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Case Report

A case of *Aspergillus nidulans* causing white granule mycetoma S. Prasanna^{a,*}, Col Naveen Grover^b, Maj Puneet Bhatt^a, Brig A.K. Sahni^c^a Resident, Dept of Microbiology, Armed Forces Medical College, Pune 411040, India^b Professor, Dept of Microbiology, Armed Forces Medical College, Pune 411040, India^c Commandant, 174 Military Hospital, C/o 56 APO, India

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species, *Pseudoallescheria boydii*, *Aspergillus nidulans*, *Aspergillus flavus*, *Fusarium* species and *Scedosporium apiospermum*. The black granule mycetoma is caused by *Madurella mycetomatis*, *Madurella grisea*, *Exophiala jeanselmei*, *Curvularia geniculata*.^{1,2}

Mycetoma is worldwide in distribution, mostly seen in rural areas and is mainly occupation related. The prevalence of mycetoma varies widely being more frequent in hot, humid, tropical and sub-tropical areas. Mycetoma is endemic in Africa, Sudan, Senegal, southern and northern parts of India. As there is a huge difference between treatment of mycetoma due to fungal and bacterial cause, identification of the etiological agent plays a major role in the management.^{2–}

⁵ White granule mycetoma is very rare and has been reported rarely worldwide as well as in India. Till now, only a few cases of white granule mycetoma caused by *A. nidulans* have been reported. The objective of this case report was to present a rare case of white granule mycetoma caused by *A. nidulans* in a diabetic adult individual residing in Pune, Maharashtra.

Introduction

Mycetoma is a frequent fungal infection encountered in dermatological practice. The clinical picture is slowly progressive, causing chronic granulomatous infection of skin and subcutaneous tissues with involvement of underlying fasciae and bones usually affecting the extremities.¹ This disease is defined by the triad of tumefaction of affected tissue, formation of multiple draining sinuses and presence of oozing granules.¹ In most cases it is caused by two groups of organisms – fungi (eumycetoma) and bacteria (actinomycetoma and botryomycosis). The eumycetoma is classified into black granule eumycetoma and white granule eumycetoma. The white granule mycetoma is caused by more than 10 species of fungi such as *Acremonium*

Case report

A 45 year old diabetic male patient admitted to a peripheral hospital, presented with multiple lumps and nodules over right lower limb for four months. The patient developed progressive diffuse painful swelling of right leg till knee. Discharging fluid was clear with occasional release of white coloured granules (Fig. 1). This was accompanied by constitutional symptoms like fever with chills. Patient continued to develop new lesions with swelling and discharging sinuses

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Fig. 1 – Mycetoma of foot and leg showing crusting lesions with white granules.

appearing higher up in leg and the site of debridement. Skin biopsy with culture was done twice during his hospital stay and diagnosis of botryomycosis was made and antibiotics were continued. In view of the progressive condition, he was shifted to a tertiary care centre.

The detailed history was taken and clinical findings were noted down. The microscopic examination of biopsy sample after treatment with 40% KOH revealed the presence of septate hyaline hyphae. The white granules were cultured in Sabouraud dextrose agar slopes with and without chloramphenicol and were incubated at 25–30 °C. After seven days of incubation, the colonies were powdery with dark green colour surrounded by white brim (Fig. 2). Microscopy by Lactophenol cotton blue (LPCB) mount showed non-radiating biserial phialides on upper part. Wet mount revealed several reddish brown to purple cleistothecium with ascospores and hulle cells (Figs. 3 and 4).

The slide culture techniques were set up for detailed morphological study. LPCB mount of slide culture showed hemispherical vesicles of size 7–8 µm in diameter, non-radiating biserial conidiogenous cell and spherical, rugose, sub-hyaline conidia. The fungus was identified as *A. nidulans* with the help of KOH mount, cultural characteristics, LPCB mount and wet mount features, with the presence of hulle cells and cleistothecium clinching the diagnosis. The patient was put on itraconazole and showed improvement after four weeks.

Fig. 2 – Growth on Sabouraud dextrose agar the colonies were powdery with dark green colour surrounded by white brim.

Discussion

A. nidulans is a saprophytic mould which is found in decaying organic matter. Mycetoma foot caused by this species has been known since 19th century, when Pinoy from Tunisia isolated it from cases of mycetoma. Nicolle et al, also confirmed the role of *A. nidulans* as an etiological agent of mycetoma.⁵ Mycetoma due to *A. nidulans* has been reported from various parts of the world by Puestow, Baylet et al from Senegal and Mahgoub et al from Sudan.^{3,5,6,8,9} In India, mycetoma due to *A. nidulans* is rare with only a few case reports.^{7,10} The white granule mycetoma itself is very rare when compared to black granule mycetoma and bacterial mycetoma.

The mycetoma foot is prevalent in almost all parts of the world, mainly between tropics of Cancer and Capricorn. Mycetoma is said to be more prevalent in places with high rainfall and with temperature ranging from 15 to 25 °C. In

Fig. 3 – Wetmount showing hulle cells.

Fig. 4 – Wet mount showing several reddish brown to purple cleistothecium with ascospores.

India, mycetoma is distributed in widely different geographical areas like Tamil Nadu (Madurai) and the moist southern part and Rajasthan.¹ But, Maharashtra is in the western part of India where mycetoma is not endemic. The various risk factors are patients with granulocytopenia, high dose corticosteroid treatment and immunocompromised status following bone marrow transplantation and chronic granulomatous disease.^{1,2} In this case, diabetes mellitus (DM) on irregular treatment may have been a risk factor for eumycetoma.

In the present case, the diagnosis of botryomycosis was made most probably due to secondary infection by *Staphylococcus aureus*. From the clinical point of view, eumycetoma caused by *A. nidulans* is often similar to those caused by other mycetoma causing agents. The differentiating feature between bacterial mycetoma and eumycotic mycetoma is mainly dependent on culture and microscopic examination. In microscopic examination of biopsy tissue by KOH mount showed the branched septate hyphae, LPCB mount showed non-radiating biserial sub hyaline conidia and wet mount

showed hulle cells with cleistothecium, which favours the diagnosis of *A. nidulans*.

Conclusion

The main aim of this case report is to highlight that *A. nidulans* is also an important causative agent of mycetoma in India. The treatment of *A. nidulans* infection is generally ineffective with antibiotics as the fungus does not respond to antibiotics traditionally intended for mycetoma. So proper clinical evaluation, categorization into eumycotic or actinomycotic mycetoma is very important and diagnosis after culture and microscopy leads to a positive clinical outcome.

Conflicts of interest

All authors have none to declare.

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