

Introduction

- Coccidioidomycosis, colloquially referred to as valley fever, is an invasive fungal infection caused by *Coccidioides immitis* or *Coccidioides posadasii*, which are pathogens found in the soil in the Southwestern United States, Mexico, Central America, and South America (figure 1).
- In this report, we describe two cases of coccidioidomycosis with pertinent travel history.

Case One

- A 20-year-old Honduran male with no past medical history was admitted for acute encephalopathy, subjective fever, cough, nausea, vomiting, and diarrhea for two weeks.
- He migrated from Honduras through Mexico to the United States about a month ago.
- He developed acute hypoxic respiratory failure requiring intubation with mechanical ventilation and acute kidney injury (AKI) requiring intermittent hemodialysis.
- Chest imaging studies suggested bilateral nodular consolidation (figure 2).
- The patient had a positive *Coccidioides* IgM enzyme immunoassay (EIA) with other infectious evaluation including bronchoscopy unrevealing.
- Lumbar puncture performed following initiation of antifungal therapy showed no pleocytosis, normal glucose, normal protein, and negative *Coccidioides* antigen and serologies.
- Clinical improvements in oxygen requirement and weaning from dialysis after initiation of fluconazole treatment. He completed a 3-month course of fluconazole with clinical improvement and experienced normalization of his chest x-ray findings at 6-months.

Case Two

- A 33-year-old Dominican male with no reported past medical history presented with three weeks of cough, shortness of breath, fever, chills, fatigue, headache, myalgia, and decreased appetite.
- He was visiting Phoenix, Arizona while his symptoms developed and denies any outdoor or gardening activities while there.
- He treated for community acquired pneumonia at a regional emergency department in Phoenix and completed a course of cefdinir and azithromycin without improvement.
- He presented to our emergency department approximately a week later with persistent symptoms and was found to have a persistent left upper lobe (LUL) infiltrate on chest x-ray and CT chest (figure 2A and 2B).
- He failed to improve on an empiric outpatient course of doxycycline and was admitted eight days later due to progressively worsening symptoms. Repeat CT chest showed a LUL necrotizing pneumonia (figure 2C and 2D).
- Pulmonology performed bronchoscopy, and resulting cultures grew *Coccidioides* species.
- The patient was discharged on a 3-month course of fluconazole and 6-week course of amoxicillin-clavulanate for both coccidioidomycosis and possible post-obstructive bacterial pneumonia. He was clinically improved at 6-week follow up visit.



Figure 1. Estimated areas of Coccidioidomycosis in the United States (from CDC website)
Figure 2. Chest X-ray showed bilateral nodular consolidation in case one
Figures 3A and 3B. CXR and CT chest of LUL pneumonia in case two respectively.
Figures 3C and 3D. Worsening CXR and CT chest upon admit in case two respectively.
Figure 4A. Fluffy white-grayish colonies of *Coccidioides* in respiratory culture. Figure 4B. Arthroconidia of *Coccidioides* in Lactophenol cotton blue (LPCB) stain

Discussion

- There are estimated 150,000 cases of coccidioidomycosis in the United States annually, but typically 10,000-20,000 cases reported per year.
- Of these infections, approximately a third present with symptomatic disease with pneumonia, cutaneous disease, and meningitis being the most common manifestations.
- Disseminated illness more likely to occur in immunocompromised individuals.
- Diagnosis is most commonly made by serologic tests, such as enzymatic immunoassay. Microscopy and tissue cultures, that provide definitive diagnosis, must be performed on tissue or respiratory cultures in a biosafety level 3 laboratory.
- In patients with neurologic symptoms, lumbar puncture should be performed to rule out central nervous system involvement.
- Treatment of asymptomatic to mild coccidioidomycosis without overt immunosuppressing condition is typically supportive.
- Fluconazole or itraconazole are the mainstay of antifungal therapy for patients with moderate symptomatic disease, particularly in the setting of immunocompromise. Amphotericin is considered in severe disease.
- Coccidioidomycosis is not endemic to southeastern Louisiana, but we reported cases through regional travel to the southwestern United States. Therefore, this infection should be considered in the differential diagnosis of patients who present with pneumonia refractory to antibiotic coverage following travel to an endemic area.

Reference

- Center for Disease Control and Prevention. Biology of Coccidioidomycosis. <https://www.cdc.gov/fungal/diseases/coccidioidomycosis/pdf/coccidioidomycosis-lifecycle508c.pdf>
- Coccidioidomycosis is a fungal infection caused by *Coccidioides immitis* or *Coccidioides posadasii*, which are found in the soil in the Southwestern United States, Mexico, Central America, and South America.
- Galgiani JN, Ampel NM, Blair JE, Catanzaro A, Geertsma F, Hoover SE, Johnson RH, Kusne S, Lisse J, MacDonald JD, Meyerson SL, Raksis PB, Siever J, Stevens DA, Sunenshine R, Theodore N. 2016 Infectious Diseases Society of America (IDSA) Clinical Practice Guideline for the Treatment of Coccidioidomycosis. Clin Infect Dis. 2016 Sep 15;63(6):e112-46. doi: 10.1093/cid/ciw360. Epub 2016 Jul 27. PMID: 27470238.
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