

## Eumycetoma Fungal Infection: A Surprise in The Left Great Toe

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### ABSTRACT

Mycetoma is a chronic inflammatory disease affecting the subcutaneous tissue. It presents as a local swelling with discharging sinuses containing granules. Mycetoma or madura foot are fungal infections caused by true fungi (eumycetoma). The classical presentation of a mycetoma foot are painless subcutaneous lesion, multiple sinuses and seropurulent discharge containing grains. An accurate diagnosis is obtained by histopathological examination. Our case was a 60 year old male with left great toe swelling, a rare clinical presentation, incidentally diagnosed to have Madura foot (Eumycetoma).

**Keywords:** Eumycetoma, Madura Foot, Fungal Infection, Discharging Sinus.

### Introduction

Mycetoma is chronic granulomatous, progressively inflammatory disease of the foot but also can occur in any part of the body. It is endemic in tropical and sub tropical regions. Eumycetoma causes infection of the foot following an injury. These organisms gets inoculated at those site. Mycetoma was described in the modern literature in 1964. The name as it is was first discovered in the mid 19<sup>th</sup> century in the famous city of Tamil Nadu, Madurai and hence it was previously known as Madura foot.

The clinical triad of mycetoma include a painless subcutaneous lesion, multiple sinuses and discharge containing grains. Bone destruction occurs when the infection is untreated as it tends to involve the deep structures.

### Case Report

A 60 year old male patient came with complaints of swelling in the left great toe for a period of two months. On examination he had a single swelling on left great toe measuring 2x1cm. Clinically the working diagnosis of haemangioma /calcified cyst was made and hence microbiological or radiological investigation was not done for the patient.

An excision biopsy was done from the left great toe swelling and was sent for histopathological examination. Grossly we received multiple skin covered soft tissue fragments which was altogether measuring 2 x1.5x1cm . Microscopically

Haematoxylin and Eosin (H& E) sections from the skin and subcutaneous tissue showed multiple micro abscess with brown colour pigmented fungal colonies (fig 1& 2) with Splendore-

Hoepli phenomenon (deposition of amorphous, eosinophilic hyaline material around the fungal colonies) (fig 3).

The filamentous fungal hyphae showed vesicular bulbous ends (chlamydoconidia). Focal giant cell reaction with reactive fibrosis and chronic inflammatory response surrounding the micro abscess was also seen. Fungal stains PAS (Periodic acid -Schiff), PASD (periodic acid -Schiff diastase) and GMS (Gomori's methenamine silver) done confirmed the above findings (fig 4-6). A diagnosis of Mycetoma foot was made. The patient was treated with oral antifungal (itraconazole). The patient has been advised for further follow up to assess the response of the treatment given and for further management.

### Discussion

Mycetoma is a chronic inflammatory disease, associated with a granulomatous reaction and occurs whenever there is an infection caused by either bacteria (actinomycetoma) or fungi (eumycetoma). It is a common endemic disease affecting the tropical and subtropical countries which include India, Mexico and Sudan.<sup>[1]</sup> In India, Madura foot is found commonly among people of low socio-economic status especially agricultural workers and rural workers. Since it is a disease of poor socio economic conditions morbidity rates are high with low mortality rate.<sup>[3]</sup> Madura foot, caused by fungi eumycetoma are saphrophytics which are found in soil. *Madurella mycetomatis* is the most common eumycetoma causative microorganisms. Other rare species include *Pseudoallescheria boydii* & *Acremonium*.<sup>[5][9]</sup> Infection occurs when these fungi gain entry through an open skin wounds.<sup>[5]</sup> In 84% of cases, foot and hand are most commonly affected. (10%). The infection starts as a subcutaneous nodules. These nodules

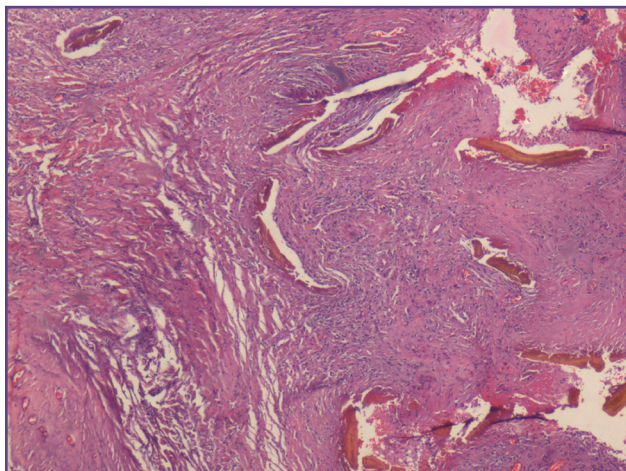


Fig. 1: Brown colour pigmented fungal colonies.H&E x40.

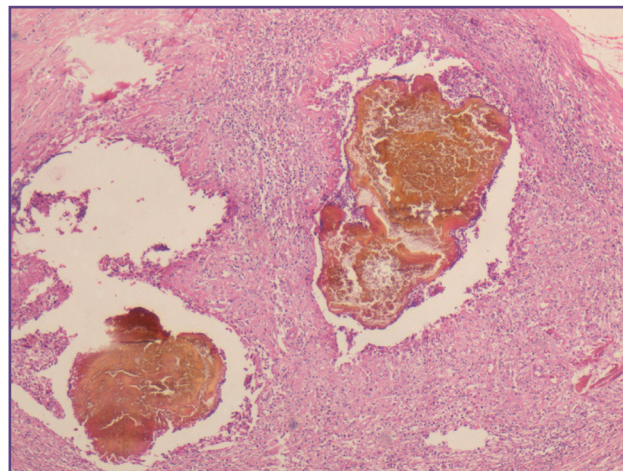


Fig. 2: Fungal colonies and surrounding inflammatory reaction.H&Ex200.

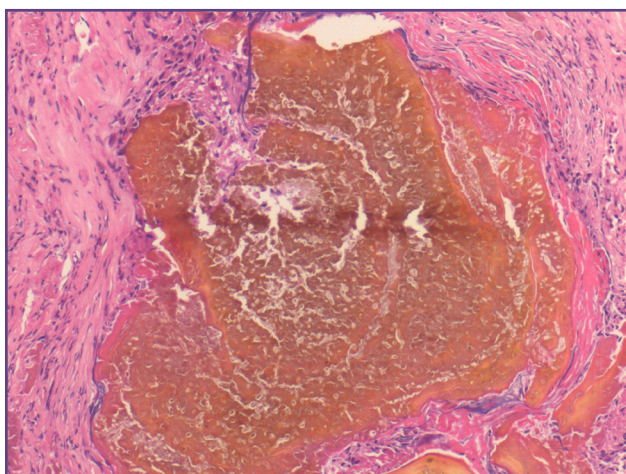


Fig. 3: Fungal hyphal colonies with splendore hopelli phenomenon.H&Ex200.

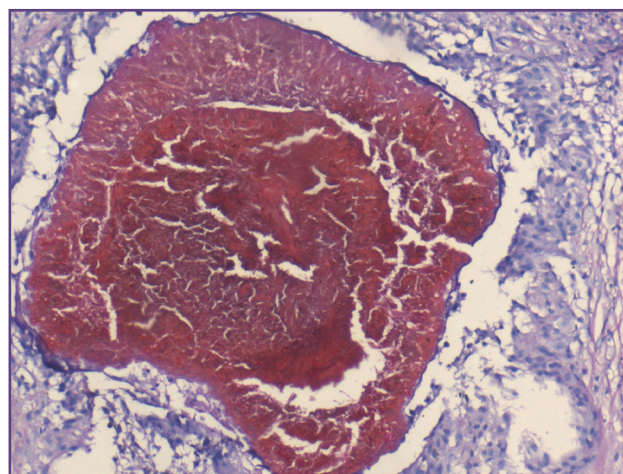


Fig. 4: Periodic acid Schiff stain-highlights the fungal colonies.PASx200.

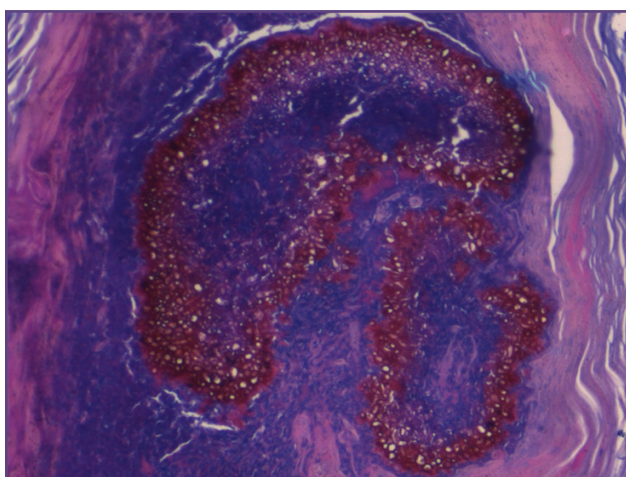


Fig. 5: Periodic acid Schiff diastase demonstrates the fungus.PASD x200.

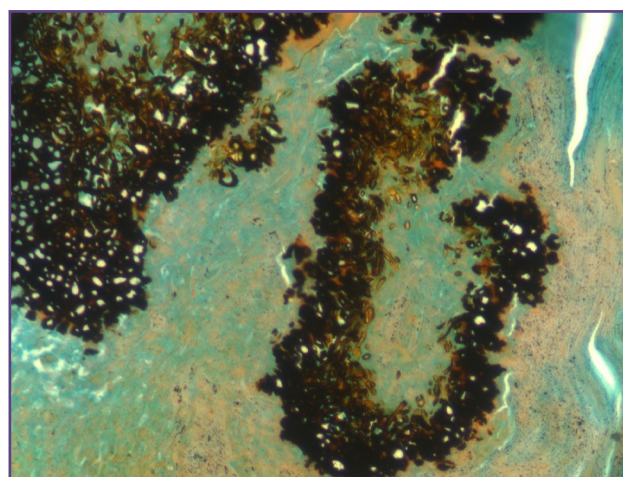


Fig. 6: Gomorine Methamine Silver stain confirms the fungal colonies. GMS x200.



conglomerate in to abscesses and draining sinuses which contain grains. These were considered as clinical triad of Mycetoma.<sup>[2]</sup> The incubation period varies from 6 months upto 1 year. There will be development of discharging sinuses. Gradually, the muscles and tendons are damaged, and osteomyelitis develops. The discharge containing dark (black) grains are pathognomonic for mycetoma. These grains vary in size microscopically ranging from 1-2mm in diameter, colour and consistency.<sup>[4][8]</sup> Although mycetoma can be caused by varying etiological agents, the clinical features and the histopathological findings remains the same.

In our case the patient had subcutaneous painless swelling of the great toe without any sinus discharge. In some patients with short history it may present with massive swelling, involving deeper tissue and bone. The patients should be subjected for other investigations such as

X-ray, CT or MRI to look for underlying bone destruction. A classical "dot in circle sign"<sup>[6]</sup> is a rare unique appearance that is seen on MRI, which is an hyper intense shadow of granulation tissue.<sup>[7]</sup> In patients with swelling and sinus discharge, FNAC can be done. In FNAC, the eumycotic mycetoma which will appear septate with branching hyphae with black granules in an inflammatory background.<sup>[3]</sup> Histopathologically, the dermis and subcutaneous tissue show localized abscesses composed of lymphoid cells, plasma cells, histiocytes. Each of these abscess contains the granules and fungal colonies in the centre. There is also presence of Eosinophilic, clublike Splendore-Hoeppli material around the fungal colonies.<sup>[5]</sup> In some cases there will be extensive granulation tissue formation leading to deformity, which may sometimes clinically misdiagnosed as neoplasm.

The treatment modality of eumycetoma include combined medical therapy and surgery. Successful treatment for a eumycetoma may require months to years of antifungal therapy.<sup>[10]</sup>

## Conclusion

Regardless of its clinical presentation, the diagnosis of mycetoma is very essential at the initial stages, because to avoid secondary infections and deformities which will

further on lead to amputation, as it is a disease of low socioeconomic status. The histopathological diagnosis in aide with microbiology play a crucial role in the management of the patient. We present this case since the case was a rare surprise presentation.

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