Mycetoma of the foot

Introduction

Fungal mycetoma of the foot, termed Madura foot from 19th century reports in India (Carter, 1861), is typically a tropical infection. Its slow growth and varied presentations mean it should be considered in the differential diagnosis of a slow-growing foot mass.

Discussion

Madura foot can be either a true fungus (Eumycetoma) or a higher filamentous bacterium (Actinomycete). The classical triad for a mycetoma includes a painless subcutaneous mass, draining sinuses and fungal grains consisting of mycelia embedded in dense fibrous material. Pigmentation is variable.

A tropical mycetoma belt has been described geographically between 30° N and 15° S. Inoculation generally follows puncture wounds in the unshod foot. Direct tissue spread including osseous involvement produces an expansile invasive mass, although nerves and tendons may be spared. Regional lymphadenopathy occurs with secondary bacterial infection. Rarely direct lymphatic spread may occur and extra-pedal mycetoma is reported.

Imaging can help with a magnetic resonance imaging 'dot-in-circle' sign described; high intensity lesions on T2 images with tiny central low-signal foci representing fungal grains within inflammatory granulomata (Sarris et al, 2003).

Treatment is surgical excision with clear margins under tourniquet (Fahal and Hassan, 1992). Local amputations may be necessary, although debulking procedures are favoured. Combination antibiotic therapy in isolation has been more successful for Actinomycoses, although case reports suggest voriconazole may be effective at treating *Madurella* spp when used for more than 1 year (Lacroix et al, 2005). There is no consensus on duration of treatment or follow up. In this case, surgery had completely excised the lesion and there was no evidence of bony involvement. It was therefore debatable whether antifungal therapy was required and an intermediate approach to therapy, with 3 months of voriconazole, was decided upon.

Conclusions

Atypical fungal infections should be considered in the assessment of a soft tissue foot mass in a patient with a history of travel or time spent in a tropical region, even in the absence of sinuses or evidence of inflammation. BJHM

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Figure 1. Preoperative appearance of foot mass.

Figure 2. Preoperative coronal magnetic resonance imaging scan with arrow indicating Mycetoma.

Carter HV (1861) On a new and striking form of fungus disease, principally affecting the foot, and prevailing endemically in many parts of India. *Trans Med Phys Soc Bombay* **VI:** 104–42

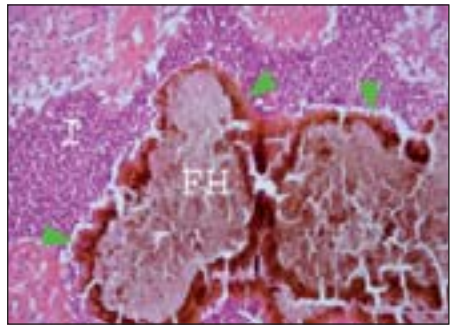
Fahal AH, Hassan MA (1992) Mycetoma. *Br J Surg* **79:** 1138–41

Lacroix C, de Kerviler E, Morel P, Derouin F, Feuilhade de Chauvin M (2005) Madurella mycetomatis Mycetoma treated successfully with oral Voriconazole. *Br J Dermatol* **152:** 1062–94

Sarris I, Berendt AR, Athanasous N, Ostlere SJ (2003) MRI of mycetoma of the foot: two cases demonstrating the dot-in-circle sign. *Skel Radiol* **32:** 179–83

Figure 3. Intraoperative surgical excision with biopsy tract.

Figure 4. Histology of the lesions shows fungal hyphae (FH) with a brown pigmented rim (arrowheads) and local inflammatory reaction (I) (original magnification 200x haematoxylin and eosin stain).



Case Report

A 22-year-old Eritrean woman, who had been resident in the UK for 6 years, presented with a 3-year history of a slowly growing mass over the dorsolateral aspect of her right foot. A previous incisional open biopsy performed by the regional bone tumour unit demonstrated fungal hyphae.

The mass measured 3 x 4 cm with intact overlying skin and no sinus formation (*Figure 1*). Plain X-rays were normal and a magnetic resonance image showed the mass to contain discrete rounded opacities of intermediate signal. Bone marrow oedema was seen but no bony infiltration or destruction (*Figure 2*).

She underwent wide excision including the previous biopsy tract (*Figure 3*). No organism was cultured under routine laboratory conditions. Histological examination showed dense fibrous connective tissue with a granulomatous component, with pigmented brown and black material surrounding central hyphae. The infection was identified as *Madurella mycetomatis* (*Figure 4*). Oral voriconazole was given for 3 months and there was no evidence of recurrence 6 months post-operation, either clinically or on magnetic resonance imaging.