# *Coccidioides immitis* Dissemination to Fifth Metatarsal

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## Purpose

Coccidioidomycosis, known also as Valley Fever or Desert Fever, is a fungal infection endemic to the southwestern United States. This pathogen is acquired via inhalation of spores found in the soil of the region. Infection typically happens following formation of airborne dust from sources such as landscaping, construction, dust storms or military exercises. Although dissemination to the skeletal system is rare such infections likely stem from hematogenous seeding of bone. Patients with risk factors of disseminated spread include travel in endemic areas, immunocompromised status, pregnancy, advanced age, and African/Pacific Islander ancestry. Most skeletal dissemination occurs in the axial skeleton but can spread to distal extremities. Due to possible lack of respiratory symptoms or radiological evidence and skeletal coccidioidomycosis' broad symptomatic presentation it is easy to miss this condition on a differential diagnosis.

## Methods

86-year-old male patient with extensive past medical history including metastatic malignancies requiring treatment with chemotherapeutics and immunosuppressants presented to Podiatry clinic with complaint of new onset wound to right 5$^{th}$ metatarsal base. The lesion measured 0.9 cm x 0.7 cm x 1.4 cm and probed to bone. Patient reported that the wound was roughly two months old, and denied any trauma or injury to the area that would correlate with the wound's presence. The wound expressed purulence on physical exam and peri-wound erythema extended roughly 2 cm from the edges. Culture/sensitivity was taken from wound, 3 view plain films taken, and empiric doxycycline prescribed with follow-up.

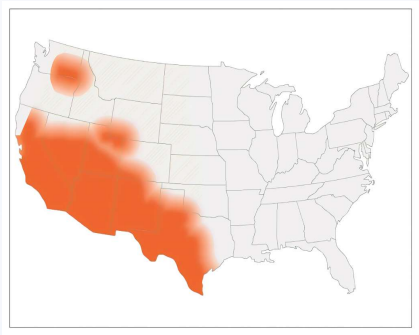

Figure 1: Endemic range of Coccidioides immitis in US – CDC.gov

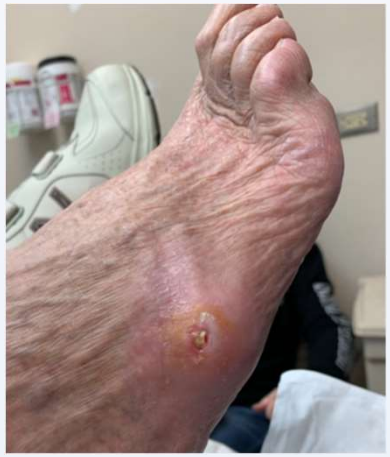

Figure 2: Image of lesion taken upon initial presentation

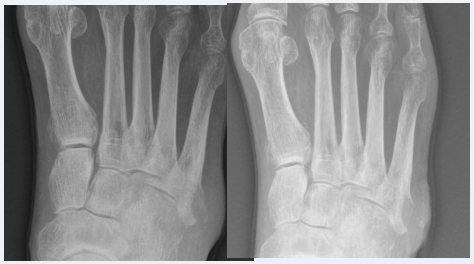

Figure 3: AP Views of Foot taken prior to antifungal therapy and after 7+ months

## Results

Wound culture and sensitivity demonstrated no bacterial growth and detected *Coccidioides immitis*. Radiographic findings included age indeterminate bone fragmentation and possible cortical erosion and/or focal bone loss. Initial antibiotic therapy was discontinued, and the patient was then treated with clotrimazole solution applied to wound surface every other day. Due to patient's ongoing severe and systemic medical conditions and patients advanced age surgical intervention of the infection was deemed inappropriate and patient elected to undergo systemic therapeutics for management. Infectious Disease consult was placed and treatment of Itraconazole 200 mg twice daily was prescribed with long term follow up scheduled with ID. Subsequent visits demonstrated decrease in wound size which eventually stabilized. Presently, the wound has healed dramatically, and the patient is being followed for long term antifungal therapy.

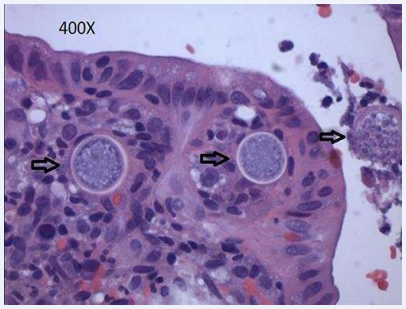


Figure 4. Example of coccidioidomycosis spherules found in an ileal biopsy

## Conclusion

Due to clinical presentation of skeletal coccidioidomycosis often mimicking other types of osseous pathology clinical suspicion should be high and based around risk factors including regional/environmental exposure, immunocompromised status, advanced age and/or ethnicity in differential diagnosis formation. Initial radiographic examination may return negative with multiple osteolytic lesions with permeative or punched-out osteolytic lesions being common in more developed infections. MRI findings can be non-specific but may be useful for planning drainage/surgical debridement if indicated. Serological, cytological studies and histological specimens are all viable methods of diagnosis in patients with high clinical suspicion although notably in patients with compromised immune symptoms serology results can be misleading. Initial treatment with intravenous AmBisome (amphotericin B) followed by antifungal systemic treatment is current guideline therapy with possible pairing with surgical resection of infected bone/tissue. Medical therapy will need to be continued for a long period of time (3 years to life) due to risk of recurrence (which can be lifelong).

## Acknowledgements

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## References

Sources:

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4) (Figure 1) CDC Fungal Disease Maps Valley Fever (Coccidioidomycosis) | NIOSH | CDC
5) (Figure 4) Disseminated Coccidioidomycosis Presenting as Carcinomatosis Peritonei and Intestinal Coccidioidomycosis in a Patient with HIV - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/Histology-from-the-ileal-biopsy-It-reveals-3-coccidioidomycosis-spherules-denoted-by_fig3_314224657 [accessed 29 Nov, 2023]