Case Report

Mycetoma foot

Somnath Gooptu, Iqbal Ali, Gurjit Singh, R. N. Mishra[1]

Departments of General Surgery, and [1]Microbiology, Padm Dr. D. Y. Patil Medical College, Pimpri, Pune, India

Address for correspondence: Dr. Somnath Gooptu, Department of General Surgery, Padm Dr. D. Y. Patil Medical College, Pimpri, Pune, India.
E-mail: somnathgooptu@yahoo.co.in

ABSTRACT

Mycetoma is an uncommon chronic granulomatous infective disease of the skin, dermis and subcutaneous tissues predominantly seen in tropical countries. A patient presented to our hospital with the swelling of the left foot with a healed sinus and a painful nodule. He gave a history of sinuses in the left foot from which there was discharge of yellow granules. Culture of the ultrasound guided fine needle aspiration cytology of the nodule revealed growths of *Nocardia* species. The patient was treated with a multi-drug therapy along with debridement of the painful nodule. He experienced symptomatic relief and a regression of the swelling within the three months of follow-up so far. Due to the relatively slow progression of the disease, patients are diagnosed at a late stage. Hence, emphasis should be placed on health education and the importance of wearing footwear.

Key words: Actinomycetoma, grains, Madura foot

INTRODUCTION

Mycetoma is an uncommon chronic granulomatous infective disease of the skin/dermis and subcutaneous tissues. It is predominantly a disease of tropical countries and is named after the region of India (Madurai) where it was first described in 1842, also called "Madura Foot," it is caused by true fungi (eumycetoma) or by the filamentous bacteria (actinomycetoma). It is characterized by a triad of tumefaction, draining sinuses and the presence of colonial grains in the exudates. It is seen commonly in people who walk barefoot. Eumycetoma is more common in Northern India,[1] while Actinomycetoma is more common in Southern India.[2]

CASE REPORT

A 60-year-old male living in a village about 90 km from Pune presented to our hospital with a history of generalized swelling of the left foot of about 11 months' duration. The initial lesion had started as a single nodule over the dorsum of the foot and was followed by a second nodule that appeared two months later and a few more nodules subsequently. These lesions, mainly distributed over the dorsum of the foot [Figure 1], then burst to develop sinuses from which there was intermittent discharge of yellow colored granules. Over a period of three months, the patient developed pain in the foot that made walking difficult The left foot was grossly swollen to the ankle with healed sinuses. The clinical findings at this point were suggestive of mycetoma.

Osteomyelitic changes involving the left calcaneum were seen. Since there was no discharging sinus at the time of presentation, biopsy was done from the site under ultrasound guidance and the specimen sent for staining and culture. Non-acid fast gram-positive narrow filamentous branching bacilli were seen [Figures 2 and 3]. Culture in plain Sabourauds' dextrose agar showed growths of *Nocardia* species.

The patient was started on Trimethoprim-sulphamethoxazole (14 mg/kg, twice daily) along with Dapsone (1.5 mg/kg, twice daily) and Rifampicin (600 mg/day). The swelling decreased in size following surgical debridement of one large painful nodule. The patient has been followed up for a period of three months so far and the medication will be continued for a total period of six months or until cure is achieved.

Access this article online	
Quick Response Code:	Website: www.jfcmonline.com
	DOI: 10.4103/2230-8229.114775

Figure 1: Dorsum of the foot showing healed and active nodules

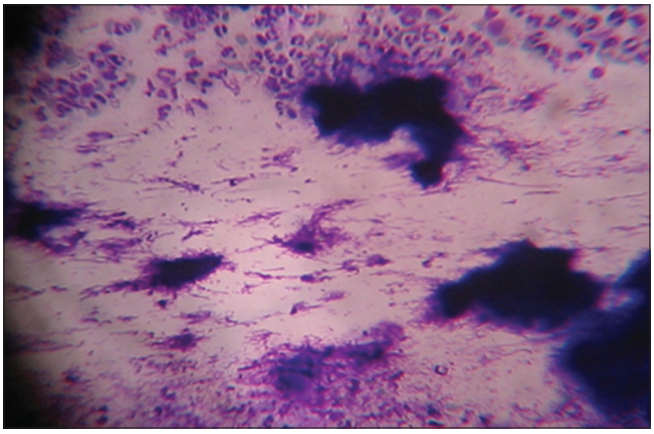

Figure 2: Gram stain showing colony and discharging granules (×40)

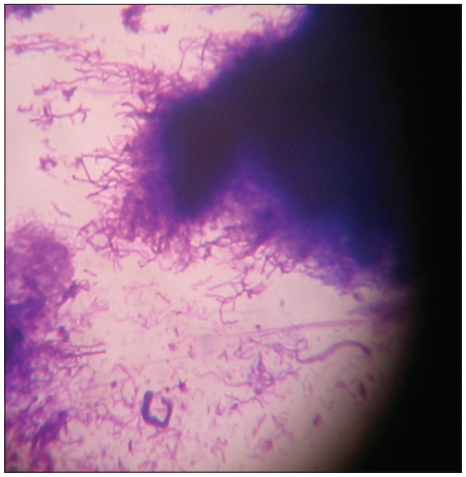

Figure 3: Gram stain showing colony and discharging granules (×100)

DISCUSSION

Mycetoma is a chronic pseudotumourous infection of the skin and subcutaneous tissue, which occasionally involves the bone. It is caused by fungi (eumycetoma) or bacteria (actinomycetoma). It is endemic in the tropics and sub-tropical Africa, Mexico and India. The incidence of Mycetoma in India has been quoted between 5.2% and 35% of the mycetomas. It commonly presents between 20 years and 50 years of age, with a male to female ratio of 2.2:1.[3]

Mycetoma typically presents in people who walk barefoot in dry, dusty conditions as was our case. Minor trauma causes the pathogens to enter the skin from the soil.[4]

The two main groups of mycetoma are the Actinomycotic and Eumycotic groups. Actinomycetoma is caused by a group of filamentous bacteria which include *Nocardia* and *Streptomyces* species. The *Nocardia* species include *Nocardia asteroids*, *Nocardia braziliensis* and *Nocardia caviae*. The *Streptomyces* species include *Streptomyces madurae, Streptomyces pelletieri* and *Streptomyces somaliensis*.

The color of the grains found in the discharge is indicative of the species and helps to initiate appropriate treatment.

The foot is the most commonly affected and the dorsal aspect of the left foot for unexplained reasons is more affected.[5] In our patient also, the dorsal aspect of the left foot was affected.

The three cardinal features of the disease are tumefaction, formation of sinus tracts and the presence of grains in the affected tissue. Our patient presented with a diffuse swelling of the left foot with a nodule and healed sinuses.

In the absence of any obvious discharge as was in our case, ultrasonic imaging and fine needle aspiration from the involved area can determine the diagnosis. The simplicity of the technique, makes it useful in epidemiological survey of mycetoma and the detection of early cases in which radiological and serological techniques may be unhelpful.[6]

The grains are histologically seen as sulfur granules surrounded by neutrophils which lead to a purulent tissue reaction containing fibroblasts. This prevents the antibiotic

from acting on the micro-organisms, hence the need for debridement in certain cases. Our case had to undergo debridement for one large painful nodule. Mycetoma can lead to deformity, amputation and death if not treated promptly and properly.[7]

Combined drug therapy is preferred to a single drug therapy to avoid resistance and any residual infection.

Surgical debridement, followed by prolonged appropriate antibiotic therapy for several months is required for actinomycetoma while a combination therapy with trimethoprim-sulfamethoxazole (14 mg/kg, twice daily), dapsone (1.5 mg/kg, twice daily) and streptomycin (14 mg/kg) has been used along with Rifampicin for resistant cases.

Newer antimicrobial agents like nemonoxacin, linezolid and tigecycline await clinical trials.[8]

Whatever regimen is used, regular a close follow-up of patients, along with renal, hepatic and hematological assessments and evidence of ototoxicity are mandatory.[9]

Our patient was treated with Trimethoprim-sulphamethoxazole, Dapsone and Rifampicin and responded to this regime. The patient refused prolonged hospitalization. Since he was from a rural area, streptomycin which is considered a first line drug in many regimes was not used.

The patient is being followed-up every month for a period of 6 months and yearly thereafter to detect any recurrence.

Medical management will continue until he is clinically, radiologically, ultrasonically and cytologically cured. Clinical improvements is judged by a reduction in size of the mass and the healing of most of the sinuses.[10]

CONCLUSION

Since the progression of the disease is relatively slow and pain free, patients do not report early and are therefore, diagnosed at a very late stage. Health education of vulnerable population, especially farmers in tropical countries like India, is, therefore, of the utmost importance. Furthermore to be emphasized is the importance of wearing proper footwear while working in fields.

Early reporting to the primary care physicians and thereafter, an early diagnosis of the disease can lead to a decrease in morbidity.

REFERENCES

1. Singh H. Mycetoma in India. Indian J Surg 1979;41:577-97.
2. Venugopal PL, Venugopal TL. *Actinomadura madurae* causing mycetomas in Madras. Indian J Pathol Microbiol 1991;34:119-25.
3. Magana M. Mycetoma. Int J Dermatol 1984;23:221-36.
4. Ahmed A, Adelmann D, Fahal A, Verbrugh H, van Belkum A, de Hoog S. Environmental occurrence of Madurella mycetomatis, the major agent of human eumycetoma in Sudan. J Clin Microbiol 2002;40:1031-6.
5. Kalendar AM, Baykan H, Ozkan F, Ciralik H, Ozturk P, Gul M, *et al*. Negative pressure wound therapy and skin graft in Madura foot treatment. Balkan Med J 2012;29:214-7.
6. EL Hag IA, Fahal AH, Gasim ET. Fine needle aspiration cytology of mycetoma. Acta Cytol 1996;40:461-4.
7. Lichon V, Khachemoune A. Mycetoma: A review. Am J Clin Dermatol 2006;7:315-21.
8. Lai CC, Tan CK, Lin SH, Liao CH, Chou CH, Hsu HL, *et al*. Comparative *in vitro* activities of nemonoxacin, doripenem, tigecycline and 16 other antimicrobials against *Nocardia brasiliensis*, *Nocardia asteroides* and unusual Nocardia species. J Antimicrob Chemother 2009;64:73-8.
9. Damle DK, Mahajan PM, Pradhan SN, Belgaumkar VA, Gosavi AP, Tolat SN, *et al*. Modified Welsh regimen: A promising therapy for actinomycetoma. J Drugs Dermatol 2008;7:853-6.
10. Fahal AH. Management of mycetoma. Expert Rev Dermatol 2010;5:1-7.

How to cite this article: Gooptu S, Ali I, Singh G, Mishra RN. Mycetoma foot. J Fam Community Med 2013;20:136-8.
Source of Support: Nil, **Conflict of Interest:** None declared