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Rare Dysuria: Prostatic Abscess due to Disseminated Coccidioidomycosis

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ABSTRACT

We present a case of disseminated coccidioidomycosis with formation of a prostatic abscess in a 28-year-old diabetic male. Though rare, *Coccidiodes* prostatitis should be included in the differential for patients who have spent time in endemic areas and present with prostatitis or other genitourinary tract symptoms, especially in the setting of immunocompromise. The small number of *Coccidiodes* prostatitis cases described in the literature previously are reviewed, along with a wider discussion of coccidioidomycosis. Treatment modalities for this challenging fungal disease are also discussed.

Introduction

The incidence of both pulmonary and disseminated *Coccidioides* has been rising in areas of high prevalence, attributed to the rising number of older, HIV, and diabetic patients. *Coccidioides*, especially in the setting of immunocompromise, may invade nearly any body system. Though rare, coccidioidomycosis should be on the differential for patients presenting with genitourinary complaints in endemic areas, as it may be the presenting symptom of disseminated disease.

Case presentation

A twenty-eight-year-old male with insulin-dependent diabetes mellitus presented to an ED in the California San Joaquin Valley with a yearlong history of progressively worsening urinary incontinence and dysuria. He also complained of worsening shortness of breath.

Physical examination revealed cachexia. There was suprapubic tenderness, as well as diffuse lung crackles and decreased breath sounds on the right. Blood pressure was 150/91, pulse was 84, temperature 97.5, and respiratory rate was 16.

Urinalysis revealed white blood cells, large amounts of leukocyte esterase, blood, and 10,000 mg/dL of glucose. The patient was admitted to the Intensive Care Unit due to concern over his respiratory status.

Chest CT scan showed multiple bilateral densities and nodules, along with a large consolidated cavitated mass occupying all three lobes of the right lung (Fig. 1).

Abdominal CT showed bilateral hydroureteronephrosis with a large fluid collection at the bladder base that was suspicious for an abscess causing post-renal obstructive nephropathy (Fig. 2).

Urology and infectious disease were consulted. A bronchoalveolar lavage and urine culture grew *Coccidioides immitus*. Coccidioidal serology was reactive for both IgG and IgM, and the complement fixation titer was 1:128.

What was determined to be a severe disseminated coccidioidal infection was treated with intravenous amphotericin B. Urology consult recommended CT-guided drainage of the prostatic abscess. The drained pus cultured *C. immitis*.

Discussion

First described in 1888 in an Argentine soldier and shortly thereafter in two farmers in the San Joaquin Valley, coccidioidomycosis is a systemic fungal disease endemic to the Southwestern United States and Northern Mexico.[1] It is caused by *C. immitis* and *Coccidioides posadasii*, the former of which is found in California and the latter outside of California, though these species display

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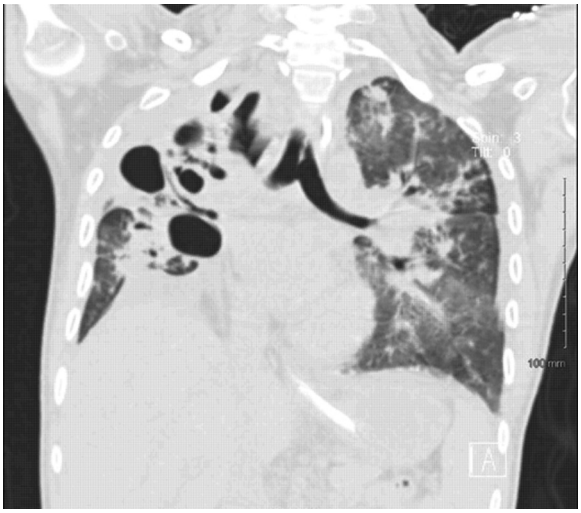

Figure 1. Coronal CT chest showing bilateral lung densities and nodules along with right lung consolidation.

geographic overlap, appear to exchange genetic material, and have identical clinical presentations.[1]

Approximately 150,000 cases of coccidioidomycosis are documented annually in the United States.[2] 97% of cases reported to the CDC from 1997 and 2011 were from Arizona and California alone.[3] Infection is transmitted almost exclusively through inhalation of arthroconidia (fungal spores). Person-to-person transfer is extremely uncommon.[1]

The majority of cases are subclinical. Pulmonary manifestations are the most common finding in coccidioidomycosis, and may include pleural effusions, cavitations, acute respiratory distress syndrome (ARDS), and sepsis.[2] Definitive diagnosis is based on culture and histology from respiratory collections. Visualization of spherules, the pathognomonic finding for identifying the organism, is diagnostic of coccidioidomycosis.[1]

Infection with *C. immitis* results in symptomatic pulmonary disease in fewer than half of those infected, and dissemination beyond the lungs occurs in less than 1% of patients.[4–7] At increased risk for disseminated infection are the immunosuppressed, pregnant women, diabetics, and non-Caucasians.[4] Filipinos have repeatedly been identified as especially susceptible.[5,6] The most common sites of involvement in dissemination are the joints, skin, bones, and meninges.[5] Already rare, urogenital tract involvement most commonly involves the kidneys.[4]

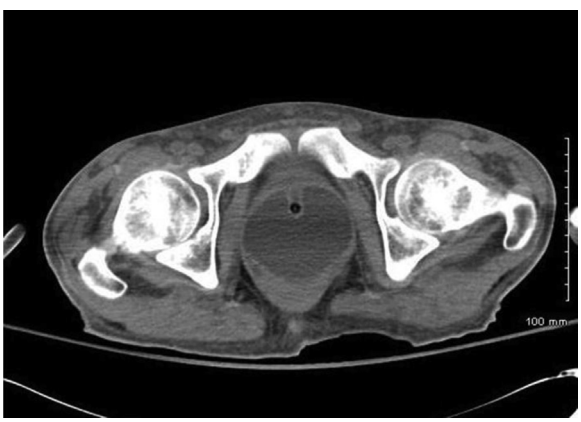

Figure 2. Hypodense intraprostatic lesion is noted on CT of the abdomen and pelvis.

A review of the literature reveals fewer than 40 case of male non-renal genitourinary tract involvement described since 1943, and fewer than fifteen cases of prostatic involvement.[4,5,7] However, a retrospective review of 3676 prostatic pathology reports (biopsies and surgical pathology) from two Arizona hospitals (an area of endemic *C. immitis*) found that 44 cases of granulomatous *Coccidioides* of the prostate gland were identified (an incidence of 1.2%), suggesting that the undiagnosed rate may be higher in endemic areas.[8]

Spread to the genitourinary system is believed to be hematogenous, though it is theoretically possible to seed disease through asymptomatic coccidiuria that can accompany pulmonary disease.[7] *Coccidioides* does not stain on Gram stain.[7] As urine culture may reflect involvement of another structure in the urinary tract, definitive diagnosis of prostate involvement can be made only with biopsy and pathology showing double walled coccidioidal spherules.[9] There are case reports of prostatic disease being discovered only after TURP and tissue pathology; in these instances it has been recommended to assume that disease has been seeded throughout the body. Needle biopsy of the prostrate appears to have a much lower risk of seeding.[9]

Conclusion

The patient was closely monitored in the ICU for 2 weeks. A follow up CT scan showed resolution of the abscess, which corresponded to downtrending serum creatinine values. After symptomatic improvement, he was transferred to the medicine wards. The course of amphotericin B was completed, and with his symptoms resolved, the patient was discharged.

Though rare, the *Coccidioides* should be included in the differential for immunocompromised patients presenting with prostatitis who have spent time in endemic areas.[8] Urinalysis covering *Coccidioides* is warranted as a first step; any patient with suspected or confirmed prostatic coccidioidomycosis should undergo a full work up and be referred to an infectious disease specialist.[9] Biopsy of the prostate may ultimately be the only method of diagnosis.

Due to the rarity of coccidioidomycosis of the prostate, specific guidelines do not exist for treatment. Infectious Diseases Society of American guidelines for disseminated disease recommend at least 400 mg daily of one of the −azole antifungals (ketoconazole, fluconazole, itraconazole).[10] These drugs have in limited studies shown to reach levels in prostatic secretions equal to or nearly equal to serum levels.[5] Amphotericin B is recommended for rapidly progressing disease.[7] In the limited number of reported cases, both amphotericin and azole-treated patients have been shown to be able to make successful recoveries, though the period of treatment required to drop their antibody titers to within normal limits has varied from days to more than a year.[5,9]

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