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Kidney and Prostatic Abscesses Secondary to Burkholderia Cepacia: A Unique Constellation in an HIV-Positive Male

Zachary Klaassen, Young Kwak, Derrick L. Johnston, Jeffrey M. Donohoe, Martha K. Terris

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ABSTRACT

We report the first case of Burkholderia cepacia infection leading to multiple kidney abscesses and concomitant prostatic abscess in a human immunodeficiency virus (HIV)-positive 21-year-old male. The patient initially presented with generalized abdominal pain, and computed tomography (CT) demonstrated left renal micro-abscesses. A follow-up CT scan demonstrated worsening of the kidney abscesses and a cystic lesion in the right prostate gland suggestive of an abscess. Transrectal ultrasound guided drainage of the abscess was followed by transurethral resection of the prostatic abscess. All clinicians need vigilance and an open-mind when investigating etiologies for infectious disease processes in HIV-positive patients.

INTRODUCTION

Burkholderia cepacia is a plant bio-pesticide common in patients with cystic fibrosis, and it is difficult to treat due to its inherent resistance and ease of communicability [1]. B. cepacia is capable of producing necrotizing granulomatous infections and abscesses, and patients with human immunodeficiency virus (HIV) are particularly vulnerable to infection [1]. Although the majority of literature relating to B. cepacia infections involves the respiratory system, sporadic reports of urologic involvement have been reported [2]. To our knowledge, we report the first case of B. cepacia infection leading to multiple kidney abscesses, concomitant prostatic abscess, and granulomatous prostatitis in a 21-year-old African-American male with HIV and chronic granulomatous disease (CGD).

CASE REPORT

A 21-year-old African-American male with a history of HIV, CGD, and pulmonary aspergillosis presented in August 2010 with generalized abdominal pain. Subsequent computed tomography (CT) of the abdomen and pelvis demonstrated left renal micro-abscesses (Figure 1); concomitant urine culture was positive for B. cepacia, and the patient was subsequently started on intravenous (IV) antibiotics (levaquin, 750 mg, for 24 hours over 10 days). Over the course of the next 6 months the patient continued to have multiple exacerbations of pyelonephritis with repeat urine cultures demonstrating persistent B. cepacia infection necessitating multiple regimens of IV antibiotics. These included meropenem (1 gm for 8 hours over 10 days), linezolid (600 mg for 12 hours over 14 days), and levaquin (750 mg for 24 hours over 10 days). An abdominal ultrasound in May 2011 demonstrated continued non-hyperemic hypoechogenicity in the left kidney and incidentally demonstrated a heterogenous prostate gland. A subsequent CT scan confirmed worsening of the micro-abscesses of the left kidney (Figure 2A), in addition to a 2.3 cm x 1.7 cm cystic lesion in the right prostate gland suggestive of an abscess (Figure 2B). During this time, the patient reported no lower urinary tract symptoms and no tenderness to palpation on the digital rectal examination; prostatic specific antigen (PSA) was 0.81 ng/mL.

Given the radiologic evidence suggestive of a prostatic abscess, the patient was taken to the operating room for transrectal ultrasound guided (TRUS) aspiration. The procedure demonstrated a solid exudate from the lesion, which was negative on both the gram stain and acid-fast stain. Subsequent

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CORRESPONDENCE: Zachary Klaassen, M. D., Department of Surgery, Section of Urology, Medical College of Georgia, Georgia Regents University, 1120 15th Street, Augusta, Georgia 30912 (zklaassen@gru.edu)

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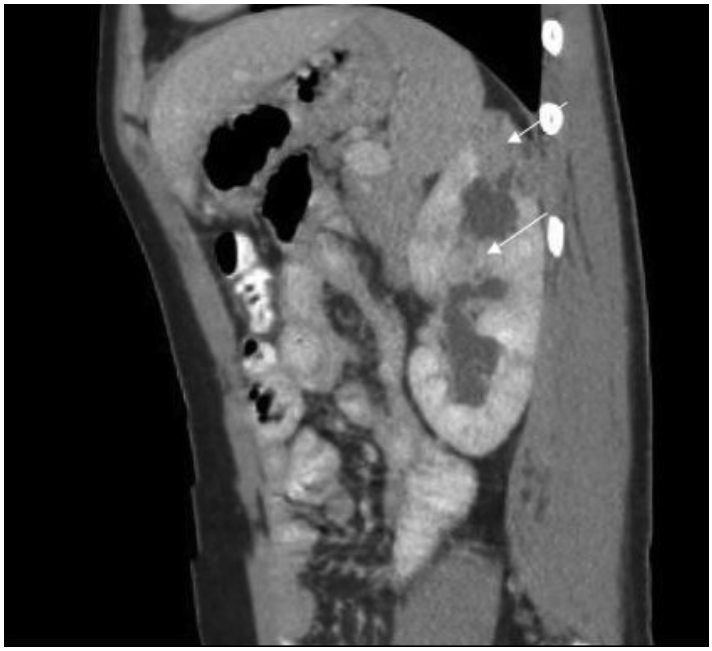
Figure 1. Coronal section of a CT scan of the abdomen and pelvis on initial presentation demonstrating multiple left kidney abscesses (white arrows).

Figure 2a. Follow-up of the sagittal section of a CT scan of the abdomen and pelvis demonstrating worsening of the micro-abscesses of the left kidney (white arrows).



3-, 6-, and 9-month follow-up CT scans demonstrated persistent left kidney and prostate lesions, and chronic cloudy urine without hematuria or lower urinary tract symptoms. Given the patient's history of HIV and granulomatous disease, the concern was that the patient had persistent prostatic tuberculosis. Thus, the patient elected for cystoscopy, bilateral retrograde pyelograms, and transurethral incision and resection of the prostate. The patient had a normal right retrograde pyelogram, and the left retrograde pyelogram demonstrated a contracted renal pelvis and pan-renal infundibular stenosis with dilated calyces (a 6 Fr x 28 cm left ureteral stent was placed). Transurethral resection of the right side of the prostate revealed thick, purulent caseous discharge (Figure 3), and pathologic analysis demonstrated granulomatous prostatitis, negative for both gram stain and acid-fast bacteria stain. As per infectious disease recommendations, the patient remains on long-standing prophylactic doxycycline (100 mg BID). The patient continues to have asymptomatic cloudy urine and will be closely monitored with serial mercapto-acetyl-triglycine scans to serially evaluate left kidney function.

DISCUSSION

The current case represents the first description of B. cepacia infection causing multiple kidney abscesses, prostatic abscess, and granulomatous prostatitis in a HIV-positive patient. B. cepacia is a gram-negative aerobe plant pathogen that most commonly affects patients with cystic fibrosis, chronic granulomatous disease (CGD), and patients with immuno-compromised states [1,3]. Previous examples of urologic involvement of cepacia species infection have included cases of urinary tract infections in renal transplant recipients and iatrogenic cystoprotatitis after transrectal ultrasound guided prostate biopsy using contaminated ultrasound gel [2,4]. Prostatic involvement is seen in nearly one-fifth of patients with melioidosis (caused by Burkholderia pseudomallei) [5]; however, most infections involving B. cepacia involve the respiratory system. B. cepacia is resistant to a number of antibiotics in addition to anti-infective solutions, including povidone iodine and chlorhexidine. Furthermore, B. cepacia's defense mechanisms include intracellular persistence within human macrophages [3], leading to difficult eradication, increased virulence, and easy transmissibility.

HIV-infected patients are at an increased risk for developing prostatitis and prostatic abscesses compared to the general population, with an estimated prevalence of 1 to 2%. This may be as high as 3% in asymptomatic HIV-positive patients and 14% in patients with AIDS [6]. This patient population is also vulnerable to granulomatous prostatitis caused by tuberculous and non-tuberculous mycobacteria, a disease process that is quite uncommon among immuno-competent patients. Treatment in the HIV/AIDS population should include a prolonged duration (4 weeks) of daily quinolones due to the high risk of re-infection [7]. Given the rate of Burkholderia infections reportedly causing granulomatous prostatitis in HIV-

Figure 2b. A transverse section demonstrating a 2.3 cm x 1.7 cm cystic lesion in the right prostate gland suggestive of an abscess (white arrow).

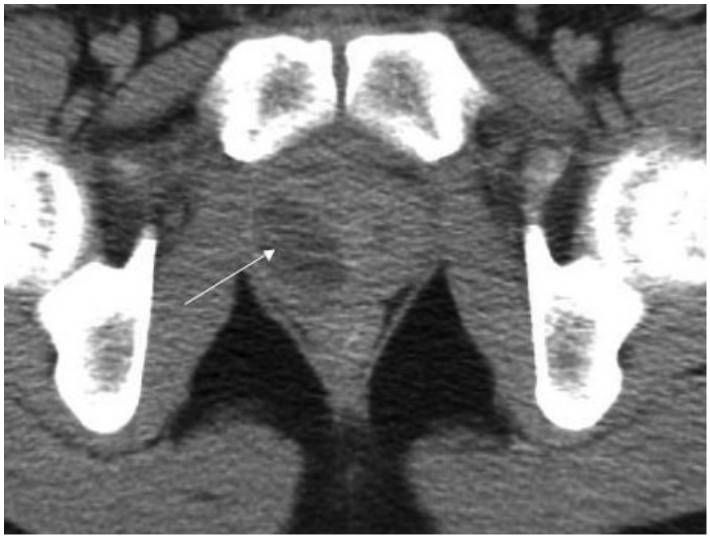
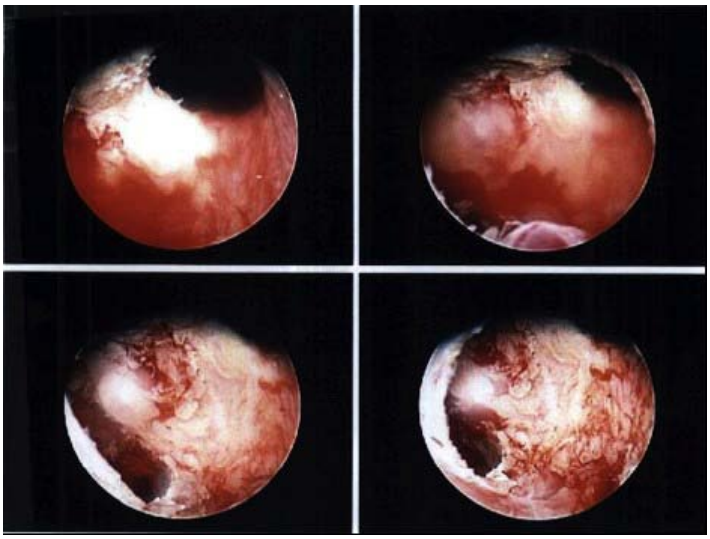


Figure 3. Intraoperative transurethral resection of the right side of the prostate gland demonstrating thick, caseous discharge from the prostatic abscess (lower 2 panels, demonstrated at the 8 and 10 o'clock positions).



affected men [5], we recommend a high degree of suspicion for Burkholderia infection for patients refractory to quinolone therapy considering that this class of antibiotics is less effective for Burkholderia infection [7]. TRUS-guided transperineal drainage is a safe and effective treatment for prostatic abscesses, potentially avoiding the communication between the abscess cavity and the urethra or rectum [8]. Thick, caseating abscesses may not be completely drained by this approach and require transurethral unroofing of the abscess cavity.

The current case represents a unique constellation of symptoms in an HIV-positive patient, secondary to infection with B. cepacia. It is important to report these associations as over the course of the last 30 years, rare infections associated with HIV-positive patients have emerged [9] and are dependent on multidisciplinary treatment modalities. All clinicians, including urologists, need vigilance and an open mind when investigating etiologies for infectious disease processes in HIV-positive patients.

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