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CASE REPORT / CAS CLINIQUE

Nondermatophytic onychomycosis by *Fusarium oxysporum* in an immunocompetent host

Onychomycose non dermatophytique à Fusarium oxysporum *chez un sujet immunocompétent*

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Summary *Fusarium* onychomycosis is not uncommon in tropical countries but is worth reporting. We report a case of nondermatophytic onychomycosis by *Fusarium oxysporum* in an immunocompetent woman from Buldhana district of Maharashtra (India). Bilateral involvement of great toe nail, chronic duration and acquisition of infection due to peculiar practice of daily pasting floors with mud and dung, is interesting. The case was successfully treated with topical and oral terbinafine with a dose of 250 mg daily for 3 weeks.

Résumé L'onychomycose à *Fusarium* n'est pas rare dans les pays tropicaux et vaut la peine d'être rapportée. Nous rapportons un cas d'onychomycose non dermatophytique à *Fusarium oxysporum* chez une femme immunocompétente du district Buldhana de Maharashtra (Inde). Il s'agissait d'une atteinte bilatérale du gros orteil d'évolution chronique, particulière par l'acquisition due à une pratique singulière d'application quotidienne de boue et de bouses sur le plancher. L'infection a été traitée avec succès par la terbinafine topique et orale avec une dose de 250 mg par jour pendant 3 semaines.

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Introduction

Nail mycoses can be caused by three groups of fungi, the dermatophytes, nondermatophytic molds and yeasts [9]. It has a worldwide distribution. However epidemiology and etiology varies with geographical variations. The nondermatophytic agents of onychomycosis include *Alternaria alternata, Aspergillus* spp., *Cephalosporium* spp., *Fusarium* spp., *Nattrassia mangiferae* and *Scopulariopsis brevicaulis*. Though *Fusarium* spp. causes hyalohyphomycosis, it is often a cause of onychomycosis.

Fusarium oxysporum is a common hyaline soil saprobe and a plant pathogen. It is reported as an opportunistic pathogen causing superficial, deep tissue and disseminated mycoses. *Fusarium oxysporum* invariably affects the great toe nail after trauma or dystrophic abnormalities and other predisposing conditions like diabetes mellitus, walking bare feet, family history and immunosuppression. It has an invasive potential. Many *Fusarium* species have shown lack of responsiveness to antifungal agents [13].

We describe a case of bilateral great toe nail onychomycosis by *Fusarium oxysporum* in a 48-year-old, immunocompetent woman.

Case

A female aged 48 years presented with discoloration of great toenail of both feet, at Dermatology unit in BVDU Medical College, Pune, India (day 1). Patient was from Buldhana district of Maharashtra (India). She complained of the infection appearing on other fingers and had come for further consultation. History revealed that she had the infection from last 25 years. She described its appearance after her marriage, when she had to paste the house, kitchen and courtyard with mud and dung. One of the great toe nail was infected first before other to be later. Her feet remained wet for prolonged period every day due to this activity. There was no history of trauma. On examination (day 1) she had bilateral great toenail infection with involvement of adjacent toenail. Nails were discolored (yellowish brown color). The distal plates were rough dry and thickened due to hyperkeratosis (Fig. 1A). Finger nails were not affected. Considering chronicity tinea pedis was not found to be associated. Patient gave history of being treated several times for the infection with allopathicas as well as other alternative medicines for last 12 years. Her records showed that she had been treated with various antifungal agents and topical ointments containing ketoconazole and ciclopirox, olamine lacquer. She was unaware of any familial history. Routine clinical investigations were performed and patient was investigated for any other associated illnesses (day 1). She was found to be immunocompetent.

Nail pieces were collected from both the great toe nails for bacterial culture and after previous cleaning with 70% alcohol for fungal culture (day 2). The first part of sample was discarded from the distal part of toe nail to avoid any contaminants in it. Subungual debris scrapings were also taken from yellowish brown area and hyperkeratotic area (Fig. 1B). 20% KOH (Potassium hydroxide) mounts were prepared from all scrapings and observed microscopically after 30 minutes of clearing (day 2). Nail pieces being thicker took long time to dissolve and clear. These mounts were observed microscopicallyafter18 hrs (day 3). KOH mounts of all the samples showed hyaline septate, nonpigmented hyphae with dichotomous branching (Fig. 2).

Samples were inoculated on slopes of Sabouraud dextrose agar with chloramphenicol (50 mg/L), different for each sample. They were incubated at 28 °C. Simultaneously bacterial culture was done to exclude any infection with bacteria (day 2). The slopes were observed for any growth daily. Initially in first week (day 6), small white mold was seen on obverse. On further incubation mold was found to have grown to a larger fluffy one in the second week (day 4) (Fig. 3A). The mold was again observed in 3rd week (day 20). There was a change in color from white to light pink as seen (Fig. 3B). Reverse of agar showed distinct salmon pink pigmentation (Fig. 3C) which is characteristic of *Fusarium* growth.

Teased, lacto-phenol cotton blue mount of the mold was prepared and observed microscopically (× 40). It showed septate, non-pigmented hyphae with abundant short single celled microconidia on phialides. Multiple sickle-shaped multi-celled macroconidia with pointed apical tip and basal foot cell were observed (Fig. 4). The isolate was identified morphologically and from growth pattern of the mold as *Fusarium oxysporum* [12].

Figure 1 A. Great toe nails and adjacent toe nails showing yellowish brown discoloration. Distal nail plates are dry, rough, thickened with hyperkeratosis. B. Nail sample collection.
A. Gros orteils et orteils adjacents montrant une dyschromie brun-jaunâtre. Le plateau de l'ongle distal est sec, rugueux, épaissi et hyperkératosique. B. Morceaux d'ongle prélevés.