EUMYCOTIC MYCETOMA INVOLVING THE LEFT FOOT – A CASE REPORT

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ABSTRACT
Madura foot or mycetoma is endemic in many developing countries like India where it is a real public health issue. It is chronic granulomatous subcutaneous inflammatory disease. The causative organism is either filamentous bacteria (actinomycetes) or true fungi (eumycetes). Treatment modalities of both the etiologies are far different, there by definite diagnosis is must and histopathology is gold standard for the final diagnosis. Herein, we are presenting a case of a patient with a diagnosis of eumycetoma of left foot.

INTRODUCTION
Madura foot is a chronic infectious disease, caused by actinomycetes bacteria or by eumycetes fungi. This is a chronic granulomatous subcutaneous inflammatory disease described in 1842 by Dr. J. Gill in the Madras Medical Service of the British Army in India [1]. It is characterized by the triad of tumefaction, draining sinuses and presence of colonial grains in the exudates [2-4]. The most common site of occurrence is foot (approximately 70% cases), which explains the synonym “Madura foot” [5]. Mycetoma can occur at any age but are most frequent in the 20-40 years age range [6]. Farmers and those who walk barefoot in dirty, dry conditions are usually affected by mycetoma. Since the treatment of these two etiologies is entirely different, a definite diagnosis in the form of histopathological examination is mandatory.

CASE REPORT
A 45 years old male presented with a one year history of a progressively enlarging, painful lesion on the dorsum of his left foot. Patient was also having past history of trauma with iron rod over left great toe and it was amputated before 5 years. On examination, there was presence of globular swelling on left foot measuring 22 X 20 X 12 cm with irregular and gangrenous external surface. Multiple discharging sinuses were present with black colored granules. (Photo - 1) The movement of the ankle joint was restricted and distal neuronal sensations were also lost.

Laboratory evaluation revealed a total leukocyte count of 9100 cells/L, with microcytic hypochromic anemia. Both his C-reactive protein and erythrocyte sedimentation rate were within normal limits. Gram stain of the lesion showed no organisms and fungal cultures were negative. Tests for syphilis and HIV infection were negative. Serological tests for hepatitis virus types B and C were negative. X-ray foot showed extensive loculated lytic areas of destruction within the bone. (Photo – 2) MRI of left foot showed multiple round hyper intense areas in the soft tissue and bone, suggestive of fungal type of infection.
with multiple abscesses in soft tissue and bone with possibility of Actinomycosis. (Photo – 3) The patient was underwent amputation surgery and the amputed foot was sent for histopathological examination. Microscopic examination showed presence of blue sulfur granules surrounded by lymphoid cells, plasma cells, histiocytes, and fibroblasts. (Photo – 4) The high power examination of the sulfur granules showed septate hyphae, 4 to 5 Aµm thick. (Photo – 5) Final diagnosis was given as eumycetoma involving left foot.

**DISCUSSION**

Mycetoma is a chronic granulomatous inflammatory response caused by bacteria or fungi that triggers the formation of grains. These grains are aggregates of the causative organisms that may be discharged onto the skin surface through multiple sinuses, causing the progressive development of granulation and scar tissue that can cause deformity [6].

Mycetoma typically presents in agricultural workers or in individuals who walk barefoot in dry, dusty conditions. Minor trauma allows pathogens to enter the skin from the soil[7]. The most common site of involvement is foot with tissues becoming necrosed and swollen after infection [8-12]. Madurellamyctomatis, the most common etiologic agents of mycetoma worldwide, is particularly found in India and Africa [13]. The type of mycetoma is often suggested by the color of the grains. Red grains are indicative of an actinomycoticmycetoma. Black grains are consistent with a eumycetoma, a white and yellow colored grainsare indicative of either actinomyctomaoreumycetoma. [14]. Histopathological examination of the early phase of the disease shows that Plasma cells, histiocytes, lymphoid cells and fibroblasts are present in surround tissue of the abscess, and fibroblasts are usually predominant in the late phase. Presence of sulfur granules in area containing purulent material of abscess or sinuses is prime evidence for diagnosis, which can be obtained by biopsy. Sulfur granules are usually 0.5-2 mm in diameter and visible microscopically [15]. PAS reaction and methenamine silver are suitable staining for granules of eumycetoma and actinomycetoma. Eumycetoma granules are made up of septate hyphae of 4-5 Aµm thick, while actinomycetoma granules usually contain very fine and branching filaments or bacillary forms of about 1 Aµm thick on microscopic examination [16].

Imaging studies are useful for defining the extent of disease. The differentiation between eumycetoma and actinomycetoma is an important one with regard to therapy [17]. The combination of the clinical specific lesions, typical grains and the histopathological appearance (presence of a granulomatous inflammatory reaction with abscesses containing granules of the infecting organism) is characteristic of the diagnosis. X-rays, tomography, and magnetic resonance imaging are all useful to determine the extension of the lesions in bone and other tissues [18]. Surgical debridement together with medical therapy both before and aftersurgery is often the preferred therapeutic strategy. In the present case the patient underwent amputation surgery which carries the best chance of cure.

**Photo 1.** Globular swelling on left foot with multiple sinuses discharging black colored granules.

**Photo 2.** X-ray of foot showed loculated lytic areas of destruction of bone. (AP view)

**Photo 3:** T2W1 image of MRI left foot showed multiple round hyper intense areas in soft tissues and bones.

**Photo 4.** Blue sulfur granules surrounded by area of granulation tissue. (H & E, 10 X)

**Photo 5.** Largely septate hyphae in the sulfur granules. (H & E, 40 X)
CONCLUSION
The novelty of this case is its unusual geographic presentation in western India. Treatment modalities of both the etiologies are far different so that differentiation between eumycoticmycetoma from actinomycoticmycetoma is must. The clinical presentation, the presence of “grains or granules” and their coloration, histopathology, and culture, are all useful for making the distinction between bacterial and fungal mycetomas, although histopathological examination is the gold standard for final diagnosis.

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