Disseminated coccidioidomycosis discovered through skin biopsy in a pregnant patient from Mexico

Henry Lim, DO; Christina Guo, OMS-IV; Marshall Hall, DO MPH; Christian Scheufele, DO; Christopher M. Wong, DO; Michael Carletti, DO; Stephen E. Weis, DO

Medical City Fort Worth

Background

- Coccidioidomycosis is an infection caused by the organism *Coccidioides immitis*, a dimorphic fungi endemic to the southwestern United States, Mexico, Central and South America.[1]
- The range of clinical manifestations of coccidioidomycosis infections is broad. It may manifest as a simple upper respiratory infection to highly morbid and potentially life threatening disseminated disease affecting virtually almost any organ system.[1]
- While usually confined to the lungs, extrapulmonary coccidioidomycosis can occur in about 1 in 200 patients, most commonly associated with immunocompromised status.[2]
- Cutaneous lesions of coccidioidomycosis demonstrate a large heterogeneity of clinical manifestations but are significant as they may be the presenting sign of disseminated disease.[3]

Case Report

- A 22-year-old G1P0 female at 33 weeks with no significant past medical history presented to obstetric triage due to 3 day history of headache unresponsive to Acetaminophen, dysuria, and decreased fetal movement.
- She immigrated to Texas from Chihuahua, Mexico 1 year ago and has had adequate prenatal care.
- A rapidly enlarging verrucous plaque on her forehead has also been present for 2 months (Figure 1).

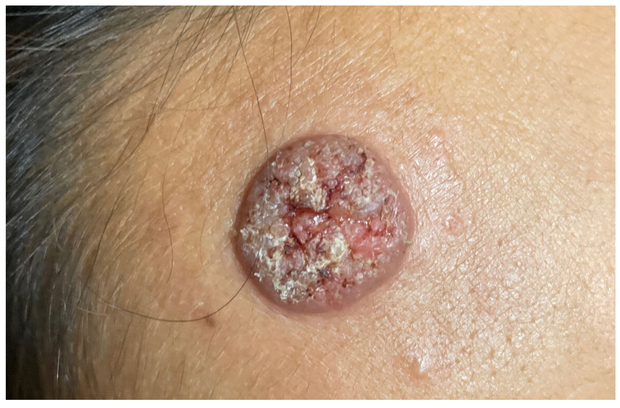

Figure 1. Well demarcated verrucous plaque with serosanguinous crust of the right forehead.

- Triage findings were reassuring: Electronic fetal monitoring demonstrating a category 1 tracing, CBC WNL, vital signs stable, negative pandemic panel, urinalysis with moderate leukocytes.
- Patient discharged with treatment for UTI, routine prenatal care, and follow up for forehead lesion.

Case Report Cont.

- Patient is admitted 5 days later due to worsening headache, dizziness, fatigue, and blurry vision, tachycardia, tachypnea, and fever up to 102.8F.
- Physical exam positive for neck stiffness and Kernig's sign

Pertinent lab & imaging findings	
CBC	WBC 10.95, Eosinophils 0.55
CMP	WNL
Special chemistry & microbiology	Procalcitonin <0.05, Lactic acid 1.5, blood cultures negative
Imaging	Chest xray & CT head wo contrast negative
CSF studies	Colorless, WBC 788/µl, RBC 69/µl , Protein 84 mg/dL, Glucose 24 mg/dL, **Eosinophils 46%**, Neutrophils 40%, Lymphocytes 9%, aerobic culture negative
Meningitis/encephalitis panel	E. coli K1, H. flu, Listeria monocytogenes, Neisseria meningititis, Strep agalactiae, Strep pneumo, CMV, Enterovirus, HSV1/2, HHV6, Human parechovirus, VZV, and Cryptococcus neoformans negative

- Punch biopsy of the forehead revealing: **superficial and deep lymphohistiocytic inflammatory infiltrate with granulomatous inflammation and scattered foreign body giant cells. Within the granulomatous inflammation were spherules recognizable as coccidioidomycosis (Figure 2).**

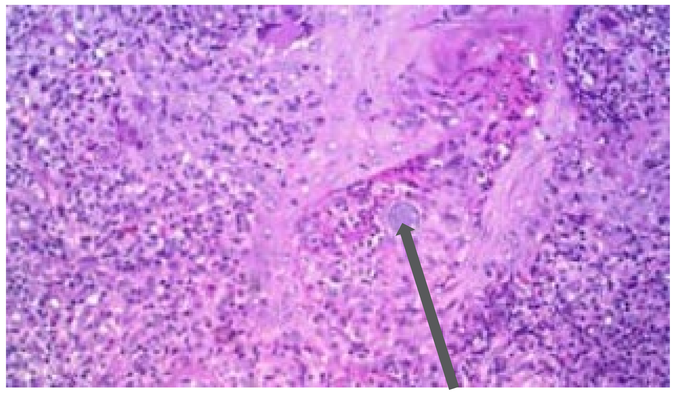

Figure 2. H&E demonstrating characteristic spherule containing pale endospores within a granuloma surrounded by lymphohistiocytic infiltrate and scattered foreign body giant cells.

- Patient started on Intravenous (IV) Amphotericin B (AmB) for eosinophilic meningitis secondary to disseminated coccidioidomycosis meningitis and experiences chest pain, dyspnea, hypoxia, and FHR decelerations 1-2 minutes later. Her medication was switched to IV Fluconazole 800 mg daily for presumed toxicity to AmB.
- Dramatic clinical improvement over 3 days and discharged with oral Fluconazole 400 mg for life.

Case Report Cont.

- Coccidioidomycosis serology by complement fixation returns **positive three days after skin biopsy results**.
- Undergoes routine spontaneous vaginal delivery at 39 weeks 4 days to an average for gestational age female.
- Patient and neonate undergo routine surveillance without complication.
- Routine well-child and post-partum visits at 2 months, tolerating Fluconazole, and breastfeeding without difficulty.

Discussion

- Biopsy of a skin lesion in this patient with presumed infection without known source led to a diagnosis and initiation of treatment of disseminated coccidioidomycosis.
- Unlikely the skin was the primary site of inoculation with dissemination to the meninges. Patient most likely had primary asymptomatic respiratory involvement and secondary dissemination.[1]
- The patient's newborn daughter did not develop any respiratory distress. Despite disseminated disease, this patient and her child experienced an unremarkable course once treatment was initiated.
- Pregnant women diagnosed with coccidioidomycosis are at little or no risk for prematurity or fetal complications and Fluconazole is considered safe after the 1st trimester.[4]
- Pregnancy is considered an immunocompromised status that has been recognized as a risk factor for disseminated and severe coccidioidomycosis.[5] Rates of dissemination and severe disease increase by trimester.[6]
- Although IV AmB is safe in pregnancy, its use is severely limited by toxicity.[4] Majority of adverse events occur within the first 5 minutes of administration, including a symptom complex of chest pain, dyspnea, and hypoxia.[7]

Learning Points

- Diagnostic errors and near misses can be used as opportunities to learn how to improve the work system and diagnostic processes.
- Clinicians evaluating patients with skin lesions and systemic symptoms should strongly consider systemic illness with skin manifestations in their differential diagnosis.
- Clinicians must be aware that pregnant women are not immunocompromised in a classical sense. Pregnancy is associated with immunologic changes that results in them being more susceptible to pathogens.[8]

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This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

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