A Case of Trichosporon Pululans Infection of the Lung with Adult T-cell Leukemia

Katsunori SHIGEHARA, Kouji TAKAHASHI, Kazunori TSUNEMATSU, Hiroyuki KOB, Seiya KATOH, Mitsuo ASAKAWA and Akira SUZUKI

Fungal infections are often reported, but Trichosporon infection is very rare. A 78-year-old man with adult T-cell leukemia complicated with pulmonary infections is presented. Bronchial exudate culture revealed many yeast-like colonies, which were morphologically and biochemically identified as Trichosporon pululans.

Key words: Trichosporon pululans, Pulmonary infection, Susceptibility to anti-fungus drug, Adult T-cell leukemia

Trichosporonosis is an uncommon fungal infection which is invasive and frequently is fatal in immunocompromised patients. Among Trichosporon species, Trichosporon beigelli (T. cutaneum) and T. capitatum more recently have come to be known as pathogenic fungi, T. pululans, however, is very rare. In this paper, we present a patient with T. pululans infection of the lung combined with adult T-cell leukemia.

CASE REPORT

A 78-year-old man was admitted to Hokkaido Kushiro Hospital on May 17, 1989, because of a productive cough and low grade fever. Physical examination revealed superficial lymphadenopathies and erythematous nodules of the skin on his trunk. Rhonchi and coarse crackles were audible in the bilateral lungs during both inspiratory and expiratory phases. Chest radiograph showed diffuse infiltrative shadows and reticulo-granular opacities of various sizes in the middle and lower lung field (Fig. 1). Chest CT demonstrated cavitary images in the bilateral lungs. The hematological findings are as follows; red cell count $338 \times 10^{6} / \mu l$, hemoglobin 10.2 g/dl, platelet $56.0 \times 10^{4} / \mu l$ and white cell count $17,500 / \mu l$ with 30% abnormal lymphocytes, the so-called “flower cells”. The erythrocyte sedimentation rate was 80 mm/h and C-reactive protein (CRP) was 6+. Surface marker analysis of mononuclear cells in the peripheral blood by flow
cytometry showed CD2 72.3%, CD3 33.1%, CD4 91.3% and CD8 3.3%. Anti-HTLV-I antibody was positive. From these findings, a diagnosis of adult T-cell leukemia was made.

Antibacterial agents were administered, but the infiltrative shadow of the chest showed no improvement. The bronchial exudate obtained using fiber-bronchoscopy was swabbed on Sabouraud's dextrose agar plates. The cultured colonies were yeast and gyrus-like (Fig. 2). Microscopic findings were as follows: 1) Both true mycelium and arthrospore were abundant. 2) The numbers of pseudomycelium ranging from sparse to abundant, were globose to ovoid. 3) Elongated blastopores arose singly in verticillated positions, appearing as lightening (Fig. 3). The above morphological findings confirm that the fungus is of the Trichosporon species. An assimilation study of carbon and nitrogen compound for yeast was performed, in which potassium nitrate was assimilated by the yeast, which is characteristic of Trichosporon pullulans according to Lodder (1). A precipitin line was found in the agar gel by Ouchterlony tests with the extracts derived from cultured fungus and patient's serum (Fig. 4). Susceptibility to amphotericin B, 5-fluorocytosine, miconazole and fluconazole was analyzed. The cultured strains were susceptible to these drugs, thus miconazole and fluconazole were administered to the patient. However, the infiltrative shadows of the chest due to the infection slowly became deteriorated in accordance with the progression of ATL.

**DISCUSSION**

Trichosporon is widely disseminated in nature; it is found not only as a saprophyte in soil, decaying matter and dairy products but also as a part of the normal flora of human skin and of the gastrointestinal tract (1). It is not a very virulent fungus but has recently been reported as a pathogen in an immunocompromised host. Walsh et al reported 15 cases of Trichosporonosis in patients with neoplastic disease in 1986 (2). As far as we know, other reports on this disease are single case reports. The common species are *T. beigelli* and *T. capitatum*, however, Ito et al did report on a single case of systemic *T. pullulans* infection in a leukemia patient (3). The present case, then, is the second to be reported of *T. pullulans* infection. *T. cutaneum* has recently been implicated as a summer-type hypersensitivity pneumonitis, exclusively reported in Japan (4).
Trichosporon Pullulans Infection of the Lung

In the present case, it is evident that the immunodepressive state due to adult T-cell leukemia was contributory to the occurrence as well as the progression of this disorder. This case confirmed that Trichosporon should also be considered as a pathogen in an immunocompromised host.

**REFERENCES**