

CASE REPORTS

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An interesting case of vesical fistula complicating urogenital tuberculosis

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Abstract

Background: The genitourinary tract is one of the commonest regions that can be affected by extrapulmonary tuberculosis where the diagnosis can be quite difficult. A high index of suspicion and an awareness of the atypical clinical manifestations of urogenital tuberculosis (UGTB) are important, especially in patients from regions where tuberculosis continues to be a major public health problem.

Case presentation: Herein, we report a 33-year-old male who presented with a non-healing fistula at the site of suprapubic catheter following an emergency repair of traumatic bladder rupture. Further evaluation revealed a scarred, small capacity bladder with urinary fistulae along with a poorly functioning kidney which was suspicious of a tuberculous etiology. Urinary isolation of *Mycobacterium tuberculosis* and a positive bladder biopsy confirmed our suspicions that the findings were indeed part of the spectrum of UGTB. The patient was started on anti-tubercular chemotherapy and underwent a nephrectomy along with an ileal conduit and is doing well at 1-year follow-up.

Conclusion: To conclude, urogenital tuberculosis always has to be kept in mind especially when dealing with patients with non-healing urinary fistula, especially in endemic countries. A high index of suspicion along with careful and methodical workup of patients with atypical complications following common surgeries can lead to identification of this morbid condition and thereby avoid mismanagement and progression to chronic kidney disease.

Keywords: Urogenital tuberculosis, Diagnosis, Bladder rupture, Trauma, Fistula

1 Background

The genitourinary tract is one of the regions that can be affected by extrapulmonary tuberculosis where the diagnosis can be quite difficult [1, 2]. A high index of suspicion and an awareness of the atypical clinical manifestations of urogenital tuberculosis (UGTB) are important, especially in patients from regions where tuberculosis continues to be a major public health problem [3–5]. Herein, we report a case of post-traumatic, scarred, small capacity bladder with non-healing suprapubic fistula who had a history of bladder perforation following trivial trauma for which an emergency laparotomy with bladder repair was done. However, on

evaluation he was suspected clinically to be part of the spectrum of UGTB which was missed at the time of emergency management of bladder rupture.

2 Case presentation

A 33-year-old male presented to the urology department with increased frequency of urination and dysuria for the past 3 years. He belonged to a poor socioeconomic background and had no prior BCG vaccination and no history of pulmonary tuberculosis in him or his family members. He had occasional episodes of fever with night sweats and no significant weight loss. He had a history of emergency laparotomy following a fall, 1 year back during which bladder rupture was diagnosed and repaired. The intraoperative details regarding his previous surgery were not available. He could not void after surgery for which the catheter was replaced. However, his suprapubic catheter (SPC) site

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failed to heal and continued to leak urine. On physical examination, he had a unhealthy lower midline scar with a large incisional hernia with a leaking SPC site. Genital examination revealed an enlarged nodular left epididymis. His serum creatinine was 2.1 mg/dl (reference range 0.6–1.5 mg/dl) with rest of baseline investigations including chest X-ray being normal. Initial ultrasound imaging showed a bilateral hydronephrosis (right > left) with a small capacity bladder. Cross-sectional imaging using a non-contrast computed tomography showed a grossly hydronephrotic right kidney with multiple dilated calyces, a small contracted renal

pelvis and a diffusely thickened ureter along with mild left hydronephrosis with no identifiable bladder (Fig. 1a, b). Renal scintigraphy by an ethylene cysteine (EC) scan showed no excretion from the right kidney. A micturition cystourethrogram (MCUG) was done which revealed a small capacity bladder with multiple fistulous tracts leading to the abdominal wall along with a left grade III reflux and a dilated prostatic fossa with intravasation into the left seminal vesical (Fig. 2a, b). A cystourethroscopy showed an urethrocutaneous fistula at proximal penile level with dilated proximal urethra with no verumontanum being made out and distorted

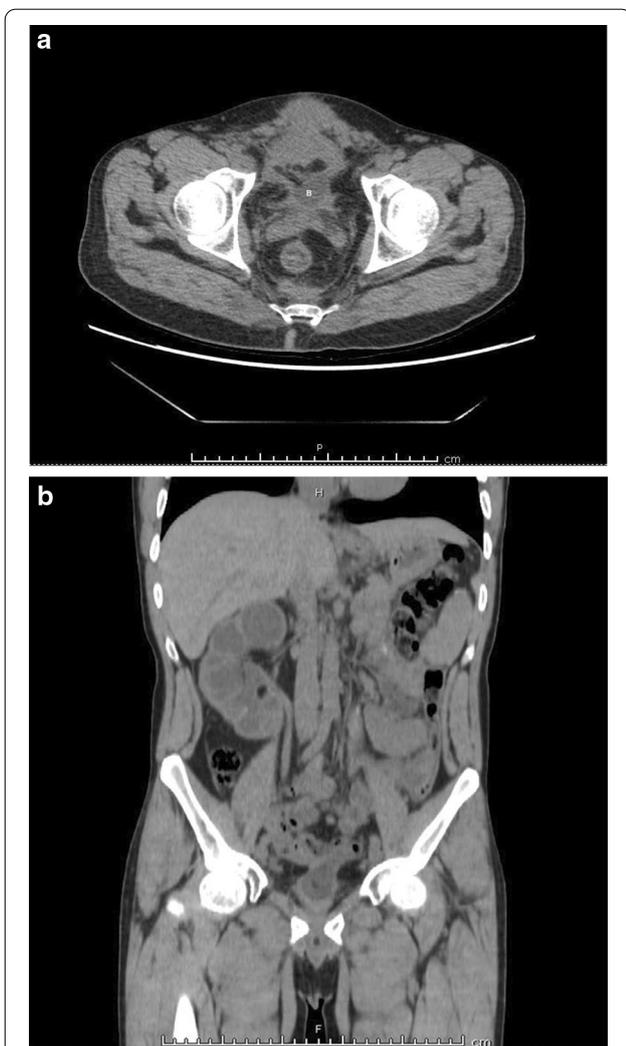


Fig. 1 Non-contrast computed tomography images. **a** Axial cut showing the shrunken small bladder filled by the Foleys balloon. **b** Coronal cut showing the grossly hydronephrotic right kidney with multiple dilated calyces due to multiple infundibular stenosis and small shrunken pelvis

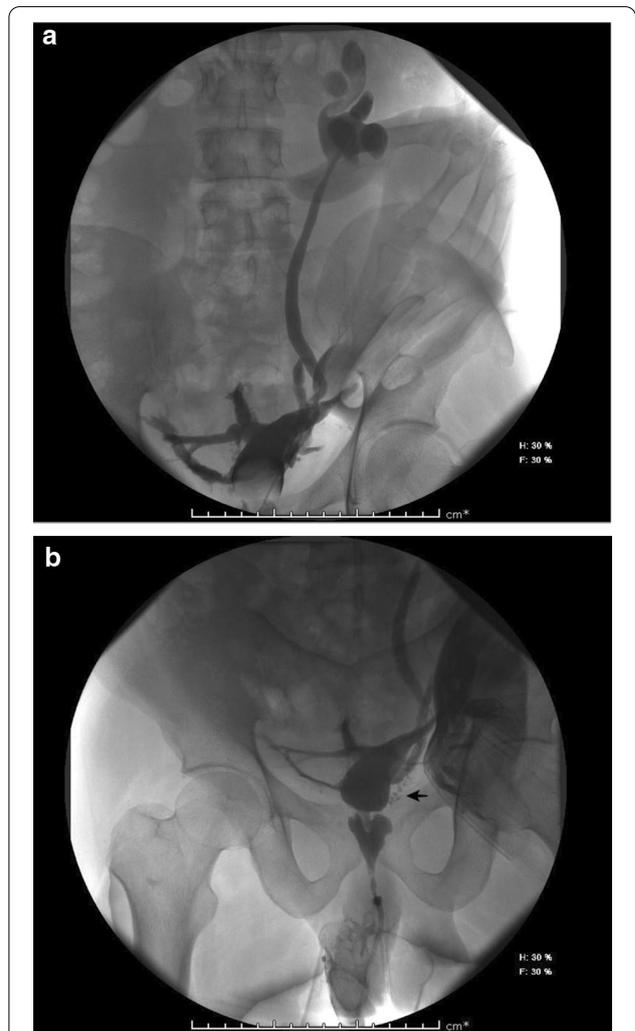


Fig. 2 MCUG images. **a** Filling phase showing the distorted small bladder with multiple sinus tracts leading to the abdomen with grade III reflux on left side. **b** Voiding phase showing the dilated distorted posterior urethra with intravasation into the left seminal vesical (shown by black arrow) and leak from urethrocutaneous fistula (shown by white arrow)

bladder neck. Bladder capacity was small with multiple fistulous tract openings visible, though the ureteric orifices could not be made out. Based on the clinical and imaging findings, tuberculosis etiology was suspected. Urinary smear examination of three consecutive overnight collected samples showed acid alcohol resistant bacilli which was further confirmed by culture as *Mycobacterium tuberculosis*. Further, multiple random bladder biopsies were taken during cystoscopy which on histopathology showed epithelioid cell granuloma with caseating necrosis confirming a tuberculosis etiology. He was started on multi-drug anti-tubercular therapy (ATT) regimen which included isoniazid, rifampicin, ethambutol and pyrazinamide for 2 months with continuation of the former two drugs for another 4 months. After starting ATT, he underwent right-sided nephrectomy followed by ileal conduit diversion. At 1-year follow-up, the patient is doing well with stable creatinine of 1.65 mg/dl (reference range 0.6–1.5 mg/dl). A timeline of the patients medial history and course of care is presented in Table 1.

3 Discussion

Urogenital TB (UGTB) has been inconsistently reported to account for 20–73% of all cases of extrapulmonary TB in the general population [1]. It is considered a severe form of extrapulmonary disease. UGTB occurs most frequently in the kidney (61%), ureter (19%), and urinary bladder (16%). Bladder TB occurs invariably secondary to TB of the kidney [2]. The source is usually from small granulomas in the kidney, which shed bacteria intermittently. Large TB lesions in the kidney can also rupture and provide a period of prolonged bacteriuria. The mycobacteria are then washed along the ureter with the urine, to the bladder. The earliest form of bladder infection starts around one or both ureteral orifices, which then turn erythematous, inflamed, and oedematous. With prolonged inflammation, there will be bladder exudates, ulcerations, fibrosis, and contracture of the bladder wall. This will lead to small, contracted, irreparably damaged bladders with intolerable frequency, pain, urgency, and hematuria [1, 2]. Bladder TB can lead to bladder perforation which can happen following trivial trauma like in our case or sometimes even after diagnostic procedures like MCUG. Due to rarity of such an emergency presentation, the diagnosis can often be missed during the management of bladder perforation unless the surgeon is well versed with the clinical picture of UGTB. Chronic non-healing fistulae along the urinary tract are another common presentation of tuberculosis which is seen in

endemic countries and was also seen in our index patient [4, 5].

For a definite diagnosis, most patients would require demonstration of tubercle bacilli in urine by smear or more definitely, by a positive culture detection from early morning urine samples. Microscopy with acid alcohol resistant Ziehl–Neelsen staining is hampered by its low sensitivity and is not very reliable, because of the possible contamination with atypical mycobacteria, which are also acid alcohol resistant [2]. The biological activity of TB can only be assessed by cultivating mycobacteria. However, the best confirmation of diagnosis will be by histological demonstration in biopsy specimens. In our patient, along with the positive urine smear, histopathological findings of chronic granulomatous inflammation with caseous necrosis and Langhans cells were highly suggestive of TB. A high index of suspicion is essential for early diagnosis and early commencement of anti-tubercular therapy as any surgical reconstruction should be ideally under ATT cover so as to promote proper healing of the inflammation and avoid morbid complications like non-healing fistulas like that seen in our index patient.

4 Conclusion

In conclusion, possibility of urinary tuberculosis though remote should be kept in mind in cases of patients giving a history of bladder perforation following trivial trauma especially in endemic countries and a workup for tuberculous should be a part of evaluation, so that early ATT can be started to avoid sequelae.

5 Patient perspective

I am a very active person and doing my day-to-day activities very comfortably. But prior coming to Sri Sathya Sai institute of Higher Medical Sciences (SSSI-HMS), I used to experience increased frequency of urine along with urinary leakage. My clothes used to get wet frequently. I experienced social awkwardness and that avoided me from participating in any social activities. The quality of my sleep and my overall quality of life were not good. After coming to SSSI-HMS, I was diagnosed with genitourinary tuberculosis (GUTB). I was started on medication (anti-tubercular treatment) followed by definitive surgery. At present, all of my symptoms improved and I have experienced improvement in my quality of life. I am doing regular follow-up visit as advised by my doctor. I am very happy and satisfied.

Table 1 Timeline of patient's medical history and course of care

Relevant past medical history and interventions			
Date	Summaries from initial and follow-up visit		
04/2017	<p>Past history of bladder trauma following accidental fall 1 year back</p> <p>Emergency laparotomy with bladder repair done (intraoperative details not available) and patient kept on SPC in postoperative period</p> <p>After removal of SPC, patient was not able to void for which catheter was replaced</p>		
Date	Summaries from initial and follow-up visit	Diagnostic testing	Interventions
Visit-1 05/2018	<p>C/o increased frequency and dysuria since 3 years</p> <p>H/o Leakage of urine from suprapubic catheter side</p> <p>P/A-unhealthy lower midline scar with large incisional hernia with leaking SPC site</p> <p>L/E-enlarged nodular left epididymis</p>	<p>Investigation including Urine R/M, RFT and USG KUB sent</p>	<p>Managed conservatively</p>
Visit-2 05/2018	<p>C/o increased frequency and dysuria since 3 years</p> <p>H/o Leakage of urine from suprapubic catheter side</p>	<p>Serum creatinine- 2.1 mg/dl</p> <p>USG KUB-Bilateral hydronephrosis (right > left) with a small capacity bladder</p> <p>NCCT KUB-Right kidney—Grossly hydronephrotic, multiple dilated calyces, small contracted pelvis Right Ureter—diffusely thickened ureter, mild left hydronephrosis, no identifiable bladder</p>	<p>Managed conservatively</p> <p>Plan for MUCG and cystourethroscopy</p>
Visit-3 06/2018	<p>C/o increased frequency and dysuria since 3 years</p> <p>H/o Leakage of urine from suprapubic catheter side</p>	<p>MCUG- small capacity bladder with multiple fistulous tracts into the abdominal wall, left grade III reflux, dilated prostatic fossa with intravasation into the left seminal vesical</p>	<p>Cystourethroscopy—urethrocutaneous fistula at proximal penile level with dilated proximal urethra with no verumontanum being made out and distorted bladder neck, small bladder capacity with multiple fistulous tract openings. Ureteric orifice not visible</p> <p>Random bladder biopsy taken</p> <p>Urine for AFB and culture sent</p> <p>Multi-drug anti-tubercular therapy (ATT) started</p> <p>Plan for definitive surgery after initial phase of ATT</p>
Visit-3 06/2018	<p>C/o increased frequency and dysuria since 3 years</p> <p>H/o Leakage of urine from suprapubic catheter side</p>	<p>Urine for AFB (3 consecutive overnight samples)—Positive</p> <p>Urine culture for Mycobacterium tuberculosis—Positive</p> <p>Random Bladder Biopsy—showing caseating granulomas</p>	
Visit-4 09/2018	<p>C/o increased frequency and dysuria since 3 years</p> <p>H/o Leakage of urine from suprapubic catheter side</p>	<p>Pre-anesthetics clearance taken</p>	<p>Right-sided Nephrectomy followed by ileal conduit formation done under general anesthesia</p> <p>Continue ATT</p>
Visit-5 10/2019	<p>Symptoms improved</p> <p>Wound healthy</p>	<p>Serum creatinine-1.65</p>	<p>Advise regular follow-up every 6 monthly</p>

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Authors' contributions

ASP contributed to manuscript writing. HP was involved in manuscript writing and editing. GG contributed to manuscript editing. All authors have read and approved the manuscript.

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Not applicable.

Consent for publication

Written informed consent for publication of this case report has been obtained from the patient.

Competing interests

The authors declare that they have no competing interests.

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