

Prostatic abscess due to blastomycosis

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ABSTRACT

Blastomycosis is an endemic infection caused by *Blastomyces dermatitidis*, found primarily in the southeastern, south-central, and Midwest United States. While the majority of infections typically present with pulmonary manifestations, they rarely present with symptoms isolated to the prostate. In order to better understand the clinical presentation, evaluation, and treatment of blastomycosis of the prostate, we present a 59-year-old male with urinary retention and lower urinary tract symptoms (LUTS).

1. Introduction

Blastomycosis is an endemic infection caused by *Blastomyces dermatitidis*, found primarily in the southeastern, south-central, and Midwest United States, with prevalence ranging from 0.5 to 4 cases per 100,000 per year.^{1,2} Infection often initially presents with nonspecific systemic symptoms including weight loss, fevers, and fatigue. The majority of infections present with pulmonary manifestations, with rare instances of extrapulmonary involvement including the skin, central nervous system (CNS), bone, and the genitourinary (GU) system. There are very few cases reported of blastomycosis infection with initial presentation isolated to the prostate.³ We present the case of a 59-year-old male with urinary retention and lower urinary tract symptoms (LUTS) to better understand the evaluation, differential diagnosis, and treatment of this rare pathology.

2. Case presentation

A 59-year-old male with recently diagnosed prostatitis and an elevated PSA of 9.7, but otherwise no significant past medical history, presented to the emergency department (ED) with urinary retention. A foley catheter was placed and urine culture obtained which was negative. The patient was discharged with instructions to continue tamsulosin, a six-week course of sulfamethoxazole-trimethoprim, and consult with urology. He was seen in the urology clinic the following week, at which time his symptoms had improved. Digital rectal exam

demonstrated a slightly firm nontender prostate. He was counseled on management options for his enlarged prostate and his foley was removed. He was able to void with a residual of 37mL. A repeat PSA was to be obtained 3 months later.

Several days later, the patient presented to the ED after developing recurrent urinary retention, as well as night sweats and fevers up to 102.7 °F. Upon presentation, the patient had a temperature of 100.2 °F, but was otherwise hemodynamically stable. He had a leukocytosis to $15.5 \times 10^9/L$ and mild anemia (hemoglobin 12.8 g/dL). His renal function was at baseline (creatinine 1.0 mg/dL). A urinalysis was obtained with 3+ leukocyte esterase, negative nitrites, >182 WBCs, 1+ bacteria, and 19 RBCs. Chest x-ray demonstrated a vague opacity concerning for possible early pneumonia, but was otherwise unremarkable. He denied upper respiratory symptoms, including cough or shortness of breath. A CT pelvis demonstrated multiple low-density regions of the prostate suggestive of a possible abscess (Fig. 1). The ED placed a foley catheter, blood and urine cultures were obtained, and the patient was started on broad-spectrum antibiotics.

Upon admission, infectious disease was consulted, at which time it was revealed that the patient participated in gardening, outdoor work, and had recently returned from a trip to the Nevada desert. He was continued on ceftriaxone while fungal cultures and antigens to *Coccidioides* and *Blastomyces* were collected. The patient continued with intermittent fevers and developed occasional nausea and vomiting. He was scheduled for cystoscopy and transurethral resection of the prostate and prostate abscess (TURP). However, on the day of surgery, his fungal

Abbreviations: GU, Genitourinary; CNS, Central nervous system; TURP, Transurethral resection of prostate; LUTS, Lower urinary tract symptoms.

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Fig. 1. Enlarged and heterogeneous prostate with multiple low-density regions concerning for prostatic abscesses.

urine cultures returned positive for *Blastomyces dermatitidis*. His surgery was rescheduled and his antibiotics were discontinued with initiation of oral itraconazole. Chest CT demonstrated several pulmonary nodules bilaterally. Forty-eight hours after initiation of antifungal treatment, the patient continued with intermittent fevers and had a persistent leukocytosis to $12.1 \times 10^9/L$. The decision was made to proceed with cystoscopy and TURP.

Intraoperative evaluation demonstrated a normal-appearing bladder and bilobar hyperplasia of the prostate. Resection revealed friable prostatic tissue with multiple cavities containing purulent fluid that were sent for pathologic examination. The patient remained afebrile postoperatively and his leukocytosis resolved. The catheter was removed and he voided without issue. He was discharged home the next day with a 12-month course of itraconazole.

The final specimen was 6.7g with pathology demonstrating granulomatous prostatitis with numerous yeast forms compatible with *Blastomyces* (Figs. 2 and 3).

The patient was seen for follow-up 1 month after surgery and was doing well with a post-void residual of 2mL. CT chest obtained 3 months after surgery demonstrated significant improvement with decreasing size of the remaining pulmonary nodules. He was maintained on itraconazole for 12 months, but is now off antifungal medications and doing well.

3. Discussion

Blastomyces dermatitidis is a fungal pathogen with thermal dimorphism, growing in mycelial form at room temperature and yeast form at body temperature.¹ Primary infection usually results from inhalation of conidia spores, with primary immunity mediated by the innate immune system. Those spores that are able to evade natural host defenses are

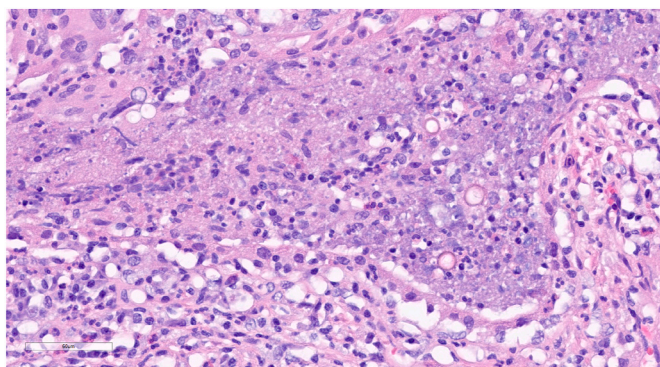


Fig. 2. Prostatic tissue demonstrating necrotizing granulomatous prostatitis with numerous yeast forms compatible with *Blastomyces* species (H&E, 40X magnification).

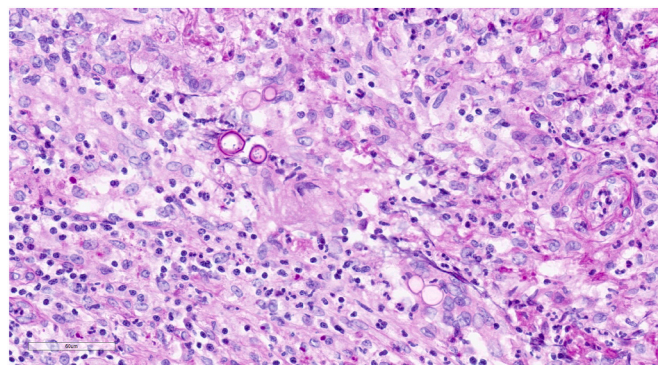


Fig. 3. Prostatic tissue demonstrating necrotizing granulomatous prostatitis with numerous yeast forms compatible with *Blastomyces* species (PAS-D Stain, 40X magnification).

converted to yeast phase, which is thought to confer a survival advantage and further increase virulence.

There are a wide spectrum of clinical presentations, including asymptomatic infections identified on screening, nonspecific systemic complaints including weight loss, fatigue, and cough, or fulminant infections with respiratory failure and high fevers.² The lungs are most commonly involved, with hematogenous spread leading to involvement of extrapulmonary sites including skin, bone, adrenal glands, the CNS, and the GU system.^{2,4} The most commonly involved organs of the GU tract are the prostate and epididymis.² A retrospective study by Eickenberg et al. found GU involvement of 21% of patients with blastomycosis.⁵

Prostatic involvement can present with nonspecific symptoms, including dysuria, perineal or suprapubic discomfort, hematuria, and urinary retention.^{1,3,4} This often leads to a delay in diagnosis, with clinicians pursuing more common diagnoses such as benign prostatic hyperplasia and/or prostate cancer.

Diagnosis is best made via visualization of the distinct yeast in smears, cultures, or direct tissue specimens.¹ While most cases of acute blastomycosis are thought to be self-limiting, most experts agree on antifungal therapy for all cases with use of at least 6 months of itraconazole for mild to moderate infections, and amphotericin for life-threatening cases or with involvement of the CNS. While systemic treatment is successful in the majority of cases, select patients, such as the one presented in our report, may require operative intervention for adequate source control.

4. Conclusion

Fungal prostatic abscesses are an uncommon pathology that can mimic alternative diagnoses and therefore require a high level of suspicion to accurately diagnosis and correctly manage. While GU involvement usually results from hematogenous spread after pulmonary infection, patients may present with isolated urinary complaints. Therefore, providers should maintain a high level of suspicion in individuals from endemic areas with refractory urinary complaints.

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Inflammation and Infection.

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Declaration of competing interest

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