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S K H Yip, B S P Ang, J Tan



Fig. 1 Transverse (left) and longitudinal (right) transrectal US scans of the prostate.

CASE REPORT

A 46-year-old man presented with fever, chills and rigors. He also complained of suprapubic pain and difficulty in micturating. The patient was single, and he denied recent exposure to venereal disease. He worked in a restaurant and had no history of recent travel abroad. On admission, his body temperature was 39°C. The bladder was distended, and rectal examination revealed a tender and enlarged prostate. Laboratory investigations showed serum leucocyte count of $25.5 \times 10^9/\text{dL}$, and serum creatinine of 694 $\mu\text{mol/L}$. Urine analysis exhibited the presence of packed white blood cells; red blood cells were absent. His human immunodeficiency virus titre was negative. He was catheterised and treated with oral Ciprofloxacin 250mg BID. His fever did not respond to the treatment. However, his renal function gradually reverted to normal with the urinary catheter in-situ. Subsequently, both his urinary and blood cultures grew *Burkholderia pseudomallei* (previously known as *Pseudomonas pseudomallei*). He was switched to intravenous Ceftazidime 1gm Q12H. What form of diagnostic imaging is indicated at this stage and what were the findings (Fig. 1)? What further investigation is useful?

Department of
Urology
Singapore General
Hospital
Outram Road
Singapore 169608

S K H Yip, FRCSE,
FHKAM (Surgery),
FAMS
Consultant

Department of
Infectious Disease
Tan Tock Seng
Hospital

B S P Ang, MMed
(Int Med), FAMS
Consultant

Department of
Surgery
National University
Hospital

J Tan, FRCSE,
FRCSG
Redistrar

Correspondence to:
Dr Sidney K H Yip
Tel: 321 4693
Fax: 227 3787
Email: gurykh@
sgh.gov.sg



Fig. 2a Enhanced CT scan of the pelvis taken at the bladder base shows a multiloculated prostatic abscess.

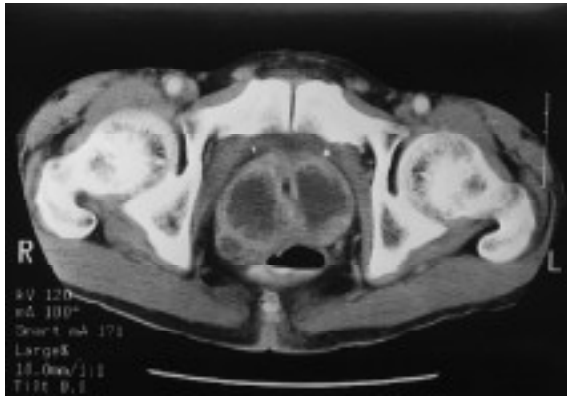


Fig. 2b Enhanced CT scan of the pelvis taken at the mid-portion of the prostate shows extensive cystic changes involving the entire gland. There is prominent septal and rim enhancement.



Fig. 3 Enhanced CT scan of the pelvis taken 1 week post-operation at a level corresponding to Fig. 2b shows complete resolution of the prostatic abscess. A Foley's balloon is located within the widely open prostatic fossa.

IMAGE INTERPRETATION

Transrectal ultrasonography (TRUS) of the prostate showed multiple heterogeneous cystic areas within the enlarged prostate. These changes were compatible with abscess formation.

CLINICAL DIAGNOSIS

Melioidotic prostatic abscess

CLINICAL COURSE

Enhanced computed tomography (CT) was performed to assess the extent of the abscess. CT pelvis showed a

multiloculated prostatic abscess that involved the entire prostate (Figs. 2a-b). Multiple septae were present between the cystic areas, which represented the loculated pus. The patient underwent a transurethral resection of the prostate (TURP) under regional anaesthesia. Upon resection and deroofting, a copious amount of pus was expressed from the prostate, and multiple cystic cavities were encountered. The necrotic prostatic tissue was removed. The patient's fever settled after the operation and he was continued on intravenous Ceftazidime for two weeks. Post-operative CT of the pelvis performed one week later showed complete resolution of the abscess with a widely-open prostatic fossa (Fig. 3). The patient managed to void spontaneously without any problem and was discharged with oral Augmentin 375mg (amoxicillin 250mg and clavulanic acid 125mg) TDS two weeks after the operation. However, after a month, he developed a scrotal abscess, which required incision and drainage. He was continued on the same antibiotic regime (oral Augmentin) after the drainage procedure.

DISCUSSION

With the advent of potent broad-spectrum antibiotics, full-blown prostatic abscess has become an uncommon clinical entity⁽¹⁻⁴⁾. At present, major pathogenic microorganisms are gram-negative bacilli, which are isolated in 60% to 80% of cases. Opportunistic organisms causing prostatic abscess formation in immunocompromised patients have recently been reported^(5,6).

The presence of lower urinary tract symptoms warrants a thorough physical assessment where marked pelvic tenderness and prostatic boggy are typical findings during rectal examination⁽¹⁾. Failure to eradicate systemic sepsis despite appropriate antibiotics should also prompt a search for possible infective foci. In the presence of abnormal urine microscopy and/or urine cultures, imaging of the urinary tract is indicated irrespective of the physical findings. However, it is important not to neglect the prostate gland, which can often be a "silent" focus.

The primary imaging investigation of choice is TRUS of the prostate, which may be performed either by an urologist or radiologist, depending on the local availability of expertise⁽¹⁴⁾. The presence of cystic areas and septa formation are highly suspicious features. CT of the pelvis has been shown to unveil the extent of abscess information. In particular, acute prostatitis and early microabscess formation are well delineated by CT (Figs. 4a-b).

While acute prostatitis is usually treated by intravenous antibiotics, the standard treatment for overt abscess remains surgical drainage. In this context, transurethral resection of the prostate, with deroofting

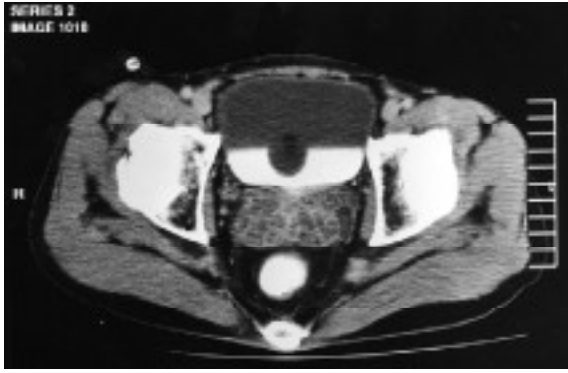


Fig. 4a Another patient with acute bacterial prostatitis. Enhanced CT scan of the pelvis shows an inflamed prostate and early prostatic abscess formation.



Fig. 4b Same patient as Fig. 4a. Enhanced CT scan taken at a more inferior level shows prostatic enlargement and multiple small abscesses.

of the abscess wall is a well-recognised mode of treatment^(1,3). However, caution should be practised during the transurethral procedure, as septicaemia is prone to occur during manipulation. While there are proponents of TRUS-guided aspiration and drainage^(2,4,7), others believe its application is limited if the abscess is multiloculated⁽¹⁾.

Melioidosis is endemic in Southeast Asia, although reports pertaining to prostatic involvement are scanty⁽⁷⁻¹¹⁾. Apart from the usual cultures of urine and blood, detection of antibodies in serum may be useful in the diagnosis. Bacterial culture remains the gold standard for diagnosis of melioidosis. However, early diagnosis is often imperative in septicaemic patients, and more rapid tests such as polymerase chain reaction^(12,13) are being evaluated.

When cultures of *Burkholderia* are reported from the microbiology laboratory, it is important to identify the specific organism *Burkholderia pseudomallei*. This is because the disease has a propensity to recur, and antibiotics need to be given for several months. In summary, while genitourinary involvement in melioidosis is uncommon, this infection should still be considered in patients presenting from endemic areas.

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ABSTRACT

A 46-year-old previously healthy man presented with urosepsis and lower urinary tract obstruction. Both urine and blood cultures grew *Burkholderia pseudomallei*. Intravenous Ceftazidime failed to control the infection. Prostatic abscess formation was first detected by transrectal ultrasonography, and the extent was subsequently delineated by computed tomography. The abscess was drained by transurethral resection, which served to eradicate a possible persistent focus of infection. The diagnosis and management of prostatic abscess, and Melioidosis infection, are discussed.

Keywords: Computed tomography, Melioidosis, prostatic infection, ultrasonography, urinary tract infection