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CLINICAL STUDY

# Urinary Tuberculosis: Ten Years' Experience

**Lutfullah Altintepe, M.D. and H. Zeki Tonbul, M.D.**
Nephrology Department, Meram Medical Faculty, University of Selcuk, Konya, Turkey

**Isa Ozbey, M.D.**
Urology Department, Medical Faculty, University of Ataturk, Erzurum, Turkey

**Ibrahim Guney, M.D.**
Nephrology Department, Meram Medical Faculty, University of Selcuk, Konya, Turkey

**A. Riza Odabas, M.D. and Ramazan Cetinkaya, M.D.**
Nephrology Department, Medical Faculty, University of Ataturk, Erzurum, Turkey

**Mehmet Mesut Piskin, M.D.**
Urology Department, Meram Medical Faculty, University of Selcuk, Konya, Turkey

**Yilmaz Selcuk, M.D.**
Nephrology Department, Medical Faculty, University of Ataturk, Erzurum, Turkey

In this study of 26 patients, clinical features diagnosed as urinary tuberculosis in our nephrology and urology clinics between 1993 and 2002 were investigated retrospectively. Fifteen patients (52%) were male, and mean age was 43.5 (18–71). Twenty percent of the patients were asymptomatic. Frequency-dysuria (46%), flank pain (33%), and macroscopic hematuria (12%) were presenting symptoms. Physical examination was not diagnostically helpful in most patients. Hematuria and/or pyuria were detected in 80% of the patients. Eleven patients had positive urine cultures of *Mycobacterium tuberculosis* (42%), and 7 patients had positive smears (25%). Definitive diagnosis of urinary tuberculosis was established microbiologically in 15 patients (58%) and histopathologically in 11 patients (42%). Tuberculin skin test was positive in 60% of the patients. Eight patients had an abnormal chest roentgenogram. Hydronephrosis (majority bilateral) in 11 patients (42%), contracted bladder in 9 patients (34.6%), and renal calcification in 6 patients (23%) were detected. Two patients also had genital tuberculosis (epididymoorchitis). Although only medical treatment was applied in 13 patients for 9 months, in the rest of the patients medical therapy plus surgical intervention was carried out. End-stage renal failure developed in one patient who died on hemodialysis. Renal functions had decreased moderately in two other patients. In conclusion, the diagnosis of urinary tuberculosis was able to be established after the obstructive complications and functional losses were developed in a fair number of cases. Surgical treatment was carried out in half the patients. Urinary tuberculosis should be taken into consideration because early diagnosis and treatment is very important for the presenting of irreversible sequelae.

**Keywords** renal tuberculosis, treatment, outcomes, clinical features, urogenital tuberculosis

## INTRODUCTION

Tuberculosis is still an important health problem in the world. The World Health Organization reported that each year 10 million people develop tuberculosis. At least 80% of these patients reside in developing countries.[1]

Tuberculosis bacilli may be seen in one or more of the organs of the genitourinary tract. Genitourinary tuberculosis usually results from ''slient bacillemia complating'' primary pulmonary tuberculosis.

Address correspondence to Lutfullah Altintepe, M.D., Meram Tıp Fakültesi, Selcuk Universitesi, Nefroloji Bilim Dalı, Meram, Konya 42090, Turkey; Fax: 0090-332-3244027; E-mail: laltintepe@yahoo.com



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About 10% of the new cases of tuberculosis reported annually are extrapulmonary tuberculosis, and 20% of these are genitourinary tuberculosis. However, in most cases, genitourinary tuberculosis remains undiagnosed or diagnosed at a later stage when renal function loss has already occurred due to inadequate investigation.[2]

In this study, we aim to report the clinical findings, diagnosis, and results of the treatment of 26 patients with urinary tuberculosis.

## MATERIALS AND METHODS

Between 1993 and 2002, diagnosis, clinical features, and medical treatment of 26 patients having urinary tuberculosis were investigated retrospectively.

Fifteen patients were male (58%), and 11 patients were female (42%); the mean age of all patients was 42±12 (ages ranging from 18 to 71 years).

Although 20% of the patients were asymptomatic, frequency-dysuria (46%), flank pain (33%), and macroscopic hematuria (12%) were presenting symptoms (Table 1). Hematuria and/or pyuria were detected in 87% of the patients.

Although many of the patients had a normal physical examination, there were nonspecific signs in some patients. Flank pain in 9 patients (33%), hypertension in 4 patients (15%), suprapubic pain in 3 patients (11%), lumbar fistula in 2 patients, painful puffiness in testis in 2 patients, and scrotal fistula in 1 patient were detected. Laboratory results of the patients were seen in Table 2.

Urine culture of 11 patients (42%) and smear tests of 7 patients (25%) were positive for *Mycobacterium*.

Definitive diagnosis of urinary tuberculosis was established microbiologically in 15 patients (58%) and histopathologically in 11 patients (42%). Hydronephrosis in 11 patients (42%), contracted bladder in 8 patients (33%), and renal calcification in 6 patients (25%) were detected. Genital tuberculosis was observed in 2 patients (Table 3).

In 13 patients, the medical treatment was carried out for 9 months by giving a combination of INH, rifampicin, and pyrazinamide. In addition to medical treatment, the rest of the patients received surgical intervention (Table 4). One patient developed end-stage renal failure and died on hemodialysis. In 2 patients, renal function was moderately decreased. In 1 patient, renal failure was developed due to renal tuberculosis. Another patient had moderate renal failure. Three patients died of other

***Table 1***
Main presenting symptoms of the patients

| Symptoms | *n* | % |
|---|---|---|
| Urinary symptoms (especially more than one) | | |
| - Dysuria and pollakiuria | 12 | 46 |
| - Lower back pain | 9 | 33 |
| - Lumber fistula | 2 | 8 |
| - Macroscopic hematuria | 4 | 12 |
| Genital signs (testicular pain, scrotal fistula) | 2 | 8 |
| Nonspecific symptoms | | |
| - Fever | 2 | 8 |
| - Loss of weight | 4 | 15 |
| Pulmonary symptoms (cough, hemoptysis) | 2 | 8 |
| No symptoms | 5 | 19 |

***Table 2***
Diagnostic features in 26 patients with urinary tuberculosis

| Features | *n* | % |
|---|---|---|
| Abnormality in routine urinary test | 21 | 80 |
| - Hematuria + pyuria | 12 | 46 |
| - Pyuria | 7 | 27 |
| - Hematuria | 4 | 15 |
| Positive tuberculin test | 18 | 69 |
| Positive urine culture (*M. tuberculosis*) | 11 | 42 |
| Urine positive ARB | 7 | 25 |
| Abnormal chest roentgenogram | 9 | 35 |
| - Active cavernous tuberculosis | 2 | |
| - Changes related to old tuberculosis | 7 | |
| Anemia | 4 | 12 |
| Azotemia | 4 | 12 |
| High sedimentation | 15 | 57 |
| Positive urine culture (mostly determined bacteriums) | 6 | 23 |

***Table 3***
Radiological findings

| | *n* | % |
|---|---|---|
| Abnormal radiologic features (DUSG, USG, IVP, RPG, VSU) | 19 | 73 |
| Hydronephrosis (due to ureteral stricture or VUR) | 11 | 42 |
| - Unilateral | 6 | |
| - Bilateral | 5 | |
| Contracted bladder | 9 | 34,6 |
| Function loss at one side | 9 | 34,6 |
| Renal calcification | 6 | 23 |

DUSG, direct urinary system graph; IVP, intravenous pyelogram; VSU, voiding cystourethrogram; USG, ultrasonography; RPG, retrograde pyelogram.

***Table 4***
Type of treatment

| Treatment | *n* | % |
|---|---|---|
| Only drug therapy | 13 | 50 |
| Medical + surgery therapy | 13 | 50 |
| - Unilateral nephrectomy | 8 | 30 |
| - Augmentation cystoplasty | 4 | 15 |
| - Ureteral stent | 1 | 4 |
| - Nephrostomy | 2 | 8 |
| - Drainage of psoas abscess | 1 | 4 |
| - Fistulectomy | 2 | 8 |
| - Orchiectomy | 2 | 8 |

reasons such as sepsis and myocardial infarction. The other patients have been stable during follow-up.

Retrograde pyelogram in the postoperation early period from 1 patient that used augmentation cystoplasty (sigmoidocystoplasty and bilateral ureterosigmoidostomy) because of contracted bladder, bilateral vesicoureteral reflux (VUR), and hydronephrosis due to tuberculosis was seen in Figure 1.

Increasing bladder capacity and improving VUR were seen in the late period cystography from the same patient in Figure 2.



***Figure 1.*** Retrograd pyelography of a patient who had augmentation cystoplasty.



***Figure 2.*** Postoperative cystography.

## DISCUSSION

Urinary tuberculosis is seen mostly in men and in the group of young to middle-age adults.[3] Fifty-two percent of our cases were male, and their mean age was 43.5 years. Although genital tuberculosis is usually accompanied by urinary tuberculosis in men, this condition is rare in women.[4] In our study, two patients had genital tuberculosis in addition to urinary tract tuberculosis.

Urine ARB is generally negative in the patients with urinary tuberculosis, and urine ARB is not reliable because of saprophytic mycobacteria. Urine cultures are of even greater diagnostic significance, but results are delayed.[3] Although urine ARB was seen in 25% of our patients, *Mycobacterium tuberculosis* reproduced in urine culture in 42% of our patients.

Clinically, clear renal tuberculosis is generally unilateral, and this disease appears approximately 10 to 20 years after the first infection. Renal tuberculosis progression is very slow, and renal lesions usually increase when the first clinical symptoms appear.[3,4] Unilateral or bilateral hydronephrosis in 11 patients (42%) was present at diagnosis in our series.

Simon et al. reported that 76% of the 41 patients with active urinary tuberculosis who were followed at the Massachusetts General Hospital from 1962 to 1974

applied with urinary symptoms (pollakiuria-dysuria 34%, hematuria 27%, flank pain 10%, pyuria 5%). Although 20% of patients did not have any symptoms, in most of the patients (78%), there were no abnormalities related to tuberculosis. The signs of extrarenal active tuberculosis were detected in only 5 patients (12%). The abnormal urine sediment (pyuria 46%, hematuria 12%, pyuria+hematuria 34%) was detected in 93% of the patients, and in most of the patients (90%), *M. tuberculosis* was isolated from urine specimen. IVP was detected to be abnormal in most of the patients (93%), but this was not out of the ordinary. Pulmonary graph was abnormal in 27 patients (66%), but lesion of active tuberculosis was determined in only 3 patients (7%). Azotemia was seen in only 5 patients. Eighteen patients (44%) were treated with both chemotherapy and surgery.[5]

In our study, the ratio of positive *M. tuberculosis* in urine (42%) was found to be lower than this study, and the necessity of surgical treatment was found to be a little higher than this study despite the study occurring about 25 years later. This condition is probably connected to late diagnosis.

In the other study that was reported by Shamma et al. from Syria, they found a high ratio in systemic symptoms (77%) and a low ratio in microbiological diagnosis (positive ARB 20%, positive urine culture 33%) in the 48 urinary tuberculosis patients that were followed at the Halep University Hospital between 1982 and 1987. Cystoscopy was made in half the patients, and it was found to be mostly abnormal (88%). Surgical treatment (mostly nephrectomy) was carried out in about half the patients (55%); in this study, this condition was associated with late diagnosis. Genital tuberculosis was determined in 6 of the patients (12%).[6]

In the study that was reported from Morocco between 1985 and 1995, 80 patients with urogenital tuberculosis were followed; these patients consisted of 50 males and 30 females with a mean age of 38 years (20–50). The diagnosis was confirmed by microbiology 60% and by histopathology 40%. Hydronephrosis in 36% of patients and contracted bladder in 17% of patients were detected, and surgical treatment (nephrectomy 50%) was required in 95% of patients.[7] The ratio of microbiological and histopathologic diagnosis that was reported in this study was similar to our results. However, the number of patients that received surgical treatment was higher than our results.

In the study that was reported from Spain, genitourinary tuberculosis was determined in 40% of 198 extrapulmonary tuberculosis patients. Hematuria+sterile pyuria was the most common urinary finding similar to our study, positive ARB in urine was found in half the patients, and IVP was found to be abnormal in 95% of the patients.[8]

There were urinary tract symptoms (pollakiuria, dysuria, and hematuria) in half the patients. Urine analysis was abnormal in most of the patients. However, positive urine cultures were low; this condition may relate to only taking one culture in most of the patients or to increasing obstructive complication.

Leung et al. retrospectively reviewed 22 renal tuberculosis cases from 1991 to 2001. They showed that 68% of patients had renal calcification, 59% had dilated calyces, 55% had lung involvement, and 41% had autonephrectomy with roentgenography. They recommended routine plain film roentgenography, including chest roentgenography and kidney, ureter, and bladder or abdominal roentgenography, followed by intravenous urography or computed tomography as investigative tools for renal tuberculosis.[9] However, in our study, we found that 23% of patients had renal calcification, 42% had hydronephrosis, and 35% had abnormal chest roentgenography (active cavernous tuberculosis and the changes related to old tuberculosis).

Nephrectomy was suggested for the unilateral nonfunctioning kidney due to tuberculosis after the 4- to 6-week comprehensive chemotherapy. Complications such as draining flank sinuses, abscesses, and hypertension were frequently seen in nonnephrectomy patients.[10] Nephrectomy was carried out in 29% of the patients (7 patients), and diagnosis of renal tuberculosis was made later by histopathology.

Reconstructive surgery was also carried out successfully for treatment of complications.[11] Bladder capacity was increased using augmentation cystoplasty with ileal and sigmoid patches in our 4 patients (their bladder capacity decreased excessively).

In conclusion, the diagnosis of urinary tuberculosis was able to be established after the obstructive complications and functional losses were developed in a fair number of cases. Surgical treatment was carried out in half the patients. Urinary tuberculosis should be taken into consideration because early diagnosis and treatment is very important for the presenting of irreversible sequelae.

## REFERENCES

1. Gow JG. Genitourinary tuberculosis. In: Walsh PC, Retik AB, Vaughan ED, Wein AJ, eds. *Campbell's Urology*. Philadelphia, Pa: WB Saunders, 1998;807-836.
2. Rubin RH, Cotran RS, Tolkoff-Rubin NE. Urinary

tract infection, pyelonephritis and reflux nephropathy. In: Brenner BM, ed. *The Kidney*. Philadelphia, Pa: WB Saunders, 1996;1638-1639.
3. Corrigliano BE, Leedom JM. Renal tuberculosis. In: Massry SG, Glassock RJ, eds. *Textbook Nephrology*. Baltimore, Md: Williams & Wilkins, 1995;781-786.
4. Tanagho EA. Specific infections of the genitourinary tract. In: Tanagho EA, Mc Aninch JW, eds. *Smith's General Urology*. Cal: Appleton & Lange, 1992;240-246.
5. Simon HB, Weinstein AJ, Pasternak MS, Swarts MN, Kunz LJ. Genitourinary tuberculosis. *Am J Med.* 1977;63:410-420.
6. Shammaa MZ, Hadidy S, Al-Asfari R, Siragel-Dın MN. Urinary tuberculosis: experience of a teaching hospital in Syria. *Int Urol Nephrol.* 1992;24(5):471-480.
7. Benchekroun A, Lachkar A, Soumana A, et al. Urogenital tuberculosis: 80 cases. *Ann Urol.* 1998; 32(2):88-94.
8. Garcia-Rodriguez JA, Garcia Sanchez JE, Munoz Bellido JL, et al. Genitourinary tuberculosis in Spain: review of 81 cases. *Clin Infect Dis.* 1994; 18(4):557-561.
9. Leung TK, Lu CT, Ling CM, et al. Imaging of renal tuberculosis in eastern Taiwan: correlation with clinical course and different communites. *Kaohsiung J Med Sci.* 2003;19(6):271-277.
10. Flechner SM, Gow JG. Role of nephrectomy in the treatment of non-functioning or very poorly functioning unilateral tuberculous kidney. *J Urol.* 1980; 123(6):822-825.
11. Carl P, Stark L. Indications for surgical management of genitourinary tuberculosis. *World J Surg.* 1997; 21(5):505-510.