what's your diagnosis?

A painful, swelling and discharging sinus in the right foot

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A 45-year-old male adult, a farmer by occupation from a small village in the Sub-Himalayan region of North India presented with a history of pain, swelling and discharging sinus in the right foot for the previous 5-6 years. Initially, the lesion was a single nodular swelling followed by multiple nodular thickenings and discharging sinuses. He took analgesics and antibiotics from a local physician and was partially relieved but the disease process continued. The patient presented to our hospital for further management. On examination the foot showed swelling and a hardened surface with multiple discharging sinuses. The discharge was slightly blackish in appearance (**Figure 1**).

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Figure 1. Right foot image of the patient showing blackish hardened skin on dorsal aspect with discharging sinuses.

Diagnosis: Madura foot

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X-rays showed cortical erosion with a periosteal reaction in the metatarsal bones with adjacent soft tissue. Bones of the foot were osteopenic (**Figure 2**). Ultrasound of the foot showed the characteristic 'dot-in-circle' sign with multiple hypoechoic lesions on the dorsum with central fine hyperechoic areas (**Figure 3**). MRI showed a typical "dot-in-circle" sign on T2- and STIR-weighted images with a hyperintense spherical lesion with central hypointense foci (**Figure 4**). A radiological diagnosis of eumycetoma was made, which was confirmed with histopathological findings. Mycetoma pedis is a granulomatous disease of the subcutaneous tissue and deeper structures with the formation of grains containing aggregates of the causative organisms that may be discharged onto the skin surface through multiple sinuses. The process is indolent and may lead to abscess formation, osteomyelitis with severe deformity and disability if not treated expeditiously.[1-4] Although biopsy and culture provide a definitive diagnosis, these are time-consuming procedures; hence radiographs, ultrasound and MRI are early noninvasive diagnostic tools for early diagno-

Figure 2. Plain radiograph anteroposterior view showing cortical erosion in 1st and 2nd metatarsal bones with periosteal reactions in metatarsal bones. Other bones of the foot are osteopenic.

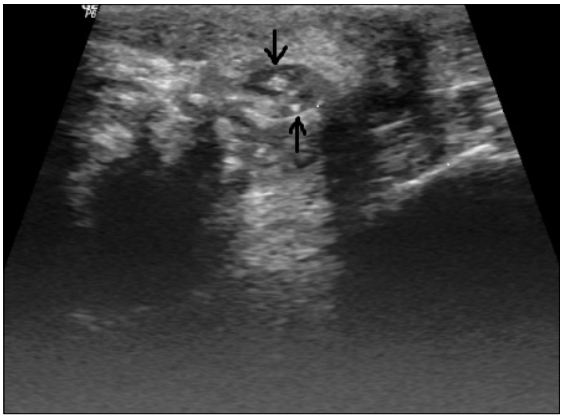

Figure 3. Ultrasound image showing typical "dot-in-circle" sign with hypoechoic lesion with central hyperechoic fungal grains (arrows).

Figure 4. Sagittal T2-weighted MR image showing hyperintense lesion on dorsal aspect with central hypointense fungal grains (arrows).

sis and better outcome in these patients.[5-7] The typical "dot-in-circle" sign on USG helps to identify Madura foot and differentiate the causative agent, *Eumycetes*. The "dot-in-circle" consists of multiple hypoechoic nodules with central hyperechogenicity. This central hyperechogenicity is fine in actinomycetoma while large and sharp in eumycetoma.[5,6] The "dot-in-circle" sign is also demonstrable on MRI where a hyperintense spherical lesion with central hypointense foci is seen. The hyperintense area represents granulomata while a low intensity hypointense center represents a fungal ball or grain.[7]

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