MADURA FOOT

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Introduction

Mycetoma is a localized chronic infection with various species of fungi (Eumycetoma) or actinomycetes (Actinomycetoma), resulting in severe damage to skin subcutaneous tissues and bones of the hands, feet and other parts of the body [1]. The aetiological agents occur as saprophytes in the soil or on vegetable matter and seed the host tissues by a penetrating injury. The injury occurs most commonly among barefoot adult male workers in tropical and subtropical regions like India. We report a case of Eumycetoma in an adult female caused by *Madurella grisea*.

Case Report

A 33 year old female reported with history of progressively spreading and recurrent episodes of multiple sinuses discharging purulent material admixed with black grains from the sole of her right foot for last 13 years. The onset was following an injury she suffered over her right instep while working in the fields. She was administered multiple courses of Tab Ketoconazole for 1-2 months, to no relief. She underwent excision and skin grafting in a civil hospital in Dec 98 but the lesions recurred in and around the grafted area. General and systemic examination was normal. Dermatological examination of the right foot revealed non tender, hypertrophic, hyperpigmented, cribriform scars over the instep, studded with nodules and sinuses discharging mucopurulent material along with black grains (Fig-1). There was no regional lymphadenopathy, impairment of mobility of right foot or gait disturbance. Mucosa, hair and nails were normal. X-ray of the right foot revealed no bony involvement. After thorough decontamination of the skin surface, black grains were expressed using a sterile spatula over a filter paper and washed several times. Microscopy of the tease mount of the grain revealed fungal elements. Few grains were inoculated directly in plain Sabourauds Dextrose Agar (SDA) and SDA with chloramphenicol; and few after preservation in a filter paper for seven days to reduce bacterial contamination. All tubes were inoculated in pairs at room temperature. Bacterial contamination was noticed in all tubes inoculated directly and none in those inoculated later. Two weeks later a small conical, grey, folded growth with white powdery surface was noticed on the surface of the medium. The reverse was brown with peripheral diffusion of the pigment. Microscopic examination revealed wide, branched, dark, septate hyphae composed of chains of rounded

cells and absence of conidiation. Based on the colony characteristics and typical microscopic picture, the fungus was identified as *Madurella grisea* (Fig-2). The patient has since been started on Cap Itraconazole 100 mg daily and has shown good response after six months. She is under close and regular follow-up.

Discussion

Mycetoma or Madura Foot was first described by Vandyke Carter in 1860 in Madurai, India [1]. The clinical syndrome consists of a triad of tumefaction, sinus tracts and grains representing microcolonies of the aetiological agent [2]. Swelling with distortion of normal anatomy, discharging nodules, draining sinus tracts, only mild impairment of mobility and relatively little pain sum up the clinical characteristics of the disease [3].

Grains are colonies of fungal hyphae with a crust or shell of fibrin derived from host tissues. The colour of the grain may indicate the aetiological agent, as black grains are always due to fungi and red to an actinomycete [4]. This differentiation is important due to different responses to treatment. Actinomycetomas are caused by filamentous bacteria eg. *Nocardia brasiliensis*, *Actinomyces israeli* and *Streptomyces somaliensis*, which respond to antibiotics eg sulfa, tetracycline and penicillin. Eumycetomas are caused by true fungi

Fig. 1 : Cribriform scars and sinuses discharging black grains over the sole of the right foot.

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Fig. 2 : Conical, grey, folded growth with white powdery surface on SDA medium with chloramphenicol of *Madurella grisea*

with thick septate hyphae e.g. *Madurella mycetomatis*, *M grisea* and *Pseudoallescheria boydii* which are resistant to all forms of treatment though Ketoconazole or Itraconazole may be useful. Our case re-emphasises this poor response by Eumycetomas by highlighting recurrences following both medical and surgical management.

Slow fungal growth and potential contamination by bacteria or saprophytic fungi make it difficult to obtain pure cultures for identification of species. However, the drying out procedure advocated by Milne and adopted by us in this case helped surmount these obstacles by avoiding contamination [5]. The fungus produced a folded, powdery colony on the surface of the medium which differed from cottony colony of *Pseudoallescheria* and a velvety colony of *Exophiala*. It also produced a distinct brownish diffusible pigment which is commonly produced by *Madurella mycetomatis* and sometimes by *M Grisea*. Absence of chlamydiospores, pycnidia and typical conidiation

pattern on microscopy ruled out *M mycetomatis* and *Exophiala*. Characteristic hyphal morphology exhibiting chains of rounded cells confirmed *M grisea* [6]. *M grisea* is reportedly the commonest agent causing Madura Foot in the New World [1]. Our case has shown a better response to Itraconazole than Ketoconazole when given continuously for months. Late complications of Madura Foot include extension to the underlying bones and joints leading to periostitis, osteomyelitis and arthritis; and destruction of the bone leading to gross deformity [7]. Though our case had none of these, it is pertinent to keep a regular follow-up to detect and manage these complications as and when they arise.

This case is reported for its incidence in female sex, the characteristic grains were successfully sub-cultured for species identification, the drying out procedure for avoiding contamination, and to re-emphasize persistent prolonged trial with chemotherapeutic agents in order to achieve satisfactory results in a condition known to respond poorly to all known modalities of treatment.

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