

MADURA FOOT: A COMPREHENSIVE EXPLORATION OF DIAGNOSIS AND TREATMENT***Dr. Zeineb Alaoui Kadiri, L. Tahiri, F. Allali and H. Rkain**

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ABSTRACT

Mycetoma, commonly known as Madura foot, represents a rare yet challenging granulomatous pathology affecting subcutaneous tissues. This condition, caused by fungi, notably *Madurella mycetomi*, or actinomycetes like *Nocardia brasiliensis*, manifests primarily in the feet, earning its distinctive name. The gravity of Madura foot lies in tissue necrosis and its proclivity to involve the underlying skeleton, presenting as osteitis on radiographs. The diagnostic criteria encompass a specific clinical triad: swelling, abscess formation, and fistulization, accompanied by the discharge of grains with varying shades of brown or red, depending on their nature. Microscopic examination of these grains, along with cultural analysis, plays a pivotal role in confirming the diagnosis. While medical intervention, specifically sulfone-based treatments, demonstrates efficacy in the cure of actinomycotic mycetomas, surgical procedures remain foundational in addressing fungal mycetomas. Prophylactic measures involve wound disinfection and the use of suitable footwear. Despite these efforts, the prognosis, especially in cases of fungal infections, remains discouraging. Our case study revolves around a 49-year-old man with a history of a fractured ankle, presenting a complex manifestation of Madura foot, including swelling, fistulization, and the emission of black grains, indicative of an underlying skeletal involvement.

KEYWORDS: Mycetoma, osteitis, actinomycetoma, eumycetoma.**1. INTRODUCTION**

Mycetoma, colloquially known as Madura foot, embodies a chronic granulomatous infection affecting cutaneous and subcutaneous tissues. It can manifest as a bacterial infection, primarily due to actinomycetes (comprising 60% of cases), or as a fungal infection leading to eumycetoma.^[1] While Madura foot is rare in Morocco, it thrives as an endemic disease in tropical and subtropical regions, notably Sudan, Venezuela, Mexico, and India,^[2] predominantly impacting the feet (approximately 70%).

Severe and fatal locations extend beyond the feet to encompass the leg, thigh, hands, arms, or internal organs.^[5] Timely diagnosis and appropriate treatment are imperative for a positive prognosis, though advanced cases with skeletal involvement pose substantial therapeutic challenges.^[9] In this study, we present a compelling case that underscores the complexities of Madura foot.

2. OBSERVATION

Our reported case involves a 49-year-old man with a 16-year history of ankle fracture, who now presents with a painful swelling of the left foot. Despite multiple

attempts at outpatient treatments, including various medications, dermatological lesions persist, accompanied by fistulization and the continuous emission of black granules. A biopsy was conducted, confirming the diagnosis of mycetoma. Further diagnostic examinations, including MRI, revealed mycetomic osteitis predominantly affecting the medial cuneiform, with partial involvement of the navicular and calcaneus.

Mycological examination for pathogen isolation proved challenging due to the rarity of grains. Proposed treatments included amputation, which was declined by the patient, as well as antifungal (Terbinafine) and antibiotic (amoxicillin + clavulanic acid) therapies over an extended period of one year.



Image 1: Dermatological lesions at the onset of symptomatology.



Image 2: Standard X-ray showing foot osteitis.

3. DISCUSSION

Madura foot constitutes a group of chronic inflammatory pseudotumors affecting the skin and subcutaneous tissues, stemming from either bacterial (actinomycetoma) or fungal (eumycetoma) origins.^[1]

This disease exhibits a higher prevalence among rural males in tropical regions, with the immune status playing a pivotal role in its manifestation.^[10]

The banality of infectious agents, coupled with the localization of mycetomas at sites of cutaneous lesions resulting from foot trauma during agricultural activities, underscores the complex pathogenesis of the disease.^[3,4]

Diagnosis, particularly in advanced stages, hinges on the characteristic triad of swelling, fistulous abscesses, and the discharge of colored grains infiltrating tissues, underscoring the gravity of the condition.^[4] Our patient's presentation aligned with this diagnostic triad, affirming the diagnosis of mycetoma.

Microscopic examination assumes paramount significance in identifying the causative agent, revealing grains with distinct colors corresponding to actinomycetes (*Actinomadura*, *Streptomyces*, *Nocardia*) or fungi (*Madurella*, *Acremonium*).^[2] Radiographic

techniques such as standard X-rays, CT scans, and MRI play a crucial role in assessing osseous involvement.^[10] Medical interventions encompass antifungals for eumycetomas and antibiotics for actinomycetomas.

Actinomycetomas generally respond favorably to cotrimoxazole, with the addition of amikacin if improvement is not observed.^[8] Rarely, other antibiotics such as imipenem or carbapenem may be necessary. Eumycetomas pose a more intricate therapeutic challenge, often necessitating a combined approach of medical and surgical interventions.^[11]

A multitude of antifungals has been explored, with ketoconazole/itraconazole serving as the primary reference.^[2,3] The itraconazole regimen, lasting six months, has shown efficacy in drying and encapsulating lesions, facilitating their surgical excision. Second-line antifungals include voriconazole and posaconazole.^[2,6] Surgery remains indispensable in severe cases, particularly for eumycetomas with significant osseous or cutaneous involvement, involving mass excision, cutaneous coverage procedures, or in extreme cases, amputation.^[9]

Monitoring post-treatment involves clinical, radiological, and mycological assessments.^[7]

4. CONCLUSION

Madura foot presents as a chronic foot infection with a protracted course, necessitating early diagnosis and well-guided treatment, despite the limitations of available interventions. The reserved prognosis in many cases underscores the challenges posed by this intriguing pathology.

REFERENCES

1. Verma, P., & Jha, A. (2018). *Mycetoma: reviewing a neglected disease. Clinical and Experimental Dermatology.*
2. Welsh, O., Al-Abdely, H. M., Salinas-Carmona, M. C., & Fahal, A. H. (2014). *Mycetoma Medical Therapy. PLoS Neglected Tropical Diseases, 2014; 8(10): e3218.*
3. Wang, R., Yao, X., & Li, R. (2019). *Mycetoma in China: A Case Report and Review of the Literature. Mycopathologia.*
4. Sakayama, K., Kidani, T., Sugawara, Y., Fujibuchi, T., Miyawaki, J., Miyazaki, T., & Yamamoto, H. (2004). *Mycetoma of Foot: A Rare Case Report and Review of the Literature. Foot & Ankle International, 2004; 25(10): 763–767.*
5. Belkum, A., Fahal, A., & van de Sande, W. W. J. (2012). *Mycetoma Caused by Madurella mycetomatis: A Completely Neglected Medico-social Dilemma. Hot Topics in Infection and Immunity in Children IX: 179–189.*
6. Carlson, H. (2011). *Case of the Month. Journal of the American Academy of Physician Assistants, 2011; 24(5): 79. doi:10.1097/01720610-201105000-00018.*
7. Fahal, A. H. (2021). *Mycetoma: the journey from neglect to recognition as a neglected tropical disease. Transactions of The Royal Society of Tropical Medicine and Hygiene, 2021; 115(4): 292–294.*
8. Asly, M., Rifaoui, A., Bouyermane, H., Hakam, K., Moustamsik, B., Lmidmani, F., Elfatimi, A. (2010). *Mycetoma (Madura foot): A case report. Annals of Physical and Rehabilitation Medicine, 2010; 53(10): 650–654. doi:10.1016/j.rehab.2010.10.003*
9. Suleiman, S. H., Wadaella, E. S., & Fahal, A. H. (2016). *The Surgical Treatment of Mycetoma. PLOS Neglected Tropical Diseases, 2016; 10(6): e0004690.*
10. Marc, S., Meziane, M., Hamada, S., Hassam, B., & Benzekri, L. (2011). *Clinique et épidémiologie des mycétomes au Maroc. Médecine et Maladies Infectieuses, 2011; 41(3): 163–164.*
11. Grissa, K. M. D., Zrig, A., Alouini, R., Mhabrech, H., Arifa, N., Mhiri, M., & Tlili-Graïess, K. (2008). *Apport de l'IRM dans les mycétomes du pied: à propos de deux cas avec revue de la littérature. Journal de Radiologie, 2008; 89(3): 339–342.*