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Case report

A case of a positive coccidioides stool culture in an immunocompetent patient with disseminated coccidioidomycosis

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ABSTRACT

Coccidioidomycosis (CM) is an infection caused by the coccidioides fungus. The spectrum of the disease ranges from a mild upper respiratory illness to severe disseminated infection that could affects the bones, joints, skin, central nervous system, and the gastrointestinal tract. Previous reports of a positive stool culture in the setting of disseminated CM are extremely rare. Herein, we describe a case of a 43-year-old immunocompetent patient with disseminated CM and evidence of positive coccidioides stool culture.

Case presentation

A previously healthy 43-year-old African American male presented to the emergency department at a tertiary hospital in Phoenix, AZ, with a chief complaint of a 6 month history of generalized fatigue. Over the course of the same period the patient experienced a 30 pounds weight loss. The patient stated that his symptoms began a year after he moved to Arizona from the Midwest. The patient denies any history of endocrine, heart, liver, kidney or thyroid disease. He never smoked and was not on any medications.

Apart from a low-grade fever of 38.6, his physical exam was normal. The initial labs showed a white blood cells count of 15 k/ul with 6.3% eosinophil count, as well as anemia with a hemoglobin of 7.1 g/dl and a hematocrit of 22.3%. Both HIV test and viral hepatitis panel were negative. A CT scan of the chest, abdomen, and pelvis revealed diffuse peripheral ground-glass opacities in the lungs, peripheral wedge-shaped opacity in the spleen, and free fluids in the rectovesical and left paracolic gutters with mesenteric stranding that was concerning for colitis. It also showed multifocal osteolytic lesions involving the axial skeleton (Picture 1).

The patient was initially started on intravenous (IV) Vancomycin and Piperacillin/tazobactam, and an iliac crest bone biopsy was also done. After 5 days of hospitalization, he remained febrile and began to exhibit confusion and increasing respiratory distress. He was subsequently transferred to the ICU where he was intubated and mechanically ventilated. Due to his continued mental deterioration a brain MRI, and a lumbar puncture were performed. The MRI revealed two small acute infarctions in the right insula and the peripheral aspect of the superior right pons, as well as skull base lytic lesions with involvement of the clivus and right occipital condyle (Picture 2). A sputum culture, the bone biopsy, and the cerebral spinal fluids (CSF) analysis all had evidence of an infection with coccidioides immitis/posadasii. The diagnosis of disseminated coccidioidomycosis infection was established and the patient was started on IV Fluconazole. Over the course of the next 5 days the patient's stool also tested positive for coccidioides.

The patient experienced prolonged respiratory failure and a percutaneous tracheostomy was performed along with gastric tube placement. The subsequent hospital stay was complicated by gastric perforation that required exploratory laparoscopy with omental patch repair. Further deterioration in his condition led to acute renal insufficiency, left femoral and popliteal deep venous thrombosis, methicillin sensitive staph aureus pneumonia and multiple intra-abdominal abscesses that were not amenable for drainage due to severe anemia and coagulopathy. After two months of treatment and supportive care, his clinical condition did not show any significant improvement and after several meeting with family care was withdrawn and patient expired.

Discussion

Coccidioidomycosis (CM) is an infection caused by the coccidioides fungus found in the desert soil of the southwestern United States, northern Mexico, and parts of Central and South America. It was first described in Argentina in 1892 by Alejandro Posadas [1] who worked under the supervision of professor Robert Wernicke; a prominent pathologist at the University of Buenos Aires. Posadas identified the cocciodiodes fungus in a biopsy that was taken from recurrent skin tumors in one of his patients. At the time, coccidioides was thought to

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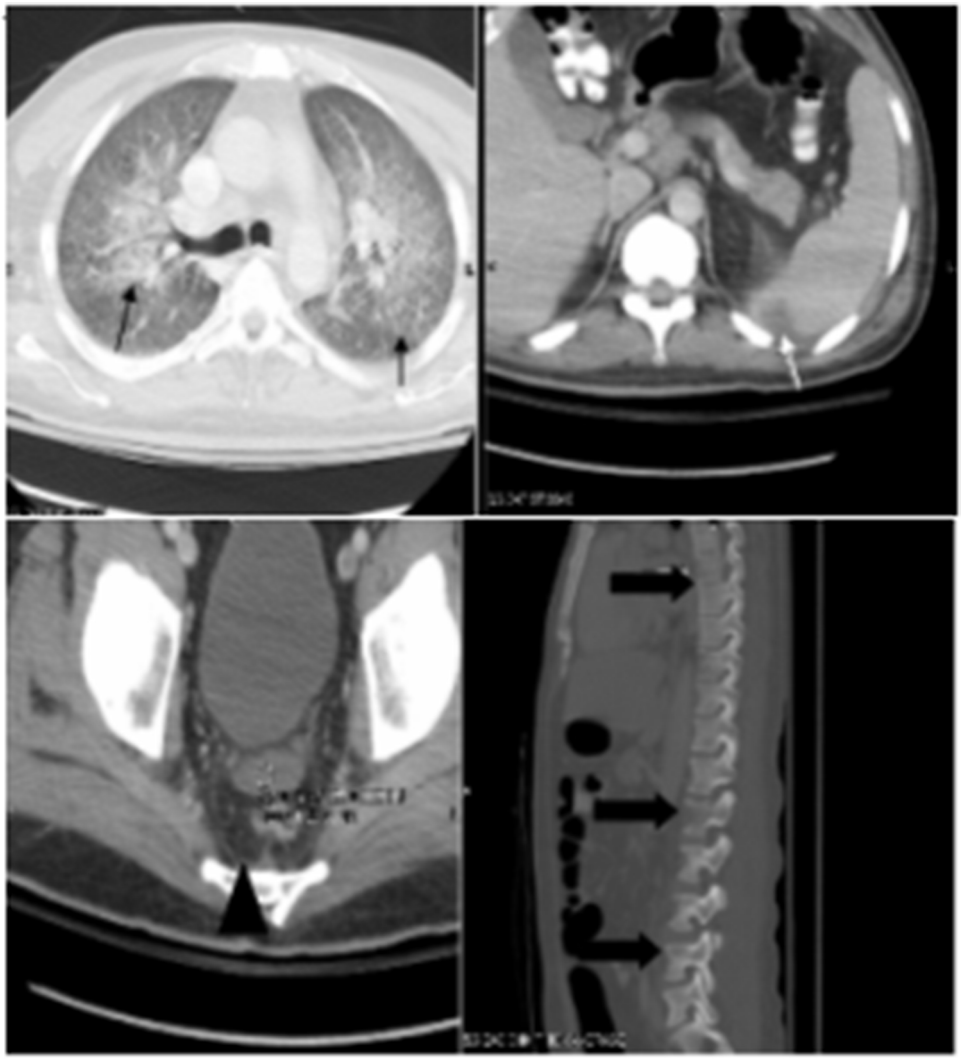

Picture 1. CT scan of the chest, abdomen, and pelvis.Peripheral ground-glass opacities in the lungs (thin black arrows).Peripheral wedge-shaped opacity in the spleen (white arrow).Free fluids in the rectovesical and left paracolic gutters with mesenteric stranding (arrow head).Multifocal osteolytic lesions involving the axial skeleton (thick black arrows).

be a parasite due to its similarity to coccidian protozoa [2].

Cocciodiodes is dimorphic, soil-borne fungus with two species; C. immitis which is more common in California, Western Arizona, and Baja Peninsula of Mexico, and the newly identified species C. posadasii (named after Dr. Posadas) that is usually found in southern Arizona, Texas, Mexico, Central and South America [3,4].

In 2011 the estimated incidence of CM infection in the endemic states was 42.6 case per 100,000 persons [5].

Sixty percent of individuals infected with CM are asymptomatic or have a presentation that is similar to upper respiratory infection. The majority of the remaining 40% show typical symptoms of “acute valley fever” that include fever, diffuse arthralgia, erythema nodosum, pleuritic chest pain and cough. The disseminated disease occurs in about 1% of the cases [6].

Pregnant women and individuals with cellular immunodeficiency such as the ones with human immunodeficiency virus (HIV) infection, organ transplant patients, and those who use chronic steroid are at higher risk of developing disseminated infection [7]. In immunocompetent patients, certain racial groups like African Americans and Filipinos are at increased risk for the disseminated disease [8].

The most common sites of disseminated infection include the lungs, bones/joints, central nervous system (CNS), skin and lymph node [9].

Previous reports of a positive stool culture in the setting of disseminated CM are extremely rare, and to the best of our knowledge there has been only one case that documented positive stool culture in a patient with an extensive gastrointestinal (GI) involvement [10]. It has been proposed that the fungal spherules may be eradicated by GI secretions [11,12], which could explain why they are rarely detected in the stool. In a retrospective analysis by RD Adam et al., only 5 of 150 cases of disseminated CM studied between 1996 and 2007 in an endemic region, reported evidence of gastrointestinal infection, however, the authors did not mention if there was any documentation of a positive stool culture in any of the cases [13].

In our case, the positive stool culture suggests but does not confirm a GI involvement. In fact several factors seem to diminish the likelihood including a lack of gastrointestinal symptoms, non-specific CT findings, and our own lack of confirmatory gastrointestinal biopsy. This interesting finding though could be a result of swallowed pulmonary secretions as it was suggested before in the literature [14].

Conflicts of interest

The authors declare that there are no conflicts of interest.

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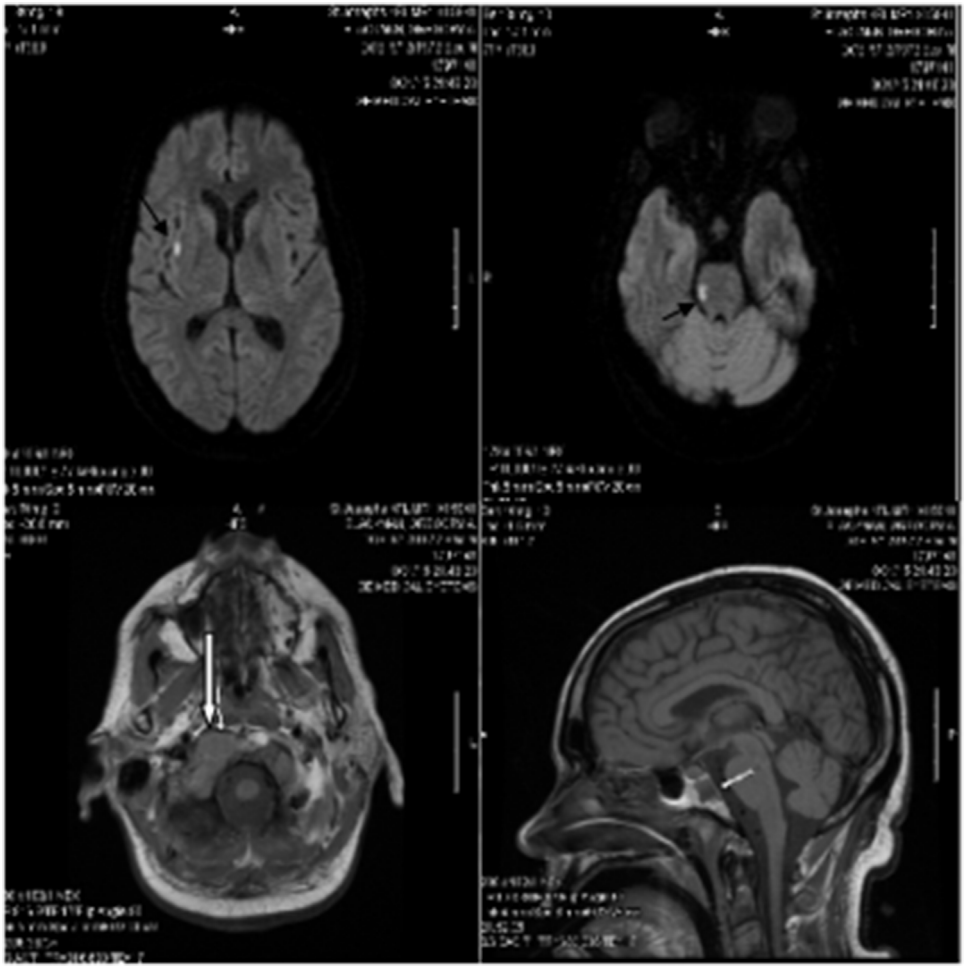

Picture 2. MRI of the brain.Two acute infarctions in the right insula and the peripheral aspect of the superior right pons (black arrows).Skull base lytic lesions with involvement of the clivus (white line) and right occipital condyle (white arrow).

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