

Primary Urogenital Tuberculous Infection with Nephrolithiasis and Urosepsis

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Abstract

Tuberculosis (TB) is a multiorgan disease with varied clinical presentations. Extrapulmonary tuberculosis is found in 15-20% immunocompetent patients. Urogenital tuberculosis is the second most common form of extrapulmonary TB in countries with high incidence of TB. We present a case of a 42-year-old female who developed acute kidney injury due to urinary tract infection but later we found tuberculosis lesion in her urinary bladder. Patient already treated with anti tuberculosis drugs regimen, but we could not evaluate the treatment response, because patient died due to her condition related with urosepsis. Tuberculosis urogenital is a rare condition and classical clinical symptoms of urinary tract infection may delayed the diagnosis.

Key word : urogenital tuberculosis, acute kidney injury

Infeksi Primer Tuberkulosis Urogenital dengan Nefrolitiasis dan Urosepsis

Abstrak

Tuberkulosis (TB) adalah penyakit multiorgan dengan gambaran klinis bervariasi. Tuberkulosis ekstra paru terjadi pada 15–20% pasien yang imunokompeten. Tuberkulosis urogenital adalah bentuk terbanyak kedua tuberkulosis esktrparu terutama di daerah dengan epidemiologi tinggi. Pada tulisan ini dilaporkan kasus seorang perempuan berumur 42 tahun yang dirawat dengan gangguan ginjal akut karena infeksi saluran kemih. Akan tetapi pada pemeriksaan selanjutnya ditemukan gambaran lesi tuberkulosis di kandung kemih. Pasien telah mendapat terapi obat anti tuberkulosis (OAT), namun responsnya tidak dapat dinilai karena pasien meninggal akibat urosepsis. Angka kejadian yang jarang dan gejala klasik infeksi saluran kemih menyebabkan keterlambatan diagnosis tuberkulosis urogenital.

Kata Kunci : tuberkulosis urogenital, gangguan ginjal akut

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Introduction

Tuberculosis (TB) can be with or without pulmonary involvement. Urogenital tuberculosis is the most common clinical manifestation of extra-pulmonary TB cases after lymphadenopathy, with an average incidence of approximately 27% (14-41%).^{1,2} Urogenital tuberculosis appears in 3-4% of patients with pulmonary TB. Active lesions of urogenital tuberculosis usually occurs 5-20 years after the discovery of active lesions in the lungs which spread via blood system in kidney.³ *Mycobacterium tuberculosis* (Mtb) hematogenically reach the urinary tract through the primary focus in the lungs or intestines, and it sometimes spread as tertiary lesions of bones. In case of renal pelvicalyceal system is infected, TB bacilli reaches the bladder through ureters and form granulomatous lesions that can grow into lesions such as tumors or ulcers. If undetected and treated, this will cause clinical picture of obstructive uropathy.

History of pulmonary TB or clinical picture of pulmonary tuberculosis infection facilitates clinical approach to urogenital tuberculosis. Recurrent urinary tract infections with existing leukocyteuria, and without the growth of pathogenic bacteria in the urine culture suspicious the diagnosis of urogenital tuberculosis. The diagnosis is confirmed when acid-fast bacilli is found in urine culture, polymerase chain reaction (PCR) -MTb, or histopatology.⁴

Case

A 42 year old woman with intermittent fever for one month with a persistent supra pubic pain, urinary disorders, and colored cloudy urine was admitted to our hospital. The patient had a history of treatment with the same clinical symptoms and was always diagnosed as a urinary

tract infection. The patient had a history of pulmonary tuberculosis treatment with an adequate anti-tuberculosis drug therapy 10 years ago. Physical examination showed that the patient was conscious, with blood pressure 100/60 mm Hg, pulse rate 104 x / min, and temperature 38.5°C; also heart and lungs showed no abnormality. Abdominal examination showed tenderness in the suprapubic area. Results of laboratory examinations showed erythrocyte sedimentation rate (ESR) 110 mm/h, hemoglobin (Hb) 8.7 g /dL (12-14 g/dL), leucocytes 13,000/uL (5,000-10,000/uL), blood urea 117 mg/dL (15-45 mg / dL), serum creatinine 2.85 mg / dL (0.60 to 0.90 mg/dL). Urinalysis showed a turbid yellow color urine, blood +3, leukocyte esterase (+), protein+2, leukocytes 10-15, red blood cells: 30-35. Microbiology examinations, showed acid-fast bacilli positive results. Chest X-ray examination found no sign of a specific process; plain abdominal abnormality was not found; ultrasonography (USG) abdomen found thickening of the bladder, hydronephrosis of right kidney and ascites. On abdominal *CT scan* with contrast, enlarging right kidney was found, and small stones appear on the lower pole of the right kidney with widening calix system and renal pelvis. (Figure 1-3).

Patient was planned to receive obstructive decompression and to repair kidney function with uretro-cystoscopy and lithotripsy. On uretro-cystoscopy a hyperemic bladder was recognized, a wide ulcers full of cheese-like masses (caseous necrosis), and the opening of ureter was not visible due to caseous necrosis (Figure 4). For this situation, biopsy without lithotripsy was conducted and acid fast bacilli was demonstrated (Figure 5). Acid-fast examination found positive from the specimen.

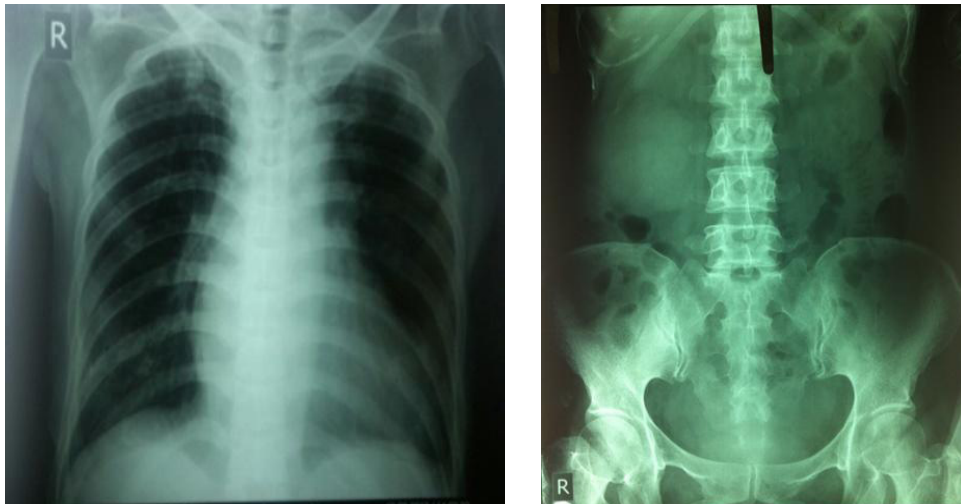


Figure 1. Chest X-ray in normal frame, specific lesion is not found (A); Abnormalities is not found in abdominal plain image (B).

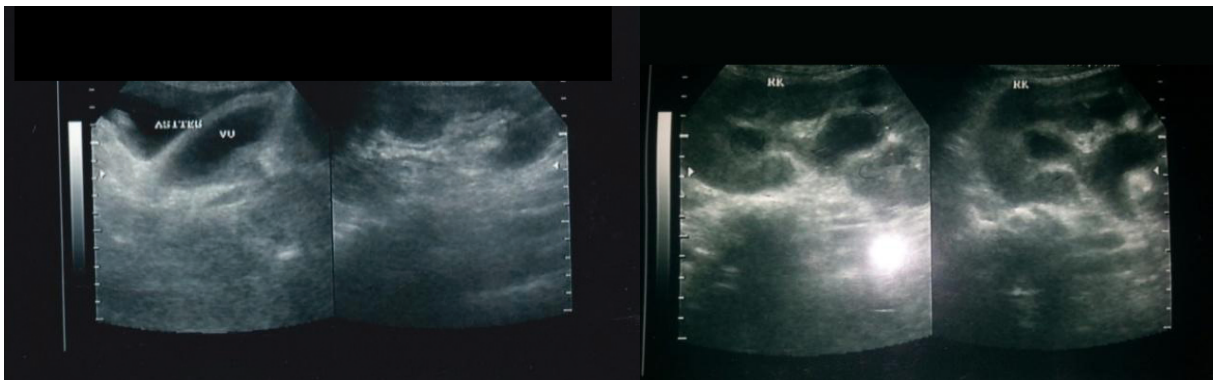


Figure 2. Abdominal USG, showed thickening of bladder walls accompanied with ascites (A) ; and mild hydronephrosis in right kidney (B).

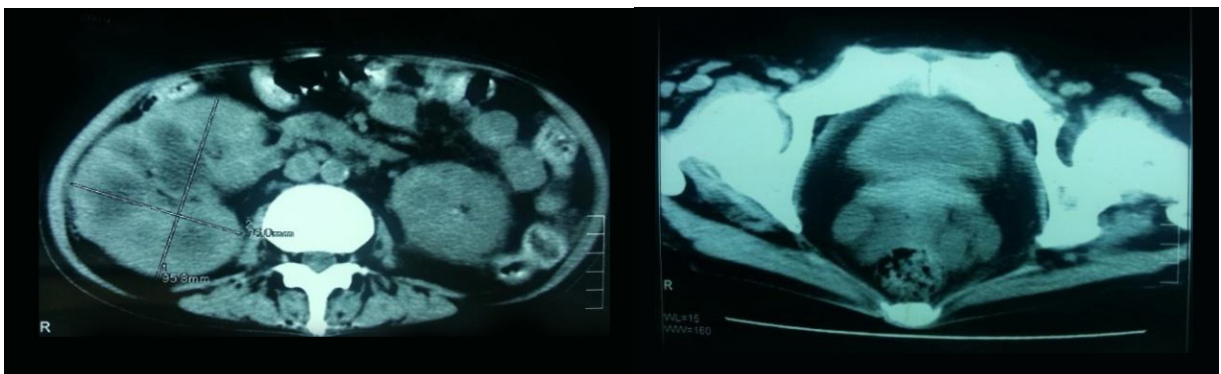


Figure 3. Abdominal CT scan with contrast: enlarging right kidney, with widening renal pelvicalyceal system, a small stone is visible in low pole (A) ; and thickening of bladder wall (B)

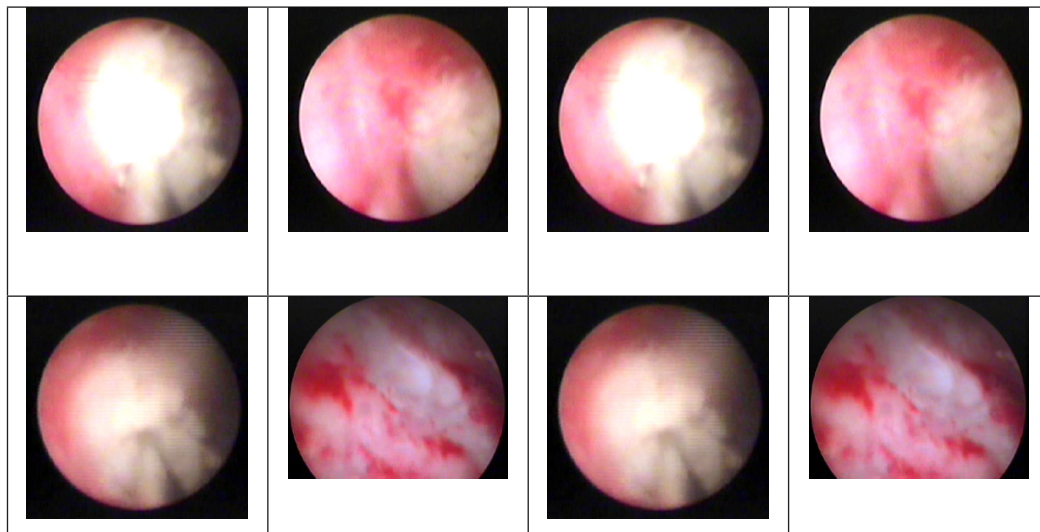


Figure 4. Cystoscopy showed ulcer like lesions and a wide caseous necrosis in bladder mucus.

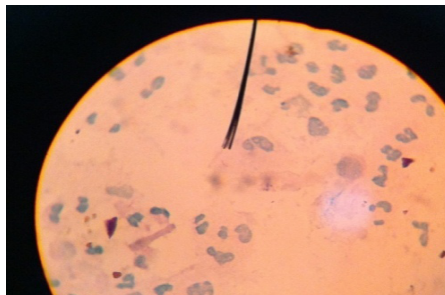


Figure 5. Acid-fast bacilli was demonstrated in urine sediment (see arrow).

Based on clinical and microbiological findings, the diagnosis of urogenital-tuberculosis and nephrolithiasis accompanied by hydronephrosis of the right kidney was established. Patients was on combination therapy with antibiotics and anti-TB drugs sefoperazon (ATD), isoniazid (5 mg/kg), rifampicin (10 mg/kg), ethambutol (20 mg/kg), and pyrazinamide (20 mg/kg).

During treatment, medication did not have a good response and the patient experienced clinical worsening, continuous high fever, tachycardia, loss of consciousness and seizures. The patient died of severe urosepsis and showing signs of meningitis.

Discussion

Urogenital tuberculosis is diagnosed based on clinical manifestations, renal and urinary tract ultrasound, and the finding of acid-fast bacilli.⁴ Urogenital TB should also be suspected in persistent cystitis that failed antibiotics treatment and accompanied by recurrent hematuria.¹ In some cases the diagnosis of tuberculosis was made in the urogenital surgery or biopsy post mortem.⁵ Patients complained about suprapubic pain, cloudy urine and fever was occurred for more than one month. Abdominal ultrasound and CT scan of the abdomen obtained right

hydronephrosis and bladder wall thickening. Ultrasound images in these patients is in accordance with the description of urogenital tuberculosis. Examination of urine showed that acid-fast bacilli was positive, confirming the diagnosis of urogenital tuberculosis.

In bladder TB, hyperemic lesions, ulceration of the urethral meatus, tubercle formation and fibrosis of the bladder wall are found.⁶ Vijayaragavan *et al.*,⁷ explained that ultrasound image of the urogenital TB showed irregular bladder wall thickening, calcification, stenosis of the calix, hydronephrosis, ulceration. In addition vesico-ureteric reflux also found. Ultrasound examination cannot distinguish the type of thickening of the bladder, whether it is benign or malignant, but this can be solved by cystoscopy examination and biopsy.⁸ On the examination of bladder using uretro-cystoscopy, hyperemic image, ulcer like lesions, extensive cheese-like appearance which covers the opening of ureter that caused unsuccessful dilatation of ureter. Through bladder biopsy an image of granulomatous inflammation, caseous necrosis, fibrosis, which ultimately led to the contraction of the bladder that fit the description of urinary tract tuberculosis were found.⁹

Acid-fast bacilli examination of the urine often shows negative results. When compared with culture the acid fast bacilli examination has sensitivity of 52% and 96% specificity.¹⁰ Culture is the gold standard in the diagnosis of urogenital TB, but it takes 6-8 weeks to get the results.¹¹ Usually polymerase chain reaction (PCR) is a screening method for TB infection, but for urogenital TB, the finding of acid fast bacilli confirmed the diagnosis.^{12,13} Urine of patients showed positive results which illustrate urogenital TB, eventhough urine culture for acid-fast bacilli was not conducted because it is time consuming

Diagnosis of urogenital TB is difficult due to its atypical clinical manifestations.

Therefore the history of previous TB infection is important. Urogenital TB usually occurs 5-20 years after active lung lesions that spread through circulation to kidneys.³ Our patient was diagnosed as pulmonary TB and completed anti tuberculous therapy 10 years ago. Chances are, there is a relationship between pulmonary TB and the appearance of urogenital TB. Complaints associated with recurrent urinary tract infections and not responding to antibiotics treatment are the keys to the diagnosis of urogenital TB.

Anti tuberculous drug (ATD) is the primary therapy for patients for urogenital TB.⁴ Our patient received ATD therapy, but therapeutic response could not be assessed because the patient died from urosepsis. Urosepsis is a state of a high fever, loss of consciousness, tachycardia, followed by severe sepsis with organ dysfunction. Delay in decompression of hydronephrotic kidney followed by drainage will increase patient morbidity and mortality. Urosepsis occurs as one of the complications of urogenital tuberculosis and can causes death.

Conclusion

In recurrent urinary tract infections with an overview of settled painless hematuria, and pyuria without bacterial pathogens, a possibility of urogenital TB must be put into consideration. In patients with suspected urosepsis, obstructive sepsis possibility has to be taken care of to avoid sepsis. Delay on drainage will increase morbidity and mortality.

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