Schizophyllum commune-induced Pulmonary Mycosis

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To the Editor: *Schizophyllum commune* is a ubiquitous basidiomycetous fungus that commonly colonizes rotting wood.[1] Reports of pulmonary involvement due to *S. commune* are limited. We herein reported a case of pulmonary mycosis due to *S. commune* in the First Affiliated Hospital of College of Medicine, Zhejiang University.

A 59-year-old Chinese female came to our hospital due to cough and yellow phlegm for 2 months, which was not relieved by anti-inflammatory therapy. The patient stated that she worked in her garden right before her illness. Her previous history included nasal polypectomy. Examination revealed white blood cell count of 6.3×10^9/L with 7.6% of eosinophils, serum carcinoembryonic antigen (CEA) level of 8.1 ng/ml (normal range: 0–5 ng/ml), and high serum IgE levels (883 KU/L). Pulmonary function test did not indicate bronchial asthma. The fractional exhaled nitric oxide (FeNO) level was 65 ppb. Serum biochemistry for renal, hepatic, and blood sugar was unremarkable. Chest computed tomography (CT) showed gloved finger sign, consolidation, and bronchial occlusion of the right middle lobe [Figure 1a]. Bronchoscopic images showed mucosal swelling of the right middle lobe bronchus and mucous plugs in the medial segmental bronchus which could not be removed by forceps and suctioning [Figure 1b]. Biopsy pathology of bronchoscope showed chronic inflammation of mucosa. Brush culture demonstrated filamentous fungus.

Endobronchial ultrasound-guided sheath-transbronchial lung biopsy was performed on the patient. Pathologist saw a large amount of eosinophils in biopsied tissue. In Sabouraud dextrose agar, bronchoscopic brush specimen culture grew white and woolly colonies of fungus, and it displayed as annular area in the colonies central [Figure 1c–1e]. Strain identification using nucleotide sequencing (genes for 18S rRNA) demonstrated this fungus as *S. commune*. The patient was diagnosed as *S. commune*-induced pulmonary mycosis.

The patient was treated with voriconazole and pulmicort inhalation in view of high FeNO level, large amounts of eosinophils in the biopsied tissue, and the isolation of *S. commune*. After treatment, the patient's symptoms improved significantly. One month after treatment, another bronchoscopy was performed for follow-up, which showed complete resolution of the mucus plugs [Figure 1f].

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The FeNO level decreased from 65 ppb to 23 ppb, serum IgE level decreased to 272 KU/L, blood CEA decreased to 5.0 ng/ml, and peripheral blood eosinophils decreased to 0.06×10^9/L. Fifty days after treatment, repeated chest CT scan showed remarkable absorption of the previous lesions [Figure 1g].

Human infection by *S. commune* was scarcely reported. Previous reports suggested that the incidence might be underestimated because of the difficulties encountered in laboratory identification.[2] The growth form of *S. commune* is characterized by densely wooly white colonies with a tart smell, formation of basidiocarp after incubation with intermittent sunlight exposure, and concentric annular area in the colonies central. Its microscopic features include septate, branched, hyaline hyphae with clamp connections, spicules, and/or basidiospores.[3] However, molecular techniques are required for definitive identification of *S. commune* isolate. Regarding treatment, Chowdhary *et al*.[4] performed *in vitro* antifungal susceptibility test against *S. commune* strains, and *S. commune* was found to have low geometric mean minimal inhibitory concentrations (MICs) of isavuconazole, itraconazole, voriconazole, and amphotericin B, but high geometric mean MICs of fluconazole and flucytosine.

From this case, it was learned that *S. commune* inhalation in an immunocompetent patient might cause eosinophils gathering and mucus formation in the bronchus. It was found that the special morphological and microscopic features of *S. commune* might help distinguish it from other fungus.

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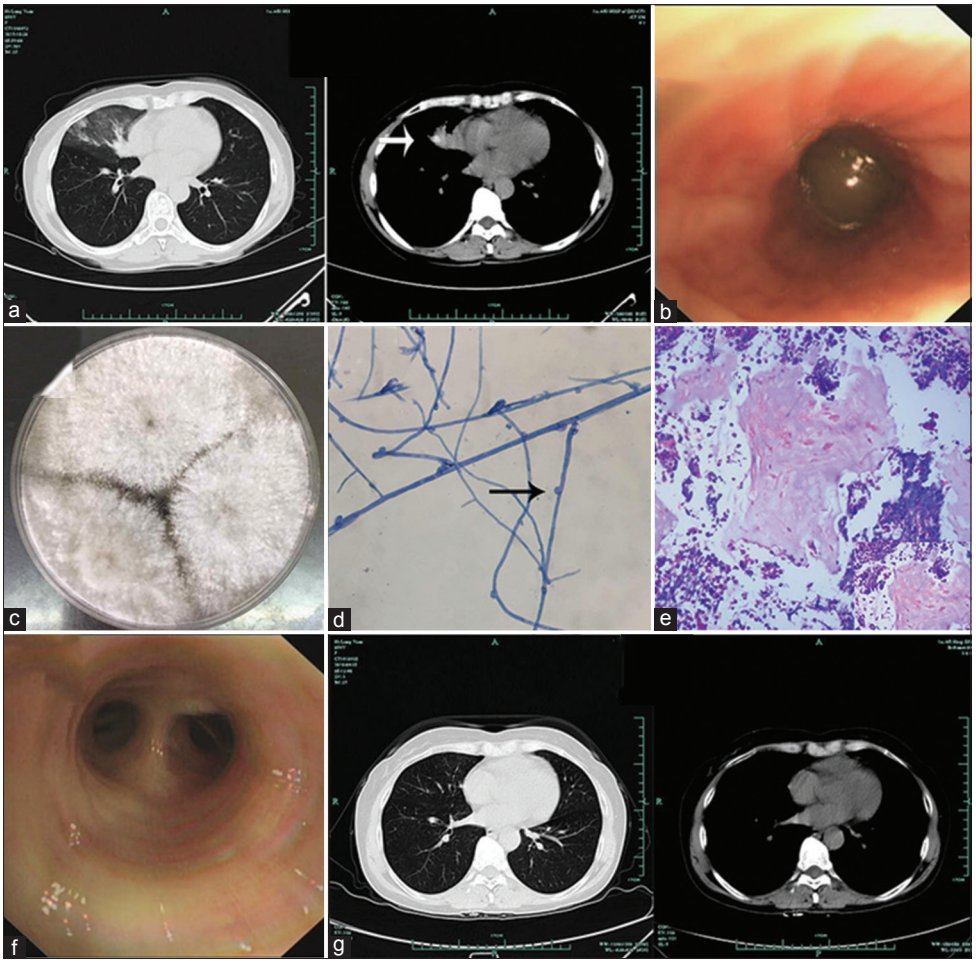

Figure 1: (a) Chest computed tomography showed consolidation and bronchial occlusion of the right middle lobe, and high density was seen (white arrow). (b) Bronchoscopic images showed mucosal swelling and mucoid impaction of right middle lobe bronchus. (c) White, woolly colonies of *Schizophyllum commune* in Sabouraud dextrose agar after incubation. (d) Slide culture of the *Schizophyllum commune* isolate on malt extract agar, showing hyaline, septate hyphae with clamp connections (black arrow). (e) Large amounts of eosinophils were seen in biopsied tissue. (f) Reexamination of bronchoscopic images was normal. (g) Chest computed tomography showed remarkable absorption of lesion after 50 days of treatment.

Conflicts of interest

There are no conflicts of interest.

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