# Actinomycosis of the foot – A South African case

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**Abstract:** Mycetoma is a chronic infection, characterised by severe disability and discomfort to patients. This condition is common throughout tropical regions of the world. The Indian subcontinent and north-east Africa, especially Sudan, bear the majority of the disease burden. Due to the limited resources and isolation of these areas, the condition is usually misdiagnosed or incorrectly managed. The World Health Organisation listed the condition as a "neglected disease" in 2013. The creation of the Mycetoma Research Centre (MRC) by the University of Khartoum in 1991 has greatly contributed to the current understanding of this disabling condition. We report a case of a 17-year-old boy from Port Elizabeth, South Africa. Uncommon in South Africa, this condition is easily misdiagnosed and mismanaged.[1,2]
**Key Words:** Mycetoma, Madura foot, Actinomycetoma, Livingstone Hospital

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## Introduction

Mycetoma can easily be misdiagnosed due to lack of understanding and the relatively low prevalence of the condition in regions outside the endemic areas.[1-3] This case aims to highlight the need to consider this diagnosis in patients outside these areas and to start treatment as soon as possible to try and avoid the high morbidity associated with the condition.

## Case

A 17-year-old boy was referred to the Surgery unit at Livingstone Hospital with a large exophytic lesion on his left foot. The boy gave a history that he had injured his foot three months earlier. He reported that it initially started as just a swelling on his ankle. This progressed to a large mass with multiple sinuses draining a dark fluid (Figure1). He does not suffer from any other medical conditions and reported no associated constitutional symptoms. This is the first occurrence of this nature. All pulses were palpable and equal. X-rays showed a soft tissue mass with what appeared to be lytic lesions on the metatarsals and areas with periosteal reactions (Figure 2). The doctor on duty initially made the assessment of a septic mass with a possible underlying malignancy. The decision was made to debride the lesion and send a deep tissue sample for Histology and cultures, including Tuberculosis culture. The initial Histology and cultures illustrated an organizing acute and chronic inflammation in the dermis with granulation tissue formation. The pathologist suggested a re-biopsy to supply more tissue for further microscopy and culture. The second Histological analysis confirmed Granulomatous inflammation containing filamentous bacteria. On this basis the diagnosis of Mycetoma/ Actinomycosis was made.

The patient was started on a combination of Amikacin (3 weeks) and Trimethoprim-sulfamethoxazole (5 weeks). This regimen was given for 3 cycles up to the time of this publication. The clinical appearance of his foot improved

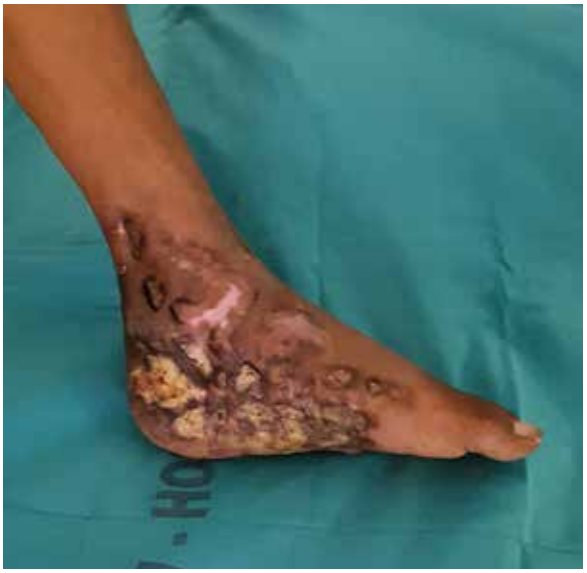

*Figure 1: Clinical presentation of foot*

dramatically, but the long term success of the treatment cannot be established at this stage. Adequate analgesia and physiotherapy was started to prevent contracture formation.

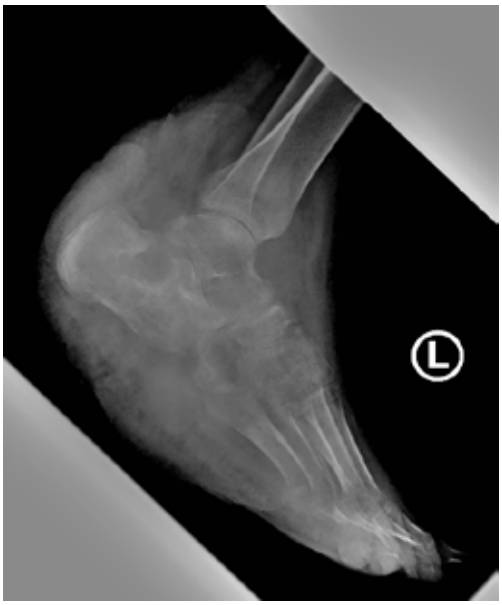

*Figure 2: Patient X-ray illustrating typical radiological findings*

## Discussion

Mycetoma is a rare disorder endemic to the tropical and subtropical regions of the world. A large number of cases are found in India, Mexico and Sudan.[3] The current available literature suggests that the condition is rare in South Africa.[5] The condition can be caused by various organisms, these include both bacterial (*Actinomycetoma*) and fungal (*eumycetoma*) causes.[1] The most common organisms involved in the development of this condition include the fungus *Madurella mycetomatis* and the Actinomycetes *Nocardia Brasieliensis*, *Actinomadura madurae* and *Actinomadura pelletieri*.[2] Actinomycetes represents almost 60% of all cases worldwide. It is more common in men with a 5:1 ratio. This does not seem to be true for infections with *Actinomadura madurae*. It is more common in the lower extremity of sufferers.

The diagnosis is made on clinical, radiological and histopathological grounds. The patient reports painless, progressive swelling of an extremity. This usually progresses to a nodular deformity with abscess formation and the presence of fistulae. Granular fluid can sometimes drain from the deformity.

The differential diagnosis includes: other fungal infections, tuberculosis, osteomyelitis and malignancy.[2] The clinical progression of the disease and late presentation of patients contribute to a poor general prognosis. Misdiagnosis also contributes to delay in starting effective treatment. Patients in which there is a delay in treatment are at high risk of severe disability and even amputation of the affected extremity.

The way in which our patient presented and was initially treated correlates to the normal presentation of these patients. The uncertainty of the initial diagnosis also represents the common misdiagnosis of the condition, especially in the South African setting where Tuberculosis and HIV are common. Initial histology failed to accurately identify the organisms and microbiological analysis were negative for any possible causative organism. This apparent oversight during initial histological and microbiological evaluation might be due to unfamiliarity with the condition on the part of the pathology team or by an insufficient primary sample.

The radiological presentation of our patient followed the described finding in the literature.[1,2,5] Current clinical evidence suggests that the current treatment regimen is working, but long term success cannot be established at the time of this publication.

The recognition by the WHO and inclusion of Mycetoma into the list of neglected diseases is an important first step in educating health professionals on the adequate and timely diagnosis of this debilitating condition. Although this disease is rare outside endemic areas it still causes severe disability and morbidity to patients. Early identification and correct diagnosis is imperative to provide the patient with the best possible prognosis.

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