**CASE REPORT**

**Case Report on renal tuberculosis-can it be diagnosed early?**

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**ABSTRACT**

Tuberculosis of the genitourinary tract is one of the late reactivation or complications of pulmonary tuberculosis which is mostly prevalent in young adults and middle-aged people. We here report a case of Renal Tuberculosis presented to us with recurrent urinary tract infection with sterile pyuria suspected to have Renal TB at the end of 6 months. Her urine for AFB culture and biopsy turned out to be positive and was put on AntiTB treatment. We had to subject patient for Right sided nephrectomy due to extensive renal involvement. Patient was given CAT-II Anti TB treatment as she had consumed CAT-I in 1996 for Pulmonary Tuberculosis and was declared cured at end of 8 months. But after one and a half year patient had involvement of left kidney along with Left ureter and bladder and needed to be subjected for augmentation cystoplasty with ureteric reimplantation. AntiTB treatment was restarted. Patients urine sample and biopsy were sensitive to first line drugs. The diagnosis of this case was delayed because of the general impression that renal tuberculosis is rare. A high index of clinical suspicion at all times with combined investigative tools especially CT urography and AFB culture permits accurate diagnosis and prompt treatment of most cases and prevents them from being complicated.

**Keywords:** Renal tuberculosis, Urine culture for AFB, CT Urography, Antitubercular treatment, Augmentation cystoplasty

**INTRODUCTION**

According to CDC (Center for Disease Control) report, genitourinary tuberculosis comprises 12% to 18% of extra pulmonary tuberculosis. Out of these about 25% are known to have pulmonary TB at some stage. Due to the diverse and atypical clinical manifestations of urinary TB, the disease is easily misdiagnosed and late diagnosed. Also, prevalence of extra pulmonary TB is increasing in the recent years especially in immunosuppressed patients such as those with AIDS. Symptoms typically include dysuria, frequency and hematuria, which may be macroscopic or microscopic. Back, flank and abdominal pain may also be present. Following pulmonary primary infection there is a haematogenous phase where the glomerular and peritubular capillary bed of the kidneys become seeded with M tuberculosis and results in cavitation and some times autonephrectom2,3. Diagnosis of acute renal TB rests on three first-morning-void urine samples. An acid-fast stain and mycobacterial culture performed on urine or renal biopsy are the backbone for diagnosis. The results may also be supported by imaging findings. A plain abdominal X-ray may show enlargement of a kidney and calcification of the kidneys and lower urinary tract 3. Computed tomography urography and intravenous pyelography are of great help to detect renal TB, any extra-renal spread and the functioning of kidney. The management of acute renal TB requires an intensive course of antituberculous drug therapy and attention of a urologist if the case
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needs some type of surgical intervention in form of nephrectomy, ureteroplasty or augmentation cystoplasty.2.

CASE REPORT

A 44-year-old female was referred to us from a private practitioner for 6 months history of recurrent urinary tract infections treated with multiple courses of antibiotics in 2009. She had history of fever, burning micturition, dysuria, urinary frequency, suprapubic pain, and bloody urine. She denied night sweats, flank or abdominal pain, cough, hemoptysis or weight loss. Physical examination demonstrated a suprapubic tenderness. Her urine report was suggestive of sterile pyuria and hematuria. Her blood pressure was normal. Her renal functions, other routine investigations and electrolytes were normal. Her HIV report was negative. She had a positive Mantoux test. Her chest radiograph was suggestive of Right pleural thickening. Patient was subjected for CT urography after taking an opinion of urologist which was suggestive of irregular right renal outline with dilated calyx and cavities with abscess formation in medulla. It was also suggestive of diffuse thickening of pelvicalyceal system and upper 2/3rd of the ureter causing luminal obliteration which was pointing towards chronic infection. The left kidney was unremarkable. Looking to the poorly functioning kidney on the basis of urography report, the decision of laparoscopic nephrectomy was taken. The biopsy of the renal and ureteric tissue was sent for histopathology which was suggestive of changes of pyelonephritis and culture for AFB which turned out to be positive for mycobacterium Tuberculosis. As patient had consumed AKT for 6 months for pulmonary TB in 1996, was put on CAT-2 under RNTCP and was declared cured on basis of negative culture reports for AFB of urine sample and improvement in symptoms. After duration of one year, in January-2010, patient presented with complains of urgency and occasional incontinence. Patient was investigated in form of urine and renal function test. Urine was suggestive of pus cells and was given antibiotics. At that time, renal function test was normal and patient got cured with antibiotics. In August 2012, patient again presented with urgency, painless hematuria and nocturnal enuresis.

Figure 1: Pre-op CTurography: irregular right renal outline with dilated calyx and cavities with abscess formation in medulla.

Figure 2: X-ray Chest: showing right pleural thickening

Immediately CT urography was planned which was suggestive of solitary enlarged left kidney with moderate to severe left sided hydroureronephrosis up to its distal end at vesicoureteric junction with stricture formation.
It was also suggestive of irregular shape bladder with reduced lumen capacity and severe eccentric wall thickening as a indicator of involvement of bladder with tuberculosis. X-Ray chest was same as previous.

**Figure 3:** Post nephrectomy CT film august 2012: Neobladder formation with lobulated margin, compensatory hypertrophy of left kidney with mild hydronephrosis and hydroureter

Her renal function was normal. Patient was subjected for left sided Percutaneous Nephrostomy (PCN) and cystoscopy. On cystoscopy, findings of CT were confirmed. Patient was discharged with Percutaneous nephrostomy and urine was sent for AFB culture and sensitivity for first line drugs. As patient was sensitive to all first line drugs, antitubercular treatment was started in form of CAT- II. Streptomycin was substituted with ofloxacin (400 mg BD) taking into consideration the presence of single kidney. After two months of Anti TB treatment patient was posted for augmentation cystoplasty with left ureteric reimplantation. Patient was also taught for self catheter training. Anti-TB treatment was extended to total duration of 1 year and stopped after negative urine AFB culture.

**DISCUSSION**

Although rare, clinicians still need to consider a diagnosis of renal TB in patients with previous TB exposure and recurrent Urinary tract infection with sterile pyuria not responding to routine antibiotics. Our patient’s diagnosis was also delayed up to 6 months. The common manifestations of TB are fever, weight loss and night sweats. However, in urinary TB these are unusual. The clinical manifestations of urinary TB are nonspecific, including back, flank and suprapubic pain, hematuria, increased urinary frequency and nocturia. Renal TB occurs as a result of haematogenous spread following a primary infection in the lung. At the time of presentation, there is frequently no evidence of active pulmonary disease. Most patients with renal TB have chest radiographs that are either normal or show sequel of healed primary infection. Chest x-ray abnormalities are found in 52 to 75% 4. However, there may be clinical or radiographic evidence of past infection, suggesting renal involvement has reactivated after a period of dormancy. GU TB is often suspected with the finding of pyuria in the absence of isolation of a causative microbiologic organism from the urine or
biopsy material. Culture of 3 morning urine specimens for mycobacteria establishes the diagnosis in 80 to 90% of cases. Urine culture is traditionally used for diagnosis because acid-fast bacilli (AFB) smears are often negative. Compared with culture sensitivity, AFB staining is 52%, specificity is 96% . The sensitivity of urine culture is as 80-90% but it takes10 -14 days for report. With a renal abnormality and negative mycobacterial urine cultures, cytologic studies, and fine-needle biopsy may be diagnostic. Laparoscopic and cystoscopic examination often aids in the diagnosis. In a study performed in India in 42 patients with a clinical suspicion of GU TB, isolation of Mtb by urine AFB culture, bladder biopsy, and urinary PCR for Mtb was 37.14%, 45.83%, and 94.29%, respectively.6 The purified protein derivative test is a useful adjunctive test and is positive in 95% 7. Most patients with renal TB have chest radiographs that are either normal or show sequelae of healed primary infection. Chest x-ray abnormalities are found in 52 to 75% (7). Patients are often unaware of their initial pulmonary infection. Our patient had also finding of pleural blunting in X-ray chest. Abdominal Plain films may reveal calcification, a mass, or atrophy. IVP is the sensitive image modality in the early stages, where subtle irregularity of calyceal contour can be seen. With progressive illness, IVP may demonstrate areas of cavitation, which communicate with the collecting system, parenchymal necrosis, or strictures that are commonly multiple (producing a "beaded" appearance of the ureter or a rigid, short, "pipestem" ureter)7. In more advanced disease, aside from calyceal distortion and ureteric strictures, there may be bladder fibrosis, hydronephrosis, and autonephrectomy. Ultrasound may reveal calyceal dilatation and more overt evidence of obstruction. CT is more sensitive for calcifications than urography and can image extrarenal extension of disease. CT urography is regarded as the correct imaging technique for upper urinary tract assessment, especially renal TB. Multislice CT has made it possible to collect thin collimated data of the entire urinary tract during a single short breath hold. It provides an accurate evaluation of the amount of residual functioning parenchyma and extrarenal spread in renal TB. Early manifestation of renal TB is seen on CT Urography includes calyceal erosion (Moth eaten calyx) with progression towards medullary or papillary necrosis8,9. The CT characteristics of active ureteral involvement are typically seen as regions of marked periureteric thickening or fibrosis10. The differential diagnosis includes chronic pyelonephritis, papillary necrosis, medullary sponge kidney, caliceal diverticulum, renal cell carcinoma, transitional cell carcinoma and xanthogranulomatous pyelonephritis [2]. The management consists of Anti TB treatment as of in other extrapulmonary TB cases under RNTCP according to the sensitivity pattern. The operative decision of nephrectomy should be made in consultation with a nephrologistin cases of non functioning kidney especially when there is uncontrolled hypertension.5 It is also possible that unilateral surgical tuberculosis, when not operated for in time, may spread to the bladder by way of the ureter, from here again an ascending infection via the other ureter to the healthy kidney leading to a secondary bilateral renal tuberculosis. Nephrostomy and Double J stenting are other modalities of treatment. The ureter should be reimplanted into the bladder as soon as possible. If the bladdertuberculosis still exists the ureter can be reimplanted into skin or the rectum or to perform a nephrostomy.

REFERENCES