



## Case Report

## Allergic Bronchopulmonary Mycosis Caused by *Schizophyllum commune* Diagnosed by Metagenomic Next-Generation Sequencing


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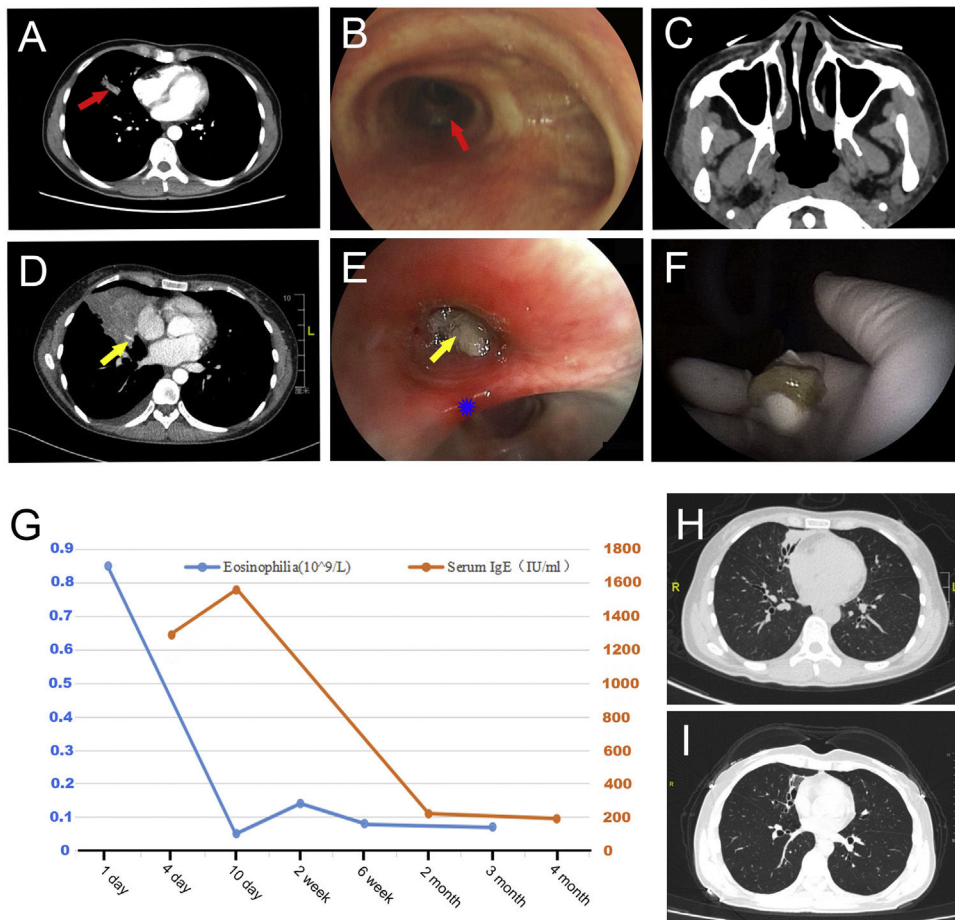
A 49-year-old woman presented with evaluation of recurrent chronic cough. She had developed an unproductive cough 6 months earlier and presented to the community hospital. A chest computed tomography (CT) scan was performed and the images showed consolidation in the right middle lobe; the patient received oral anti-inflammatory therapy and the condition was improved a week later. However, the cough recrudesced about 3 months later. The patient was admitted to another hospital because hyperattenuated mucoid impaction in the right middle lobe was shown in the chest CT examination images (Fig. 1A). Laboratory tests showed peripheral eosinophilia and high serum IgE levels. Fiberoptic bronchoscopy was conducted for diagnosis (Fig. 1B). The biopsy detected chronic inflammation of the mucosa with collagen hyperplasia in the middle lobe of the right lung, and a smear of bronchoalveolar lavage fluid (BALF) reveal G<sup>-</sup> bacteria. However, culture of BALF did not yield any significant pathogen. The paranasal sinus CT image was negative (Fig. 1C). The patient received 1 week's treatment with cefoselis combined with azithromycin and was discharged after her condition improved.

About 3 months later, the patient presented to Respiratory and Critical Care Medicine in Suzhou Ninth People's Hospital for further evaluation of recurrent chronic cough. She had no history of allergic disease such as asthma, and no smoking or drug use except for oral entecavir due to hepatitis B. However, the chest CT reexamination images showed that the consolidation in the right middle lobe was enlarged (Fig. 1D), although physical examination including auscultation did not reveal any

abnormalities. Laboratory tests revealed an eosinophil count of  $0.85 \times 10^9/L$  and an elevated total IgE level (1280 IU/ml) (Fig. 1G). However, sputum culture did not yield any pathogen. Bronchoscopy was performed and yellow mucous plugs obstructing the right middle lobe were observed (Fig. 1E). After bronchoalveolar lavage and brushing biopsy were conducted, the mucous plugs were completely removed by cryotherapy under bronchoscopy (Fig. 1F). Bronchial aspirates and BALF did not yield any significant pathogen. However, the metagenomic next-generation sequencing (mNGS) result from BALF showed *Schizophyllum commune* infection. Therefore, the patient was diagnosed with allergic bronchopulmonary mycosis (ABPM) based on the diagnostic criteria recently proposed by Asano K, et al.<sup>1</sup> After confirmation of *S. commune* infection, the patient was immediately started on treatment with oral 200 mg voriconazole twice a day and 20 mg prednisolone once a day owing to the successful treatment with VRCZ in patients with ABPM and the low MIC against *S. commune*.<sup>2–4</sup> Although she was not suffering from wheezes or rhonchi, we thought the prednisolone was necessary because of the eosinophilia and high serum IgE level. In the next 6 months, the patient received intermittent outpatient follow-up. No hyperattenuated mucous plugs were found on the chest CT 2 weeks later (Fig. 1H). The prednisolone was withdrawn when the eosinophils and serum total IgE level were normal (Fig. 1G). The voriconazole was withdrawn 3 months later and infection has not relapsed 6 months later under chest CT follow-up (Fig. 1I).

mNGS provides an opportunity to direct patient treatment when traditional test results are repeatedly negative and empirical treatment is ineffective.

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**Fig. 1.** Chest imaging showed hyperattenuated mucoid impaction in the right middle lobe (A). Bronchoscopy showed chronic inflammation (B). Paranasal sinus CT image with negative result (C). Chest CT reexamination images showed the consolidation in the right middle lobe (D). Bronchoscopy showed a yellow mucous plugs, in the right middle lobe (E) and complete removed by cryotherapy under bronchoscopy (F). Eosinophils count and total serum IgE level (G). Chest CT 2 weeks after treatment with VRCZ (H). Chest CT 6 months after treatment with VRCZ (I).

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