Review

Phaeohyphomycosis in Korea

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Abstract

Phaeohyphomycosis is a mycotic disease caused by dematiaceous fungi that produce brown yeast-like cells, pseudohyphae, and irregular true hyphae in tissues. Seven Korean cases of subcutaneous phaeohyphomycosis have been reported to date, four males and three females, ranging in age from 9-84 years (mean 50.4 years). Causative organisms of subcutaneous phaeohyphomycosis were 3 of Exophiala jeanselmei, 2 of E. dermatitidis, 1 of Drechslera dematioidea and 1 of Phoma sp. Four cases of abscess and 3 cases of verrucous plaque were present as skin lesions, and were all exposed areas of the body. Patients were treated with itraconazole, ketoconazole, fluconazole or amphotericin B.

Key words: phaeohyphomycosis, Korea

Introduction

Phaeohyphomycosis is a clinical term proposed by Ajello et al.1) in 1974 for mycotic infections that contain dematiaceous mycelial elements in tissue, and differs from chromoblastomycosis in that it has no sclerotic cells2-5). These infections have been referred to as chromomycosis, phaeosporotrichosis, cerebral chromomycosis, phaeomycotic cyst, chromohyphomycosis, and systemic chromoblastomycosis2, 3). McGinnis3) defined four forms of phaeohyphomycosis; superficial (black piedra, tinea nigra), cutaneous and corneal (dermatomycosis, mycotic keratitis, onychomycosis), subcutaneous, and systemic.

Subcutaneous phaeohyphomycosis has been commonly reported in Japan6, 7) but rarely in Korea. There have been several reports8-14) of subcutaneous phaeohyphomycosis in Korea, and I would like to discuss their causative organisms, clinical features and treatment in this report.

Etiology

The number of fungi documented as etiologic agents of phaeohyphomycosis currently number at least 55 genera and 104 species4). The etiologic agents of subcutaneous phaeohyphomycosis are predominantly Exophiala (E.) sp. and Phialophora (P) sp., including E. jeanselmei, E. dermatitidis and P. verrucosa2). The most common is E. jeanselmei, followed by E. dermatitidis2-4, 15, 16). They are considered to be saprophytes of plant material, wood and soil. Many patients with phaeohyphomycosis have lived in rural areas. Infection follows traumatic inoculation of fungi into the skin2, 3, 11, 12). Among the seven Korean cases of subcutaneous phaeohyphomycosis, etiologic agents were: 3 cases of E. jeanselmei, 2 cases of E. dermatitidis, 1 case of Drechslera dematioidea, and 1 case of Phoma sp.

Clinical manifestations

The skin lesion of subcutaneous phaeohyphomycosis is a solitary abscess or granuloma that forms at the site of probable trauma in an exposed area of the body. The most common exposed area is an extremity. Patients with phaeohyphomycosis are predominantly older males2, 3). The clinical features in Korean cases of subcutaneous phaeohyphomycosis are summarized in Table 1. Patients comprised four males and three females with a mean age of 50.4 years (range 9-84). The ratio of male to female was 1.3 to 1. Among these seven Korean cases of skin lesions were: 4 cases of abscess (Fig. 1) and 3 cases of verrucous plaque, and the sites of lesions involved were 3 cases of forearm, 3 case of face & neck, and 1 case of foot.

Mycology

Black-gray velvety or yeast-like colonies are noted on the culture from biopsied tissue.
specimens placed on Sabouraud’s dextrose agar at 25°C for 2 to 4 weeks in patients with phaeohyphomycosis2,3) (Fig. 2). The dematiaceous fungi have been identified and classified by morphological, biochemical, and physiological tests2,17) (Fig. 3). Molecular analysis has recently been introduced to the field of medical mycology18-20). All Korean cases of subcutaneous phaeohyphomycosis showed the same mycological findings.

Pathology

Histopathologically granulomatous inflammation with or without abscess and dematiaceous fungal elements in tissues of patients with subcutaneous phaeohyphomycosis are observed on Hematoxylin-eosin (H & E) staining (Fig. 4). Fungal elements are also visible on Periodic acid-Schiff (PAS) & Gomori methenamine silver
(GMS) stain (Fig. 5), but sclerotic cells are not visible\(^2,3\). All Korean cases of subcutaneous phaeohyphomycosis showed the same histopathological findings.

**Treatment**

Subcutaneous phaeohyphomycosis is usually treated by surgical excision. There have been reports of its successful medical treatments by itraconazole, ketoconazole, amphotericin B and fluconazole\(^2,3,21\). Among the medically treated cases in Korea, 3 were treated with itraconazole, and 3 with each of ketoconazole, fluconazole and amphotericin B.

**Conclusions**

Phaeohyphomycosis has so far been known as a rare disease in Korea, since not many cases have been reported due to lack of knowledge of infections caused by dematiaceous fungi. Moreover, phaeohyphomycosis has frequently been mistaken as sporotrichosis of deep mycoses which leads to less interest in identification of the microorganisms. Many cases of phaeohyphomycosis have been reported in Korea since 1996, and more reports of this condition are expected in the near future.

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**References**


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