

Case Report

Madurella grisea: a case report on an uncommon cause for mycetoma

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Abstract

Madura foot is a disfiguring, disabling condition, found in the tropics and subtropics. We present a case of a farmer who presented with swelling and multiple discharging sinuses in his left foot. The offending organism, *Madurella grisea* was identified by fungal culture. The patient was managed with local excision combined with systemic antifungal therapy. So far, the patient has made an uneventful recovery, with no recurrences. The laboratory diagnosis proved difficult, given the limited resources. We wish to highlight the difficulties faced in diagnosis and management of this condition, as response to antifungals are dependent on the pathogen, and adherence to long term antifungals are crucial.

Keywords: mycetoma, Madurella grisea, madura foot

Introduction

Mycetoma is a destructive, chronic inflammatory disease, mainly affecting the feet, with the population at risk being those who are socioeconomically disadvantaged, such as labourers and agriculturalists. Sri Lankan data regarding the aetiological agents of this disease is sparse. The control of this neglected tropical disease requires better knowledge and understanding by the clinicians, continuous supply of good quality antifungal agents and high quality fungal diagnostic facilities.

Case report

A 55 year old previously well farmer presented to Base Hospital, Mahiyanganaya, complaining of painless swelling of his left ankle of 6 months duration, which was insidious in onset. There were no signs of systemic disease. Upon close inspection, multiple discharging sinuses were seen on the medial, plantar aspect of the left foot. Baseline full blood counts and liver function tests were within the normal range. Local excision was performed and skin biopsy was sent for histology and fungal studies. The patient was started on itraconazole 100 mg twice daily following the excision biopsy.

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The microscopic findings reported on histology were “Hyperkeratotic and acanthotic epidermis with underlying granulation tissue with large foci of suppuration containing fungal balls, consistent with madura mycetoma.”

Direct microscopy of the skin biopsy sample sent to the Department of Mycology, Medical Research Institute, Colombo was negative for fungi. However, the sample inoculated onto Sabouraud’s Dextrose agar (SDA), and incubated at 26 °C yielded a slowly growing, raised, felty, dark grey colony with darkened reverse, but no pigment exuded into the medium (Figure 1A). The SDA slants incubated at 37 °C yielded no growth. Dense, melanized, mostly sterile mycelia, were seen in microscopic view of the culture isolate (Figure 1 B) as well as in slide cultures. A mycological identification of *Madurella grisea* infection was made based on these colony characteristics.

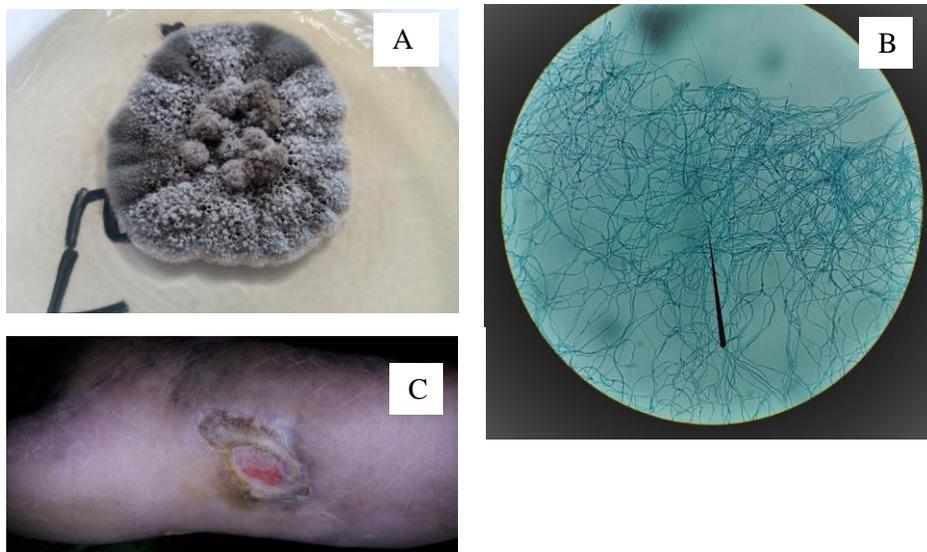
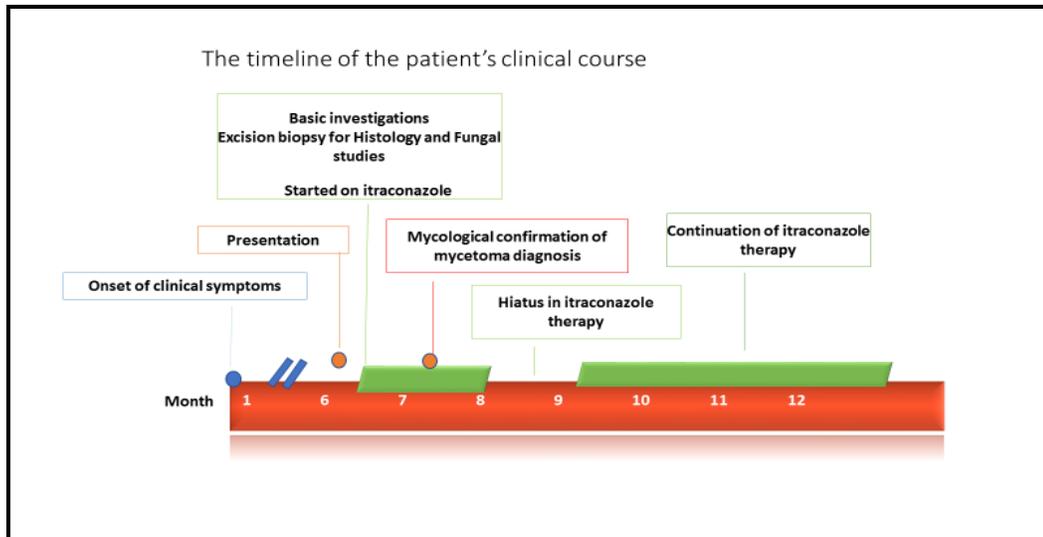


Figure 1 (A) Colony morphology on Sabouraud’s Dextrose Agar (SDA) after a month incubated at 26 °C
(B) microscopy x40 stained with Lactophenol cotton blue
(C) healing wound after 6 weeks of antifungal therapy

The patient is being periodically reviewed at the local dermatology clinic. As the antifungals were not available at the hospital, the patient was requested to purchase it himself. He has continued itraconazole therapy for the past three months, except for a hiatus of a month, where the medication was discontinued due to financial constraints. He is being followed up at the local hospital, and so far, the wound is healing with no recurrences, with no adverse effects of note due to the medication.



Discussion

Mycetoma is a chronic disease of subcutaneous tissue, which involves formation of tumour-like swellings and multiple sinuses discharging pus, blood and fluid along with grains. The causative organism is often introduced to the subcutaneous tissue through local trauma. When considering global data, most cases are due to bacteria (50.8%) while fungi are responsible for a smaller percentage (41.7%).¹ However, only about seven species of bacteria are known so far to cause actinomycetoma, while 18 different fungal species are known to cause eumycetoma. The commonest organism is *Madurella mycetomatis*.¹ Other fungi implicated include, among others, *Cladophialophora bantiana*, *Acremonium recifei*, *Curvularia geniculata*, *Fusarium oxysporum* and *Fusarium monoliforme*.

The mycological diagnosis of mycetoma has been hampered by a paucity of laboratory diagnostic criteria.² Speciation has traditionally depended on colony characteristics. Two species of *Madurella*, *M. grisea* and *M. mycetomatis* have been identified through culture based methods (Table 1). With the advent of molecular diagnostics, several other species, namely *M. pseudomycetomatis*, *M. tropicana* and *M. fahalii* have been identified.

Colony morphology, observed growth rate, production of conidia and assimilation patterns have been used to identify the fungal causes of mycetoma. However, in countries with the highest prevalence, such as Mauritania (3.49 cases per 100,000 population) and Sudan (1.81 cases per 100,000 population), this may be difficult due to constrained resources.¹ In such regions, including Sri Lanka, colony morphology, growth characteristics and microscopy are used for identification.

Table 1 Diagnostic parameters of *Madurella* species²

Species	Characteristic			
	Grain	Brown pigment on SDA ^a	Optimal growth temp	Susceptibility to itraconazole
<i>M. mycetomatis</i>	Black	(at 23, 30 and 37 °C)	37 °C ^a	+
<i>M. grisea</i>	Black	-	30 °C ^a	+
<i>M. pseudomycetomatis</i>	Black	(at 23 and 30 °C)	30 °C ^a	+
<i>M. tropicana</i>	Black	(at 23 and 30 °C)	30 °C ^a	+
<i>M. fahalii</i>	Black	-	30 °C ^a	-

^a When grown for 2 weeks on SDA.

Irrespective of the causative agents, treatment is still a challenge. Most patients are managed with surgical debridement, combined with long term antifungal therapy. In most countries where eumycetoma is endemic, itraconazole and ketoconazole are the most commonly used antifungals, while treatment is initiated based on the colour of the grains. Nevertheless, the aetiology of mycetoma is very diverse, and antifungal susceptibilities may vary.³ Additionally, in-vitro susceptibility testing has been studied in depth only for *M. mycetomatis*. Certain species, such as *M. fahalii* may be more resistant to the azole group of antifungals.²

Conclusion

Successful management of mycetoma needs proper aetiological diagnosis. Therefore, it is important to improve the knowledge of clinicians regarding this disfiguring condition, to ensure optimum diagnosis. It is also useful to provide state hospitals with the necessary antifungal agents, to minimize patients from defaulting treatment and suffering recurrences.

Acknowledgements

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Conflicts of interest: None

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