Slowly growing plantar mass in a 40-year-old immigrant

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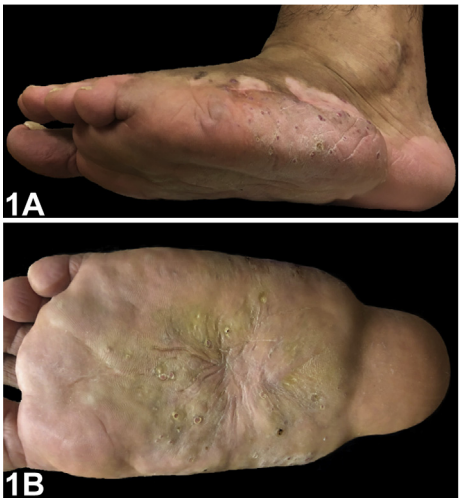

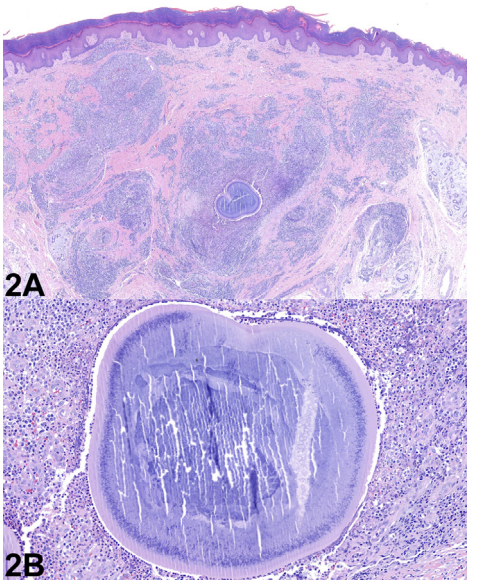

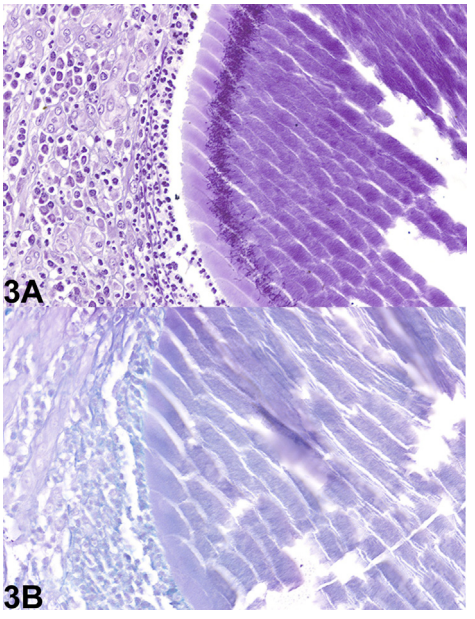

A 43-year-old male agriculture worker who arrived to the United States from Mexico 20 years earlier presented with a 16-year history of progressive soft tissue enlargement of the plantar foot (Fig 1). An incisional biopsy was performed (Figs 2 and 3). Magnetic resonance imaging found joint effusions of fourth and fifth metatarsals and phlegmonous changes around the third, fourth, and fifth metatarsals.

Question 1: Based on the clinical presentation and histology, what is the most likely diagnosis?

A. Actinomycotic mycetoma

B. Lymphatic filariasis

C. Eumycotic mycetoma

D. Kaposi sarcoma (KS)

E. Chromoblastomycosis

Answers:

A. Actinomycotic mycetoma (actinomycetoma) — Correct. The history of a large infiltrative plaque on the foot, along with occupational risk factors and residence or travel in endemic areas (Africa or Central and South America) are associated with Madura foot (mycetoma). Mycetoma is a chronic deep infection of the dermal and subcutaneous tissue that affects the feet in most cases.[1,2] Over time, the infection may spread to muscle and bone, including joint effusions and phlegmonous changes.[1,2] Magnetic resonance imaging is an important tool to guide treatment of mycetoma. Actinomycetoma occurs more commonly in Central and South America. *Actinomadura spp.* and *Nocardia spp.* are the most common organisms isolated in actinomycetoma in the Americas and can be distinguished by the Fite-Faraco stain, which highlights the partially acid-fast *Nocardia*.[1,2]

B. Lymphatic filariasis — Incorrect. Only early lymphatic filariasis would have the immune response present in the histologic images presented. Further adult worms usually persist for 5 years, with some living up to 15 years.[3]

C. Eumycotic mycetoma — Incorrect. Eumycotic mycetoma (eumycetoma) occurs more commonly in areas with longer wet seasons such as Africa and India. Eumycetoma and actinomycetoma are differentiated by gross and microscopic inspection of grains. Eumycetoma have large grains that are ≥1 to 2 mm in diameter that are composed of broad fungal hyphae, whereas actinomycetoma grains are smaller and composed of narrow filamentous bacteria.[1,2]

D. KS — Incorrect. Although this case is in a typical location for the classic type of KS, KS does not demonstrate multiple sinuses or suppurative or granulomatous inflammation.[4]

E. Chromoblastomycosis — Incorrect. Chromoblastomycosis is characterized by medlar or sclerotic bodies, pigmented yeast with pathognomonic septations.[5]

Question 2: What are the histopathologic features of this diagnosis?

A. Fragments of worms, microfilariae, macrophages, and variable epithelioid granulomas

B. Granules with delicate, gram-positive branching filaments less than 1 μm in diameter

C. Masses of periodic acid—Schiff—positive hyphae embedded in intercellular cement with filaments wider than 1 to 2 μm

D. Cellular proliferation of neoplastic spindled cells arranged in fascicles with hemorrhage

E. Hyperchromatic and pleomorphic endothelial cells lining vessels that dissect dermal collagen

Answers:

A. Fragments of worms, microfilariae, macrophages, and variable epithelioid granulomas — Incorrect. This description is of lymphatic filariasis.[3]

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B. Granules with delicate, gram-positive branching filaments less than 1 μm in diameter — Correct. The grains of actinomycetoma are distinguished histologically from eumycetoma based on morphology, aided by special stains. Gram stain highlights the thin filamentous bacteria *Nocardia* and *Actinomadura*. In contrast, the thick hyphae of eumycetoma are highlighted by periodic acid—Schiff and Gomori methenamine-silver stains.[1,2]

C. Masses of periodic acid—Schiff—positive hyphae embedded in intercellular cement with filaments wider than 1 to 2 μm — Incorrect. This description is of eumycetoma, which is most commonly caused by *Madurella mycetomatis*. Eumycetoma grains should be washed with antibiotics and cultured for a minimum of 6 weeks on Sabouraud agar enriched with antibiotics. Mycetoma plates should be incubated at 25°C and 37°C to identify the causative agent.[1,2]

D. Cellular proliferation of neoplastic spindled cells arranged in fascicles with hemorrhage — Incorrect. The nodular stage of KS is cellular spindle cell proliferation with cytologic atypia, mitotic activity, and hemorrhage.[4]

E. Hyperchromatic and pleomorphic endothelial cells lining vessels that dissect dermal collagen — Incorrect. This is a typical morphologic description of angiosarcoma. Immunohistochemistry demonstrates expression of CD31, CD34, D2-40, or Ulex europaeus-1 lectin by neoplastic cells.[6]

Question 3: Which of the following would be an appropriate treatment option for this patient?

A. Sulfamethoxazole/trimethoprim and amikacin

B. Itraconazole

C. Penicillin G

D. Ketoconazole

E. Amphotericin B

Answers:

A. Sulfamethoxazole/trimethoprim and amikacin — Correct. Sulfamethoxazole/trimethoprim and dapsone for 2 to 3 years comprise the first-line therapeutic regimen for the 4 most common pathogens underlying actinomycotic mycetoma.[1,2]

B. Itraconazole — Incorrect. Itraconazole is the first-line medical treatment for eumycetoma. This therapy is not curative but reduces disease burden in preparation for surgery.[1,2]

C. Penicillin G — Incorrect. Penicillin G plays no role in the major treatment regimens of actinomycetoma. Penicillin G is indicated in the treatment of *Actinomyces* rather than *Actinomadura*.[1,2]

D. Ketoconazole — Incorrect. Ketoconazole has been used in the treatment of eumycetoma but is no longer recommended because of hepatotoxicity associated with systemic administration.[1,2]

E. Amphotericin B — Incorrect. Amphotericin B was historically used in the treatment of eumycetoma but is no longer recommended because of toxicity and high relapse rates.[1,2]

Abbreviation used:

KS: Kaposi sarcoma

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