69%, 63 -73). At the end of rewarming, SctO2 increased further to 71% (67 - 78). Of 24 patients, 9 patients did not survive until hospital discharge. There was no significant difference in starting values of SctO2 between survivors and non-survivors. However, three hours after the start of TH, there was a significant difference ($p < 0.05$); survivors: SctO2 60% (59 - 65), non-survivors: SctO2 57% (55 - 58). There was no significant difference in PaCO2, MAP or CO.

Conclusion: During induction of mild hypothermia after CA, a decrease in cerebral oxygen saturation and PaCO2 was observed. Furthermore, during TH we observed a difference in cerebral oxygenation course between survivors and non-survivors.

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Neuron-specific enolase and S-100B after cardiac arrest treated with therapeutic hypothermia: the role as early prognostic markers of neurological outcome

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Purpose: The introduction of therapeutic hypothermia (TH) has completely changed the role of traditional prognostic indexes, used to evaluate the clinical outcome in survivors after cardiac arrest (CA). Early prognosis of neurological outcome in patients resuscitated from CA is a major medical, economic and ethical challenge. Increased values of both serum neuron-specific enolase (NSE) and S-100B protein are related to brain damage, but the relationship with neurological outcome at hospital discharge is unknown. The aim of this study was to evaluate the prognostic value of NSE and S-100B protein in predicting neurological outcome in comatose patients after CA treated with TH.

Methods: We enrolled twenty-seven consecutive comatose patients treated with TH after CA, between November 2010 and March 2012.NSE and S-100B values were determined at admission and every 24 hours since discharge from Intensive Care Unit (ICU). According to Cerebral Performance Category (CPC) scale, neurological outcome was dichotomized into good (CPC 1-2) or poor (CPC 3-5). Statistical analysis was performed with random forest and conditional inference trees methods.

Results: the mean age of the population (23 males and 4 female) was 60 ± 16 years; median ICU hospitalization was 10 days. Median values of serum NSE peak and S-100B peak were 25 μg/L (interquartile range, 20.9 to 43.5 μg/L) and 0.25 μg/L (range, 0.14 to 0.69 μg/L) respectively. Out of 27 patients, 18 had a favourable outcome and the other 9 patients had an unfavourable outcome. High peak values of NSE and S-100B were significantly associated with poor neurological outcome (respectively $p = 0.024$ and $p = 0.008$). At statistical analysis NSE peak value above 64.7 μg/L or S-100B above 0.65 μg/L were markers of poor neurological recovery (respectively $p = 0.024$ and $p = 0.008$). Good neurological outcome was associated with NSE peak value less than 40.5 μg/L ($p = 0.012$) especially if S-100B was less than 0.23 μg/L ($p = 0.031$).

Conclusions: Serum peak concentrations of NSE and S-100B result to be highly predictive of neurological outcome, especially when combined. Moreover, our data demonstrate that a good neurological outcome is associated with NSE peak value minor than 40.5 μg/L especially with S-100B minor than 0.23 μg/L. On this basis, the determination of NSE and S-100B peak values, may be useful in the early evaluation of prognostic neurological outcome, usually difficult in the setting of TH for CA patients.

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Worse outcome related to use of epinephrin in out of hospital cardiac arrest

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Introduction: Epinephrin use in out of hospital cardiac arrest seems to be associated with a poor outcome according to recent studies.

Objectives: Our study evaluated the use of adrenalin in management of OHCA and the effect on mortality at discharge.

Patients and Methods: Between january 2007 and august 2011, data from 187 consecutive adults victims of OHCA were collected. After excluding obvious extra-cardiac etiologies, 113 patients with exploitable data were included. All of these achieved ROSC before hospital admission and had mechanical ventilation at admission. All ECG recordings were reinterpreted by a cardiologist in the post-hoc analysis.

Results: In our population, 71% were men, with a mean age of 58, 7 ± 15 years. Twelve patients (10.6%) had a history of diabetes, 42 (37%) a history of hypertension and 37 (33%) a known dyslipidemia. Smoking was present in 51 patients (45%). An initial chest pain was found in 32 patients (28%). The median No Flow duration was 3 minutes (0 to 40 min), and the CA to ROSC median delay was 25 minutes (2 to 95 min). CPR was immediately initiated in 63 patients (56%). Adrenalin was used in 90 patients (80%). the adrenalin bolus dose was ≥ 6 mg in 35 patients (31%), and a shockable rhythm (VF/pulseless VT) was found in 70 patients (62%). Coronary angiography was performed in 65 patients (57.5%), significant lesions were found in 44 patients (68% of angiographies) with a successful PCI in 40 patients (61%). Mild therapeutic hypothermia (MTH) was initiated in 71 patients (63%) with a median time to reach the target temperature of 9 h [6.35-12].

In univariate analysis, the use of adrenalin during initial management of patients was associated with an increased mortality (OR = 26.7 [8.1-122.4]). Adrenalin use in the intensive care seems also to increase mortality (OR = 2.6[1.07-6, 43]). When we studied the dose effect of adrenalin we found that adrenalin dose > 6 mg is associated with a three fold increase of mortality (OR 3.36 [1.32- 9.8]).

In multivariate analysis, an adrenalin dose > 6 mg (13.34 [3.54-64.08]), a non shockable rhythm (19.45[4.43-114.52]), an age > 70 years (OR = 8.57[2.07-45.27]), a history of dyslipidemia (OR = 4, 34[1, 31-17, 24]), a no flow duration > 10 min (16.57[2.6-143.7]), were associated with a worse outcome

Conclusion: Our study shows retrospectively that use of epinephrin is associated with a poor outcome in OHCA, when used during initial management or in the intensive care unit. Notably, a dose>6 mg during initial management is associated with an increased mortality.

Telemedecine

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Comparison of standard and derived 12-lead electrocardiograms registrated by a simplified 3-lead setting with four electrodes for diagnosis of coronary angioplasty-induced myocardial ischemia

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Purpose: Electrocardiograms (ECG) derived by transformation from three bipolar quasiorthogonal leads according to EASI have been introduced for many years for use in emergency situations and for the monitoring of patients during the acute phase of myocardial infarction. Theoretically a further reduction and simplification of the classic EASI setting of five electrodes may even improve acceptance of the derived 12-lead ECG in these critical situations, especially in the telemedical use. The objective of the present study was to evaluate the comparability of the 12-lead ECG derived by a system, that reduces the classic EASI setting from five to four electrodes with the standard 12-lead ECG in the detection of acute myocardial ischemia induced during percutaneous transluminal coronary angioplasty (PCI).

Methods: To determine whether a 12-lead ECG derived from a reduced EASI setting using only four electrodes would demonstrate typical ST-segment changes of ischemia during PCI, 24 patients with overall 148 episodes of balloon-induced myocardial ischemia were monitored with continuous 12-lead ST-segment monitoring during PCI. Additionally a derived 12-lead ECG was registrated by the four electrodes system. Both ECGs were compared for each patient by to blinded cardiologists not involved in the intervention.

Results: Of the 148 episodes of balloon inflation recorded with the derived ECG, 104 (70.3%) were associated with typical and significant ischemic ST-segment changes during balloon inflation. The amplitudes of these ST deviations were similar to those observed during transient myocardial ischemia observed in clinical settings (median peak ST deviation, 234 microV). There was agreement regarding presence or absence of ischemia in 147 of the 148 episodes of ischemia recorded with both derived and standard electrocardiographic methods (>99% agreement). With use of the standard ECG as the "gold standard" for ischemia diagnosis, there was no false-negative result (0%) and only one false-positive result (0.7%) with the derived ECG. There was no significant difference between the two techniques

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by linearity tests (p> 0.1). Bland-Altman analysis showed no significant bias. Moreover, both methods demonstrated 100% concordance with respect to localization of myocardial ischemia (anterior, inferior, lateral).

Conclusions: The new 4-electrodes-set 12-lead ECG is as an alternative to the standard 12-lead ECG with 10 electrodes in emergency situations and for monitoring in acute-care settings.

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Predicting the transition to acute heart failure by refined multiscale entropy analysis of heart rate variability in chronic heart failure patients

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Introduction: Several nonlinear heart rate variability algorithms were developed to stratify various risks of cardiac patients, but the comparison of the various calculation methods in different type and sized cardiac patients showed different results. Telemedicine ECG monitoring is an approach to the early evaluation of changes in physiological parameters that lead to acute decompensate heart failure and would be valuable to reduce rehospitalization rate and reduce the costs.

Objectives: To determine the risk of hospitalization predicting by the Refined Multiscale Entropy (RMSE) analysis of heart rate variability (HRV) in chronic heart failure patients.

Methods: Refined Multiscale Entropy (RMSE) is based on three steps: 1) progressive elimination of the fast time scales; 2) coarse graining procedure necessary to assess entropy rate; 3) calculation of the entropy rate. Sixty-six patients (aged 68.4 ± 1.3 years, m/f: 37/29) were enrolled in our telemedicine study. Patients were followed for 18 months, a 24-hour Holter registration was performed in every month. The Group_A contains 41 patients (Holter recordings within 30 days), who were hospitalized due to acute heart failure, the Group_B (25 pts) patients were not hospitalized.

Results: All the RMSE curves exhibited a minimum at short time scale followed by an exponential increment with t-scale. The two groups showed significant differences over a large interval of scales (t = 4-15). The largest statistical differentiation was obtained at the time scale t = 7 with a p-value = 0.0016 (Group_A: SE = 1.107 ± 0.022, Group_B: SE = 1.312 ± 0.015). The risk of hospitalization increased continuously with each quartile with an adjusted relative risk of 3.9 (95% CI 1.9-6.8, p < 0.0001) was observed. Using this cutoff value at scale_t:7, the unadjusted OR for HF hospitalization was 4.4 (p < 0.0001) and 2.5 for mortality (p < 0.006).

Conclusion: Worsening chronic heart failure leading to hospitalization could be predicted by this nonlinear HRV method and would be used for the frequent telemedicine ECG monitoring of these patients to prevent cardiac death.

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Role of telemedicine for the assessment recurrent and asymptomatic episodes of arrhythmia

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Purpose: Telemedicine is a relatively new medical trend which incorporates medicine, telecommunications and information technologies, providing diagnostic work-up, treatment, consulting and training. The signs and symptoms of cardiac arrhythmias can range from none at all to loss of consciousness or sudden cardiac death. Asymptomatic arrhythmias can be a challenge to diagnose. The goal of the present study was to assess asymptomatic and recurrent episodes of arrhythmia with the help of mobile telemonitoring, which is an uncomplicated technology that facilitates the continuous monitoring and recording of arrhythmias.

Methods: We investigated 54 outpatients in Georgia (Republic of) with different types of arrhythmia (n = 32 male and n = 22 female, age – 12-80 year), among them were patients with unexplained syncope, patients with epilepsy, asymptomatic patients who underwent radiofrequency catheter ablation (RFA), also asymptomatic patients after aorto-coronary bypass graft surgery and n = 10 healthy athletes during physical activity. Investigations were made by 3-lead electrocardiograph-ECG loop recorder in automatic recording/transmitting mode. Results: Arrhythmias were registered during 7-68 hours of observation. Cases of sinus brady- and tachyarrhythmia, sick-sinus syndrome, atrial fibrillation, supraventricular tachycardia (SVT) supraventricular premature complexes (SVPCs) and ventricular premature complexes (VPCs) have been correctly recognized by automatic recognition software and recorded. 52% of arrhythmia episodes were asymptomatic. Arrhythmia relapse was detected in 27%. SVT, SVPCs was detected in n = 3 (from n = 6) patients who underwent radiofrequency catheter ablation (RFA), but mostly they were asymptomatic. Asymptomatic episodes of ventricular premature complexes were detected also in patients who underwent aorto-coronary bypass graft surgery. From n = 10 patients with epilepsy we discovered n = 3 patients with SVT and n = 2 patients with sinus tachycardia. Among n = 10 patients with unexplained syncope we revealed n = 2 patients with sinus tachycardia, n = 2 patients with SVT and n = 1 patient with sick-sinus syndrome. Asymptomatic episodes of supraventricular

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tachycardia was detected in n = 1 sportsmen. Asymptomatic episodes were detected in majority cases p = 0.001.

Conclusions: Tested mobile telecardiology represents a feasible methodology to monitor arrhythmia outpatients in Georgia, promoting earlier discharge of non-life threatening cases, improving comfort of their lives. It is also a useful tool to detect a relapse or symptomatic and asymptomatic episodes of life-threatening arrhythmia.

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Clinical information transfer and data capture in acute cardiac care: Observational Study

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Aims: Acute Myocardial Infarction (MI) is a medical emergency. Adequate, accurate and completeness of patient information is vital during the early stages of admission of a patient with a heart attack which may impact significantly on the quality and safety of patient care.

The aim of the study is to record the current clinical information transfer between different clinical teams in the MI care pathway and to review the flow of information between the various clinical teams.

Methods: A prospective, descriptive, structured observational study (n = 20 patients) to assess current clinical information systems (CIS) utilisation in an acute cardiac care setting was undertaken across the four key stages (pre-admission, admission, intervention and discharge) of the MI Care Pathway. Patients were diagnosed with an acute MI (STEMI or NSTEMI) and were stratified into either "high risk" or "medium risk" groups. High risk patients were defined as those presenting via either Emergency Medical Services or the hospital's ED. Medium risk patients were defined as patients transferred from another hospital's ED or inpatient ward.

Results: Thirteen separate information systems were utilised during the four phases of the MI pathway. Observations revealed fragmented CIS utilisation with users accessing an average of six systems to gain a complete set of patient information. Data capture was found to vary between each pathway stage and in both patient cohort risk groupings. The highest level of information completeness (100%) was observed only in the discharge stage of the MI care pathway. The lowest level of information completeness (58%) was observed in the admission stage.

Information capture between the high and medium-risk cohort groups did not differ at the pre-admission (84%), or discharge (100%) stages of the pathway. Conversely, the levels of information capture did vary at the admission and intervention phase with "High risk" patients demonstrating lower levels of information completeness at the admission stage than their medium risk peers (58% vs 68%) and higher levels of information completeness than for the medium risk patients during the intervention phase (87% vs 70%).

Conclusion: The study has highlighted the discrepancies in the current clinical information capture and data transfer across the MI care pathway in an acute cardiac care setting. Development of a simple, user friendly, effective, electronic data capture and information transfer will avoid duplication of clinical information and will facilitate efficient and complete information provision at the point of care.

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Factors affecting successful design and implementation of clinical information systems in healthcare

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Introduction: Accurate recording and transfer of patient information can have a profound impact on safety and quality of care. Clinical Information Systems (CIS) offer the potential for improvements to quality and safety through the provision of accurate, timely information to healthcare staff at the point of care. However, historically, successful implementation of CIS within clinical contexts has been limited.

Aims: The current review aimed to critically evaluate the literature on key factors that have been shown to impact (positively or negatively) on the design and implementation of newly introduced CIS within healthcare contexts.

Methods: An electronic database search was conducted using MEDLINE (1980 to present), ESBCO, EMBASE (1980 to present), Health Management Information Consortium (HMIC) (July 2008) and Science Direct. Eligible studies included assessment of the impact of novel CIS on outcomes related to patients or healthcare professionals.

Results: The electronic search yielded 2, 745 citations resulting in a total of 23 articles that form the evidence base for this review. Included articles focussed on Electronic Medical Records (n = 12), mobile and wireless technologies (n = 5), Integrated Information Systems (n = 3) and electronic communication systems (n = 1). Four main themes emerged from the literature reviewed, namely; aims, design, structure and implementation of novel CIS. Designs conducted in a collaborative manner, involving end users from the outset emerged as a consistent theme. Factors such as usability and ease of use were cited as key for individual acceptance. Allowing healthcare staff to familiarise themselves with new technology outside of their demanding clinical and managerial workload is essential.

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CIS need to structure and present the data in a way that is intuitive to end users to read/retrieve, and likely to facilitate the processing of substantial, often complex information across the care continuum.

Conclusions: Results support a stepwise process to the implementation of novel CIS in healthcare with the involvement of the end users (clinicians). Gaining understanding of users requirements and their perceptions of novel CIS was found to be a crucial driver in facilitating system acceptance and system utilisation. Novel CIS will act as a facilitative tool for clinical auditing, research and higher-level management decisions. Further research is needed to empirically explore and validate the stepwise CIS implementation process that has emerged from this review.

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Urgent cardiology distannce consulting centre. effective organisation, effective practice

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Nowadays Ukraine is a country with a high prevalence of cadiovascular diseases. Also we have one of the highest level of mortality caused by myocardioal infarction in

Europe. For changing situation for better an Urgent Cardiology Distance Consulting Centre of Poltava region was founded in 2011 with the aim to provide acute cardic care for the patients of our region. the population of poltava region is about 1, 200, 000 people. There are 2 High specialised cardiological centres, 1 catheterisation lab, 24 general regional clinics and a great number of family doctors centres. During the last years all general regional clinics, some municipal clinics, several fammily doctors centres were equipped by distant ECG-transmitters. Now the number of ECG-transmitters in region is 70.The transmission is provided by mobile phone or cable phone. Every day our Urgent Cardiology Distance Consulting Centre receives ECG on central computer station and immediately interpreted by qualified cardiologist. Also we receive information and provide consultation using e-mail and video-calls via Skype. In clinical difficult cases our cardiological group immediately organise a departure to any part of the region and transports patient to preffered clinic (pci-capable hospital, non-pci capable hospital or high-specialised critical care unit). Also we provided consultation and urgent transportation from the region to cardiological centres patients with heart blocks. Our car is equipped also with temporary cardiostimulation devices. Such organisation of the Urgent Cardiology Distance Consulting Centre makes possible to save more lifes by providing urgent distance consulting, urgent on-site consulting in several cases and by transporting critical ill patients to high-specifife and most-equipped cardiological centres.

Valvular heart disease

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Comparison between circulating endothelial cells and platelet microparticles levels in Egyptians rheumatic mitral diseases with and without atrial fibrillation.

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Purpose: Atrial fibrillation (AF) is a continued cardiac arrhythmia, which is linked to a high risk thromboembolism. The association of AF and valvular heart disease results in a substantial stroke and thromboembolic risk. AF is interrelated with a hypercoagulable state and abnormalities of plasma indices of endothelial damage/dysfunction such as circulating endothelia cells (CECs) and platelet microparticles (PMPs), which the later are procoagulant membrane vesicles that are derived from activated platelets. Thus we hypothesized that the levels of CECs and PMPs would be raised in rheumatic valvular heart diseases.

Methods: Sixty patients with rheumatic valvular diseases [(30 patients (35 ± 12 yrs; 10 male) with rheumatic mitral valve disease (Mitral stenosis MS and Mitral regurgitation MR)] and with normal sinus compared to [(30 patients (31 ± 11 yrs; 11 male males) with rheumatic valvular diseases with AF but without left atrial or left atrial appendage] and 20 healthy controls HC (31 ± 10 yrs; 17 male) CECs were estimated by CD146 immunobead capture. CECs were calculated using flow cytometry after staining with CD45 antibody. PMPs were illustrious from non-platelet measures by their fluorescence from FITC-conjugated anti-CD41a bound to the particle surface. PMPs were reported as a percentage of the total platelet count.

Results: Rheumatic mitral diseases with AF had significantly elevated numbers of CECs and PMPs (mean (SD);147.4 (130.1) cell/mland 43.6 (15.7) %) respectively compared to rheumatic mitral diseases patients who in sinus rhythm (66.2 (50.5) cell/ml and 47.9 (16.3) %) in that order and HC (55.05 (21.2) cell/ml and 50.8 (15.01) % ($P < 0.0001$) respectively. CECs levels were significantly higher in AF patients with mitral diseases compared to patients with valvular diseases who in sinus rhythm ($P < 0.05$). Rheumatic mitral diseases with AF patients had significantly higher levels of PMPs ($p < 0.001$) compared to healthy control subjects. PMPs in patients with no AF getting therapy with aspirin and warfarin were significantly correlated with PMPs levels in patients with no AF without receiving therapy ($p < 0.05$).

Conclusion: Severe endothelial damage, as assessed by increased numbers of CECs, appears not to be a prominent feature of rheumatic valvular lesions patients in sinus

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rhythm, but levels are undoubtedly elevated rheumatic valvular diseases with AF at the time of an acute vascular complication. There is evidence of platelet activation high PMP in rheumatic AF patients, may reflect to the perturbations of valve lesion rather than AF by itself.

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Rheumatic mitral stenosis: a possible cause of vascular epilepsy

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Background: Rheumatic mitral stenosis is a potential cardioembolic source of stroke, wherein early or late-epileptic spells can occur.

Objectives: the aim of the study is to examine the association between mitral stenosis and epilepsy and precise triggering risk factors.

Patients and methods: Between January 2000 and December 2011, among 621 patients followed for mitral stenosis, eleven (1, 77%) patients (mean age = 39, ranges: 22 - 52 years-old; gender: 6 males, 5 females) present epilepsy spells. They benefited from transthoracic echocardiography, transoesophageal echocardiography, electroencephalography; Brain CT scan; 24h-ECG monitoring in 4 cases with sinus rhythm and MRI in 2 cases with normal brain CT scan.

Results: All the patients had severe mitral stenosis (mitral aera = 1cm²) with enlarged left atrium (mean size = 57 mm). 82% presented atrial fibrillation (permanent in 54% and paroxysmal in 27% demonstrated at 24h-ECG monitoring). Left atrial spontaneous contrast and thrombi were found in 82 % and in 45 % of the cases respectively. The brain CT scan showed a cortical stroke in 36%. The MRI performed in two cases individualized small size infarcts. Partial and generalized epileptic spells were reported in 6 and 5 patients respectively. Electroencephalography recorded epileptiform activity in 60 % of the cases. In 3 cases epilepsy revealed the cardiac disease. All the patients were under vitaminK antagonists and antiepileptic drugs. Moreover, they underwent either mitral annuloplasty (27%) or mitral valve replacement with thrombectomy (45%). The outcome was marked by the occurrence of hemorrhagic stroke in one case secondary to excessive anticoagulation due to antiepileptic dug discontinuation. Conclusions: Rheumatic mitral stenosis remains common in our country. Its relationship with epilepsy remains uncertain, yet we are indecisive whether this relationship is fortuitous, especially in patients with silent brain infarcts or related to post-embolic stroke. In the latter situation, some cardio-neurological risk factors might be raised such as left atrial spontaneous contrast or thrombi, permanent or paroxysmal atrial arrhythmias, large brain infarcts, cortical location. In addition, the association of mitral stenosis and vascular epilepsy is difficult to manage because of drug interactions (vitaminK antagonists and antiepileptic drugs) and seriousness of trauma under anticoagulants in case of epilepsy spells.

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Percutaneous closure of a mitral bioprosthesis paravalvular leak in a patient presenting with acute heart failure - Case Report

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Introduction: Cardiac prosthetic paravalvular leakage is an infrequent complication. Small leaks can be asymptomatic or cause hemolysis, whether larger leaks can cause serious hemodynamic changes and heart failure. Surgical correction of paravalvular leaks is associated with high morbidity and mortality, being the percutaneous closure an alternative option.

Case report: We report the case of a 68-years-old woman with valvular rheumatic disease, who had surgical mitral valve repair 33 years earlier. The disease evolved into symptomatic severe aortic stenosis and moderate mitral restenosis and moderate regurgitation. Replacement of both valves was performed with a nº 29 Carpentier-Edwards SAV in mitral position and a nº 23 Mitroflow aortic bioprosthesis. Shortly after surgery the patient evolved into congestive heart failure in III-IV NYHA class. The transesophageal echocardiography (TEE) showed severe mitral paraprothesic leak.

The patient was considered at high surgical risk owing to hemodynamic instability, previous cardiac surgeries, chronic renal failure and moderated pulmonary hypertension. The interventional cardiology and cardiac surgery teams jointly decided to underwent a percutaneous approach.

The maximum leak diameter was 9 mm. A Amplatzer Duct Occluder 14 x 12 mm was implanted. TEE showed a reduction of the leak to moderate severity. The procedure was complicated with a right femoral artery pseudo-aneurysm requiring surgical correction. Althought the residual leak persisted, the patient clinical status improved and the acute heart failure symptoms resolved. Accordingly, there was an important decrease of NT-proBNP to 719 pg/mL. After one year of follow-up the patient is in class II NYHA functional class.

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Conclusions: The treatment of choice for cardiac prosthetic paravalvular leakage is surgical replacement. Percutaneous closure is an alternative option in high surgical risk patients. Despite its frequent suboptimal results, it is an interesting rescue strategy in unstable patients.

Databases, registries and surveys

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MULTIPRAC non-interventional study of STEMI patients treated with primary angioplasty and upstream thienopyridines

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Purpose: With the change towards more intensive prehospital treatment including new oral Antiplatelet drugs, real-world data are warranted.

Objectives: The objective of this pan-European non-interventional study is to collect data on STEMI patients treated upstream with a thienopyridine loading dose (LD) either in the ambulance or in the Emergency department of a feeder hospital before or during transportation to a primary PCI (pPCI) center. The study is gathering detailed data on patients' characteristics, management, in-hospital and one year outcomes.

Methods: Around 30 pPCI centers with an established referral network and routine upstream thienopyridine treatment from about 10 European countries. Consecutive enrollment of STEMI patients treated with a thienopyridine LD immediately after STEMI diagnosis and prior to or during ambulance transport to a cathlab hospital for pPCI. Patient data captured from symptom onset through hospital discharge, with a 1 year follow-up for mortality.

Special focus in the statistical analysis on transportation times and delays across European countries (e. g. time from symptom onset to initial STEMI diagnosis, from initial STEMI diagnosis to Thienopyridine LD, from LD to admission to cathlab, from decision/start of transport to admission to cathlab, from LD to start of PCI, from arrival at cathlab hospital to discharge etc.) as well as on oral Antiplatelet drugs (e. g. change of therapy, time point of change, reasons for change of therapy).

Conclusion and perspective: As the data capture continues throughout 2012 and into early 2013 an updated data snapshot will be presented at ACC. Network and patient characteristics of approximately 1000 patients will be presented at the meeting.

While several other registries are ongoing that investigate all-comers in ACS, this will be the first registry to specifically capture the complex environment of patient management in the pre-hospital phase, with a focus on pre-hospital thienopyridine use.

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