A Case of Phaeohyphomycosis on the Wrist: Identification of *Exophiala spinifera* in Korea

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Dear Editor:

An 89-year-old female presented with a tender, dark gray, scaly, verrucous plaque on the right wrist for several months (Fig. 1A). The plaque measured 3 cm in diameter. This lesion developed after traumatic injury. She had a history of diabetes mellitus and human immunodeficiency virus infection. She was diagnosed with phaeohyphomycosis caused by *Exophiala spinifera* by KOH examination, fungal culture, lactophenol cotton blue stain, biopsy, and ribosomal DNA (rDNA) sequencing. Yeast-like fungal elements with pseudohyphae were observed on KOH preparation (Fig. 2A). Fungal culture on potato dextrose agar and corn meal agar, with peptone and tween 80, showed dark black, velvety colonies (Fig. 2B). Long annellophores and annelloconidia were observed on lactophenol cotton blue staining. Histopathology highlighted dark brown, yeast-like fungal elements and showed mixed inflammatory and granulomatous infiltrate in the dermis (Fig. 1B). Sequencing analysis of the internal transcribed spacer (ITS) region of the rDNA identified *E. spinifera* using the GenBank Basic Local Alignment Search Tool (BLAST). The GenBank BLAST search revealed 98% (530/539 bp) similarity with accession number NR111131 and 99% (537/540 bp) similarity with accession number KP132127. The lesions are resolving with oral antifungal medication (fluconazole 50 mg once a day for 3 months).

Cutaneous, subcutaneous, and systemic infections can be caused by *Exophiala*, which is characterized by annellidic conidiogenesis¹. Identification of *Exophiala* has been based upon recognition of macroscopic and microscopic

appearance¹. On the basis of morphological examination, the most common species of *Exophiala* are *E. jeanselmei* and *E. dermatitidis*¹. However, morphological examination is unreliable in differentiation of the genus *Exophiala*. The advent of gene sequencing technique has permitted more accurate differentiation of *Exophiala*². Heterogeneous species of *E. jeanselmei* have been reclassified as several species, including *E. heteromorpha*, *E. lecanii-corni*, *E. oligosperma*, *E. xenobiotica*, and *E. jeanselmei*, using data sequence analysis of the rDNA ITS region and ITS-restriction fragment length polymorphism analysis³. Although *E. dermatitidis* is very homogeneous, it was reclassified into five subgroups. A recent study on the order of frequency of *Exophiala* infection in the USA showed the following: *E. dermatitidis* (29.3%), *E. xenobiotica* (19.7%), *E. oligosperma* (18.6%), *E. lecanii-corni* (6.9%), *E. jeanselmei* (3.7%) and *E. spinifera* (2.7%)¹. Although a few cases of *E. spinifera* infection identified by molecular techniques and morphological features have been reported, none has been observed in Korea⁴. Our case was identified with KOH, fungal culture, and biopsy. In addition, sequencing analysis of the ITS region of rDNA verified the isolate as *E. spinifera*. A few reported cases of phaeohyphomycosis caused by *E. spinifera* came from tropical and subtropical areas⁵. *E. spinifera* is distributed in soil, plants, water and decaying wood material. Cutaneous *E. spinifera* infections show various clinical presentations: erythematous papules, verrucous plaques, and deep subcutaneous abscesses. The distribution and course of disease are variable according to the age and immune competency of the patient.

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Fig. 1. (A) A solitary, tender, dark gray, scaly, verrucous plaque on the right wrist. (B) Dark-brownish yeast-like fungal elements, mixed inflammatory infiltrate, and granulomatous infiltrate in the dermis (H&E, ×400).

Fig. 2. (A) Yeast-like fungal elements with pseudohyphae on KOH preparation (Parker ink stain). (B) Dark black, velvety colony on fungal culture.

Although susceptibility of *E. spinifera* to antifungal agents has been variable, our patient was successfully treated with oral fluconazole. We report a case of phaeohyphomycosis caused by *E. spinifera*, identified newly in Korea.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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