## CASE REPORT

# *Tuberculosis of the bladder without previous renal infection*

Peter John Pommerville, MD,<sup>1</sup> Paul Zakus, BSc,<sup>1</sup> Nicholas van der Westhuizen, MB,<sup>2</sup> Pamela Catherine Kibsey, BSc<sup>3</sup>

<sup>1</sup>Can-Med Clinical Research Inc., Victoria, BC, Canada <sup>2</sup>Department of Laboratory Medicine, Royal Jubilee Hospital, Victoria, BC, Canada <sup>3</sup>Department of Laboratory Medicine, Victoria General Hospital, Victoria, BC, Canada

POMMERVILLE PJ, ZAKUS P, VAN DER WESTHUIZEN N, KIBSEY PC. Tuberculosis of the bladder without previous renal infection. The Canadian Journal of Urology. 2006;13(2):3044-3046.

Tuberculous (TB) infections are usually limited to the pulmonary system but the hematogenous spread of TB

#### Case report

A 73-year-old male with nocturia x4 complained of urinary frequency, dysuria and urge incontinence. These symptoms had a gradual onset but were progressively getting worse over a 6-month period. A referral to an urologist was made by his family physician for further investigation.

The patient's bladder capacity was markedly

Accepted for publication February 2006

Address correspondence to Dr. Peter J Pommerville, Can-Med Clinical Research Inc., Suite 330-1641 Hillside Avenue, Victoria, BC, V8T 5G1 Canada can result in secondary infections in any part of the body. Genitourinary TB is uncommon and follows hematogenous spread from a primary pulmonary infection to the kidneys. A rare case of a TB infection of the bladder without renal involvement is described.

Key Words: tuberculosis, genitourinary, cystitis

reduced at less than 150 cc to 200 cc and he had decreased urine flow with an interrupted stream. No gross hematuria was present and both urine cultures and urine cytology were negative. The bladder displayed evidence of a chronic inflammatory reaction, especially on the right side, which was suspicious for transitional cell carcinoma. A cystoscopy showed that the urethra was normal and that the prostatic portion of the urethra had bilateral lobar enlargement with outlet obstruction. A biopsy of the bladder showed no evidence of underlying malignancy but confirmed a chronic inflammatory process.

Six weeks after the biopsy the dysuria and urge incontinence continued to be unresolved so the patient was prescribed a 3-week course of



**Figure 1.** H & E (magnification x 40). A caseating granuloma (4 pointed star). A non-caseating granuloma (5 pointed star). Langhans giant cell (arrow).



**Figure 2.** H & E (magnification x 100). A caseating granuloma (4 pointed star). A non-caseating granuloma (5 pointed star). Langhans giant cell (arrow).



**Figure 3.** H & E (magnification x 200). Langhans giant cell (arrow).

ciprofloxacin and oxybutynin. One month later the symptoms continued to be unresolved so another biopsy was performed by a second urologist. This biopsy revealed caseating granulomas, Figure 1-3. An urinalysis was performed finding sterile pyuria. The combination of caseating granulomas and sterile pyuria supported the diagnosis of tuberculosis cystitis. Acid fast bacilli (AFB) smears using three morning urine samples were all positive for mycobacteria, later proven to be mycobacterium tuberculosis. An AFB smear of the patient's sputum x2 was negative. A chest x-ray identified a 1.2 cm nodule in the upper left lung which was confirmed by a chest CT scan, Figure 4. This lesion most certainly represents a past focus of TB infection. No signs of TB infection in any other part of the genitourinary system were evident, most notably the kidneys, Figure 5. The patient was referred to a TB clinic for assessment and treatment. The patient had no known previous TB contacts or any family history of the disease. He underwent antituberculosis therapy taking Isoniazid, Pyrazinamide, Pyridoxine and Rifampin. The treatment was successful and resulted in the resolution of his bladder inflammation which alleviated his urinary frequency, dysuria and urinary incontinence.



**Figure 4.** A CT scan of the chest showing a 1.2 cm nodule (white arrow).

### Discussion

Genitourinary TB is the second most common type of extrapulmonary TB accounting for an estimated 30% of all nonpulmonary cases of TB.<sup>1</sup> Pulmonary infection is usually the primary focus for TB. In this patients case the nodule found in the upper left part



**Figure 5.** A CT scan with contrast of the pelvis region reveals normal kidneys (white arrows) with no signs of prior TB infection.

of the lung most certainly represents a past focus of TB infection. The spread from the pulmonary system to the genitourinary system is hematogenous. Eight to fifteen percent of patients with pulmonary tuberculosis develop an infection in the genitourinary system.<sup>1</sup> This form of TB is usually a disease of young to middle-aged people involving men more than women at nearly a 2:1 ratio.<sup>2</sup> However, this patient was outside of the usual age range at an age of seventy-three.

Tuberculosis of the urinary tract is rare and has many different manifestations. Tuberculosis cystitis is a progressive disease that erodes the urothelium with the formation of ulcers and eventual fibrosis of the muscularis.<sup>1</sup> The advancing nature of this disease was shown by the patient's increasing symptoms from severe urinary frequencies to incontinence. The chronic inflammation and decrease in bladder capacity cause the symptoms of urinary frequency, urgency and incontinence.<sup>1</sup>

Tuberculous cystitis is always reported to be secondary to renal tuberculosis.<sup>3</sup> A review of the literature revealed no reported cases of TB of the bladder without renal involvement. In this case, no fibrous reaction or calcification were present in the kidneys to indicate a prior TB infection. The TB most certainly spread hematogenously from the focus in the left lung to the bladder.

The most probable explanation for the missed diagnosis in the first biopsy was that the biopsy was taken the periphery and not the central area of the lesions. For this reason the biopsy didn't reveal any caseating granulomas unlike the second biopsy.

Inconsistent radiographic presentations and unspecific clinical presentations may cause genitourinary TB infections to closely resemble other pathologic lesions. The stains of first morning urines using AFB was clearly demonstrated in this case to be an effective detection method for mycobacteria. Urinary TB should be considered in the differential diagnosis whenever sterile pyuria and caseating granulomas are present.

#### References

<sup>1.</sup> Wise GJ, Marella VK. Genitourinary manifestations of tuberculosis. *Urol Clin North Am* 2003;30(1):111-121.

<sup>2.</sup> Gow JG. Genito-Urinary Tuberculosis. *Practitioner* 1971;207(241):609-616.

<sup>3.</sup> Abdel-Rehim F, Safwat M, Mosaad A. The tuberculous bladder. *J Egypt Med Assoc* 1975;58(12):655-663.