Scrotal abscess as an unusual presentation of blastomycosis

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Blastomyces dermatitidis is an environmental fungus endemic to parts of Eastern North America that notably causes pulmonary infection in humans and other animals with the potential for extrapulmonary spread, particularly in immunocompromised hosts. However, it rarely presents with genitourinary (GU) tract involvement. Herein, we present a unique case of a 37-year-old immunocompetent male with genitourinary blastomycosis with the initial presentation of a scrotal abscess.

Key Words: case report, blastomycosis, scrotal abscess, prostatitis

Introduction

Blastomyces dermatitidis is an environmental fungus that most commonly causes pulmonary infection in humans and other animals in the form of blastomycosis. This dimorphic fungus is endemic to the Mississippi River Valley and North-Central United States extending into Southern Canada with a reported incidence 20-50 times higher in the state of Wisconsin than the rest of North America (2 per 100,00).[1,2] Blastomyces has the potential for extrapulmonary spread, most commonly in immunocompromised hosts, however it may rarely present in patients with isolated genitourinary (GU) involvement. Herein, we characterize the presentation, diagnosis, and treatment of this unusual but significant GU pathogen by presenting the case of a 37-year-old immunocompetent male with a diagnosis of blastomycosis who presented with a scrotal abscess.

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Case report

A 37-year-old male presented to an outside facility Urgent Care with dysuria, urgency, and pelvic pain and was diagnosed with prostatitis. He completed a 4-week course of trimethoprim-sulfamethoxazole (TMP-SMX) with subsequent resolution of his symptoms, except for terminal dysuria. Three weeks later, his symptoms recurred, and he developed acute urinary retention requiring urethral foley placement at an outside emergency department (ED). He passed the trial of void but developed left-sided testicular pain shortly thereafter. He then presented to Urgent Care again and is prescribed a second course of TMP-SMX and undergoes a scrotal ultrasound (US) demonstrating right epididymitis, prompting a switch to 2 weeks of levofloxacin.

Four months after his initial Urgent Care visit, the patient presented to our ED with concern of bilateral testicular pain of 6 weeks duration. On physical exam, bilateral epididymii and testicles were indurated and tender, scrotum is erythematous, and digital rectal exam revealed enlarged, non-tender prostate. He was afebrile, leukocytosis to 14.0 x 109/L, and creatinine of 1.1 mg/dL. Urinalysis shows proteinuria, negative nitrites, moderate leukocyte esterase, few bacteria, 542 RBCs, and 1364 WBCs with many clumps. Scrotal US showed bilateral epididymo-orchitis and right scrotal wall abscess, shown in Figure 1. Urology is consulted and bedside incision and drainage (I&D) of the scrotum is performed expressing a large amount of purulent drainage. Urine and wound cultures are negative. Chest radiograph is obtained and reported as unremarkable. The patient is admitted and started on empiric broad spectrum antibacterial coverage with piperacillin-tazobactam and vancomycin. While on antibiotic treatment, the patient developed left scrotal abscess and undergoes a second I&D on admission day-three. A computed tomography (CT) of the abdomen and pelvis is obtained due to persistent leukocytosis to 12.4 x 109/L and was unremarkable.

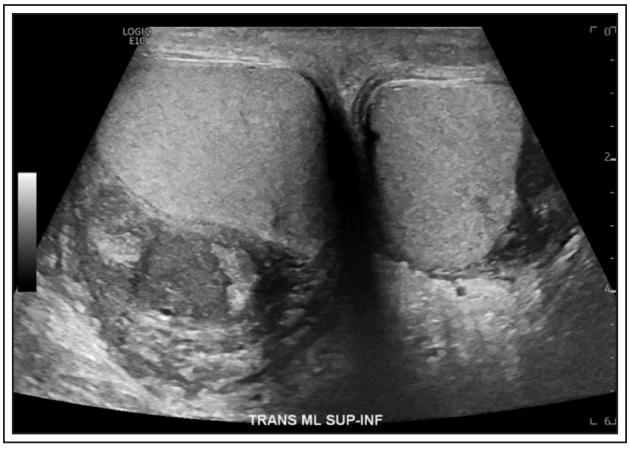

Figure 1. A 4.6 cm x 2.0 cm complex collection containing punctate echogenic debris within the right scrotal wall, which is contiguous with the right epididymis.

The infectious disease (ID) service was consulted, and it was elicited that the patient worked as a construction worker in Wisconsin before moving to Illinois 6 months ago to work at a cheese factory. Antibiotics were discontinued due to a lack of improvement in the patient's condition. Additional immunology and microbiology work up included negative acid-fast bacteria (AFB), Quantiferon tuberculosis, HIV, serum cryptococcal antigen, serum brucella, syphilis, gonorrhea and chlamydia testing. Urine Blastomyces antigen returned positive (5.05 ng/dL). Fungal cultures of the scrotal abscess were obtained and returned positive with 1+ growth resembling Blastomyces dermatitidis. The patient was promptly started on itraconazole 200 mg twice daily and CT chest was obtained, which showed innumerable bilateral pulmonary micronodules. Per ID, the patient was prescribed itraconazole for at least 6 months. At the 2-month urology follow up appointment, the patient has resolution of his genitourinary symptoms, and a repeat scrotal US demonstrates no evidence of recurrent abscess formation.

Discussion

Blastomycosis is caused by the fungal agent blastomyces dermatitidis, which is one of three endemic environmental pathogens (the others are Coccidioides and Histoplasma). It is a dimorphic fungus that grows in mycelial (a branching structure of thread-like hyphae) form at room temperature and a yeast form at body temperature. The primary mode of entry results from inhalation of conidia spores that are aerosolized as the mycelial form during activities that disrupt soil. Upon entering the lungs, it is converted to the virulent yeast phase, allowing for evasion of natural host defenses and a survival advantage.[1] Infections have been linked to rural workers in close contact with soil, although some reports also suggest proximity to rivers, decaying forests, and construction sites in urban areas as risk factors.[2] For this case report, our patient worked at a construction site in Wisconsin which was his most likely source of infection.

Blastomyces most commonly causes a self-limited pulmonary infection. Around 50 percent of pulmonary infections are symptomatic and present like bacterial pneumonia with disease limited to lungs in 53 to 75 percent of cases.[2,3] Blastomyces also has the potential for hematogenous and lymphatic dissemination. Between 25 to 40 percent of symptomatic blastomycosis are extrapulmonary, most commonly in the skin and bones, with involvement in the GU system seen in less than 10 percent of cases.[2,3] Within the GU system, the prostate is the most affected, followed by the epididymis, with presentations mimicking bacterial prostatitis and epididymitis, respectively.[3,4] Clinical symptomatology includes dysuria, lower urinary tract symptoms, testicular pain, suprapubic discomfort, perineal pain, hematospermia and/or urinary retention.

The diagnosis of blastomycosis is typically considered in delayed fashion after the patient shows no symptomatic improvement following several courses of antibiotics. Chapmen et al found that correct diagnosis was delayed more than 30 days in 43 percent of patients, with clinicians pursuing more common diagnoses, such as bacterial prostatitis.[5] Fungal cultures are the gold standard for definitive diagnosis. They can take between 1 to 4 weeks to demonstrate growth and sensitivities can range from 75 to 86 percent depending on the location of the collected sample.[4,6] Therefore, diagnosis can be supported more rapidly with positive blastomyces urine antigen or direct visualization of prototypical round, multinucleated yeast with broad based budding daughter cells.[7] Urine antigen sensitivities have been found to be comparable to those of fungal culture with sensitivities ranging from 76 to 93 percent.[1,2] Treatment recommendations set forth by the Infectious Diseases Society of America endorse 200 mg itraconazole orally for 6 to 12 months to treat mild to moderate pulmonary or disseminated, including GU, disease in adults. Amphotericin B is reserved for severe disease with treatment duration of 6 to 12 months.[8] Medical management is typically sufficient for these patients, but there are reports of surgical intervention for GU source control being used successfully.[9] The majority of disease is self-limited, but antifungal therapy is recommended, even in asymptomatic disease, to prevent progression. Overall, mortality associated with blastomycosis is 4 to 6 percent but substantially higher in immunocompromised patients or cases with central nervous involvement.[2]

Conclusion

Blastomycosis is an uncommon source of GU pathology. Nevertheless, it merits an important diagnostic consideration, particularly in endemic areas in the Midwest river valleys. Persistent infection after several antibiotics, history of travel to endemic areas, and elimination of other common etiologies should raise suspicion for blastomycosis and prompt testing via cultures, antigen testing, or histopathologic examination. □

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