INTRODUCTION

Fusarium species are molds that are widely distributed throughout the environment, including soil, air, water, and plants. They generally infect immunocompromised patients, especially those with hematologic malignancy, bone marrow transplantation, and neutropenia. They rarely cause local infections, like septic arthritis, endophthalmitis, osteomyelitis, cystitis, and brain abscess, in immunocompetent patients. However, they can cause cutaneous infections through skin breakdown by burns, trauma, foreign bodies, or vascular insufficiency.

CASE REPORT

The patient provided written informed consent. The patient was a 64-year-old male presented with a tender, erythematous, deep-seated nodule on the outer aspect above his left ankle. This nodule developed one month after an intralesional triamcinolone injection for lipoma was administered at a private clinic. Fungal hyphae were identified in subcutaneous tissue by skin biopsy using Gomori methenamine silver stain. Lactophenol cotton blue staining, fungal culturing, and 28S rRNA sequencing confirmed the presence of Fusarium solani. After diagnosis, the patient was successfully treated with oral itraconazole.

Key Words: Fusarium solani, Itraconazole

Cutaneous Infection by Fusarium solani in an Immunocompetent Patient

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SDA plate showed yellow-brownish colored colonies (Fig. 3B). Lactophenol cotton blue staining of the culture revealed sickle-shaped macroconidia with three thick septa (Fig. 3C). 28S rRNA sequencing was performed to confirm the fungal species, and the fungal culture was identified as *Fusarium solani* (Fig. 4). Based on these findings, cutaneous fungal infection by *F. solani* was diagnosed. The patient was treated with oral itraconazole (200 mg/day) for about 4 months and was completely cured. The patient was followed up for 12 months and showed no clinical signs of recurrence (Fig. 1C).

**DISCUSSION**

*Fusarium* species are widely distributed throughout the environment. They are divided into several species complexes (SC) such as *F. solani* SC, *F. oxysporum* SC, *F. fujikuroi* SC, and *F. dimerum* SC. *Fusarium* infection has rarely been reported in immunocompetent individuals. It shows slower progression in such patients than in immunocompromised patients. Usually, patients with *Fusarium* infection have a previous history of infection through skin breakdown. In this case, cutaneous infection occurred one month after intralesional triamcinolone injection. Therefore, cutaneous fungal infection should be considered even in healthy patients showing slowly progressing skin lesions with previous trauma history such as insect bites or needle injuries. Skin and soft
Fig. 3. (A) Top view of the Sabouraud dextrose agar plate showed a white floccose colony. (B) Bottom view of the colony showing yellowish to brownish color. (C) Sickle-shaped macroconidia with three thick septa were observed (lactophenol cotton blue stain, ×400).

Fig. 4. RNA sequence alignment of the sample from the patient was 100% identical to the 28S rRNA of *Fusarium solani* (GenBank accession number KT313637.1).
tissue infections develop in approximately 75~90% cases of disseminated *Fusarium* infection. According to previous reports, the upper and lower extremities are the most common sites. Common morphologic types of skin lesions include red or gray papular and macular type lesions with central eschar and necrosis and subcutaneous nodular type lesions. Previous studies have reported various skin lesions such as necrotic tissue, cellulitis with necrosis, ulceration, and plaque type with vesicles and pustules in immunocompetent patients. Most of these patients had a history of skin breakdown such as burns, trauma, and preexisting onychomycosis.

Most *Fusarium* species are resistant to antifungal agents. In particular, *F. solani* SC shows high resistance to various antifungal agents and has high minimal inhibitory concentration to many azoles including posaconazole, itraconazole, and difenoconazole. The ideal treatment regimen for *Fusarium* infections is controversial. Combination therapy of liposomal amphotericin B and voriconazole is most commonly used. However, unlike immunocompromised patients, cases successfully treated by oral itraconazole or local heat therapy have been reported. In this case, the patient was effectively treated with oral itraconazole, and he had no recurrence during the 12-month follow-up period.

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The authors declare that there is no acknowledgment.

CONFLICT OF INTEREST

In relation to this article, we declare that there is no conflict of interest.

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PATIENT CONSENT STATEMENT

The patient provided written informed consent for the publication and the use of his images.

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