Onychomycosis Caused by *Chaetomium globosum*

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Onychomycosis is usually caused by dermatophytes, but some nondermatophytic molds and yeasts are also associated with invasion of nails. The genus *Chaetomium* is a dematiaceous nondermatophytic mold found in soil and plant debris as a saprophytic fungus. We report the first Korean case of onychomycosis caused by *Chaetomium globosum* in a 35-year-old male. The patient showed brownish-yellow discoloration and subungual hyperkeratosis on the right toenails (1st and 5th) and left toenails (1st and 4th). Direct microscopic examination of scraping on the potassium hydroxide preparation revealed septate hyphae and repeated cultures on Sabouraud’s dextrose agar (SDA) without cycloheximide slants showed the same fast-growing colonies, which were initially velvety white then turned to dark gray to brown. However, there was no growth of colony on SDA with cycloheximide slants. Brown-colored septated hyphae, perithecia and ascospores were shown in the slide culture. The DNA sequence of internal transcribed spacer region of the clinical sample was a 100% match to that of *C. globosum* strain ATCC 6205 (GenBank accession number EF524036.1). We confirmed *C. globosum* by KOH mount, colony, and light microscopic morphology and DNA sequence analysis. The patient was treated with 250 mg oral terbinafine daily and topical amorolfine 5% nail lacquer for 3 months. (Ann Dermatol 25(2) 232 ~ 236, 2013)

-Keywords-
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INTRODUCTION

Onychomycosis is caused mainly by dermatophytes but occasionally by nondermatophytic fungi including *Scopulariopsis brevicaulis*, *Aspergillus* species (spp.), *Fusarium* spp., *Acremonium* spp., and *Chaetomium* spp. which have often been considered as saprophytic or opportunistic fungi1. So far such molds have been regarded as saprophytic or opportunistic fungi and thus have been ignored. Recently, as a consequence of the increase in the number of cases of immune suppression and environmental changes, more attention has been given to this wide, but generally not pathogenic group of fungi2. This apparent emergence might be an artifact of improved diagnostic techniques and increased awareness that these fungi are potential etiologic agents3.

The genus *Chaetomium*, which belongs to ascomycetes, is a dematiaceous mold found worldwide in soil and plant debris as a saprophyte. *Chaetomium* species are rarely involved in human infection, but have been reported to cause subcutaneous phaeohyphomycosis and systemic infections in immunocompromised patients as well as onychomycosis in healthy subjects4. There have been only four cases of onychomycosis caused by *Chaetomium globosum*, which is the most frequently isolated species among *Chaetomium* spp.4-10.

Here, we report the first case in Korea of onychomycosis caused by *C. globosum*. The identification of the causative fungus was confirmed by clinical findings, repeated fungal isolation, light microscopy and sequencing analysis of the internal transcribed spacer (ITS) region in ribosomal RNA genes.
CASE REPORT

A 35-year-old male presented with a 2-year history of brownish-yellow discoloration and subungual hyperkeratosis on the right toenails (1st and 5th) and left toenails (1st and 4th) (Fig. 1, 2). The patient was otherwise in good health and he denied nail trauma or dystrophic nail abnormalities prior to the onset of the present lesions. There was no history of other diseases except for toenail dystrophy. On the visit, laboratory studies including a complete blood cell count with differentials, liver and renal function test, venereal disease research laboratory, urinalysis, stool examination, hepatitis viral test, human immunodeficiency virus test, chest X-ray, and electrocardiogram were all within normal limits or negative.

In mycological examination, septated hyphae were observed in 20% KOH preparation from the toenail lesions. Nail specimens were cultured on two Sabouraud's dextrose agar (SDA) without cycloheximide slants at 25°C for a week to yield several identical colonies. However, there was no growth of colony on SDA with cycloheximide slants. These rapid growing colonies were initially velvety white then turned to dark gray to brown (Fig. 3). The reverse surface of the colonies revealed an orange-tan color. Subcultures on agar plates exhibited the same results (Fig. 4, 5). When the slide cultures of fungal colonies were stained with lactophenol cotton blue, the

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Fig. 1. Brownish-yellow discoloration with hyperkeratosis on the right toenails.

Fig. 2. Close up view of the right first toenail.

Fig. 3. Multiple, dark grey to brown colonies with aerial mycelium on Sabouraud's dextrose agar slants after incubation at 25°C for 1 week.

Fig. 4. A rapid growing, dark grey to brown colony with aerial mycelium on Sabouraud's dextrose agar plate after incubation at 25°C for 1 week.