



Actinomycetes mycetoma - case report

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ABSTRACT

Mycetoma is a chronic infection, frequently seen in tropical and sub-tropical countries and is considered as an occupational disease. Nocardia species though it can infect immunocompetent individuals, it most commonly affects immunocompromised patients. A 50-year-old male, farmer presented to our hospital with serosanguineous discharging swelling over the dorsum of right foot. We have isolated Nocardia asteroides from the tissue sample. Speciation of this isolate was carried out based on phenotypic methods. Hereby we report a case of Actinomycetes Mycetoma in an immunocompetent individual.

KEYWORDS

Mycetoma, nocardia, subcutaneous

Introduction

Mycetoma is a chronic subcutaneous infection caused by actinomycetes or fungi. This infection results in granulomatous inflammatory response in the deep dermis and subcutaneous tissue, which can extend to the underlying bone. Mycetoma is characterized by the formation of grains containing aggregates of the causative organisms that may be discharged onto the skin surface through multiple sinuses. The tendency of members of the population to walk barefoot, along with predisposing environmental factors for mycetoma including rainfall, temperature, soil and the abundance of thorny sharp vegetable materials which can inoculate etiological agents into the feet, instigate the disease¹⁻⁵. Nocardiosis is a localized or disseminated infection caused by the aerobic filamentous bacteria belonging to the genus Nocardia. Although Nocardia species can infect immunocompetent individuals, it most often infects immunocompromised patients. This disease has been reported to respond to sulpha drugs, rifampicin, streptomycin and dapsone

Case report

A 45-year-old, farmer presented to us with history of pain, swelling and discharging sinus in the left foot (figure 1) of fourteen months duration. The initial lesion appeared as a single nodule, which was followed by the appearance of successive nodules close together. The lesions were distributed mainly on the dorsum surface of the foot. All the

nodules showed intermittent discharge for which the patient took an analgesic and antibiotic. This treatment partially relieved the patient of the discharge; however, the nodules persisted. Over the course of, fourteen months the patient experienced severe pain and swelling at the same site necessitating hospitalization. The patient denies history of any trauma prior to swelling of dorsum of left foot. On examination, the left foot showed swelling and hardened surface skin with multiple discharging nodules. The regional lymph nodes were not enlarged. Gross examination of the discharge revealed pale yellow coloured granules (figure 2). An X-ray of the left foot AP and Oblique view revealed bone remodeling with sclerosis and multiple lucencies are noted in left tarsal and metatarsal with soft tissue swelling suggestive of mycetoma foot (figure 3) The patient history and physical findings at this point were strongly suggestive of mycetoma. In the laboratory, a smear was prepared from the sample and stained with Gram's stain, which revealed thin, long, branching, Gram-positive filamentous bacilli. On modified Ziehl-Neelsen stain (1% H₂SO₄ decolorizer) the filaments were weakly acid fast.

Culture was done on sheep blood agar and Sabouraud's dextrose agar (SDA) with antibiotics. A small, dry, granular, wrinkled chalky white to cream colored colonies were grown after a week's incubation at 37°C. The colonies were identified as Nocardia species by culture smear and were subjected for biochemical testing for confirmation and speciation.

Based on history, clinical examination and culture case is confirmed as actinomycetes mycetoma- nocardia species. The patient was kept on combination therapy of Dapsone 100mg od Bactrim DS 1bd and rifampicin 600mg 1od. Treatment response was assessed after four weeks. The patient showed good progress, with a fair diminution of local pain and nodule size, and treatment was further continued and patient is on follow up

Discussion

Mycetoma is characterized by the formation of grains containing aggregates of the causative organisms that may be discharged onto the skin surface through multiple

sinuses. The disease was described in 1842 and initially named madura foot, after the region of Madurai in India where it was first identified. "The draining sinuses with the presence of grains are characteristic of etiologic agents, including a variety of bacteria

(actinomycotic mycetoma) or fungi (eumycotic mycetoma)". It usually affects the foot, hand and legs with tissues becoming necrosed and swollen after infection⁶⁻¹⁰.

Nocardial infections occur worldwide, particularly in tropical and subtropical areas. Actinomycetoma is more often seen in sub-tropical areas, particularly in America (Mexico and Venezuela), whereas Eumycetoma predominates in Africa and India. Nocardia species though it can infect immunocompetent individuals, it most commonly infects immunocompromised patients. Patients at risk of acquiring this infection includes persons with underlying disease like malignancy (3-4%), pulmonary disease (12%) or

immunodepression (17-30%). A significant number of infected persons, however, appear to have no pre-disposing factors (15-71%). The most frequent primary site of involvement is the pulmonary system (73%). Diseases can disseminate to almost any organ system. Secondary sites are brain (45%) meningitis, spinal cord (23%), skin and subcutaneous tissue

(9%), pleura and chest wall (8%)¹¹. Mortality is highest in patients with disseminated disease¹²⁻¹³.

Nocardia causes primary disease in the skin by its traumatic introduction from soil. This primary skin infection is rare, often with a sub-acute course, presenting as cellulitis, lymphocutaneous disease or mycetoma in the immunocompetent patient. Mycetoma is a chronic localized infection of the dermis and subcutaneous tissue with indolent swelling and draining sinuses. Walking barefoot and working outdoors in rural settings are particularly at risk. In the present study, diagnosis was made by Gram staining and confirmed by culture. We report a case of actinomycotic mycetoma from a tertiary health care centre from Kadapa. The case is reported owing to its rare occurrence as no mycetoma case has been reported from Kadapa. Treatment regimens usually consist of combination therapy. Combination therapy of two or more drugs is often used to prevent resistance to one antibiotic and persistence of the infection. Our patient responded to Dapsone 100 mg 1 tablet OD, Bactrim DS 1 tablet BD and daily Rifampicin 600mg 1 tablet OD for four

weeks. Treatment response was assessed after five weeks. The patient showed good

progress, with a fair diminution of local pain and nodule size, and treatment was further continued. Hence the identification of the causative agent and differentiation of eumycotic mycetoma from actinomycotic mycetoma constitute the major points in application of appropriate antimicrobial therapy. The novelty of this case is its unusual geographic presentation in the Rayalaseema region.

Figure 1-photograph of growth on left foot



Figure -2 pale yellow coloured discharging grain



Figure -3-X ray left foot AP view



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