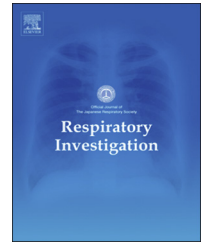




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## Case report

## Two cases of endobronchial aspergilloma complicated with primary and metastatic lung cancer: A case report and literature review



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## ABSTRACT

Endobronchial aspergilloma is a rare and unusual presentation of lung aspergilloma; the natural history for such rare diseases is poorly understood. This report presents two cases of endobronchial aspergilloma complicated by primary and metastatic lung cancer, and summarizes previous reports that suggest that an endobronchial lung cancer lesion may promote the colonialization and growth of *Aspergillus* species in the bronchus. Therefore, if endobronchial aspergilloma is found, the complication of primary or metastatic endobronchial lung cancer should be carefully considered.

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### 1. Introduction

*Aspergillus* species causes a variety of bronchial and lung-complicating disorders such as aspergilloma, allergic bronchopulmonary aspergillosis, and invasive aspergillosis.

Aspergilloma is the most common complication of pulmonary aspergillosis, which is usually formed in the presence of an underlying lung disorder such as old tuberculosis, a lung cyst, sarcoidosis, and cystic fibrosis [1]. While endobronchial aspergilloma is known as a rare and unusual presentation of lung

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aspergilloma, the natural history of endobronchial aspergilloma is poorly understood [2-5]. Herein, we report two cases of endobronchial aspergilloma complicated by primary and metastatic lung cancer. Previous case reports are also summarized.

## 2. Case presentations

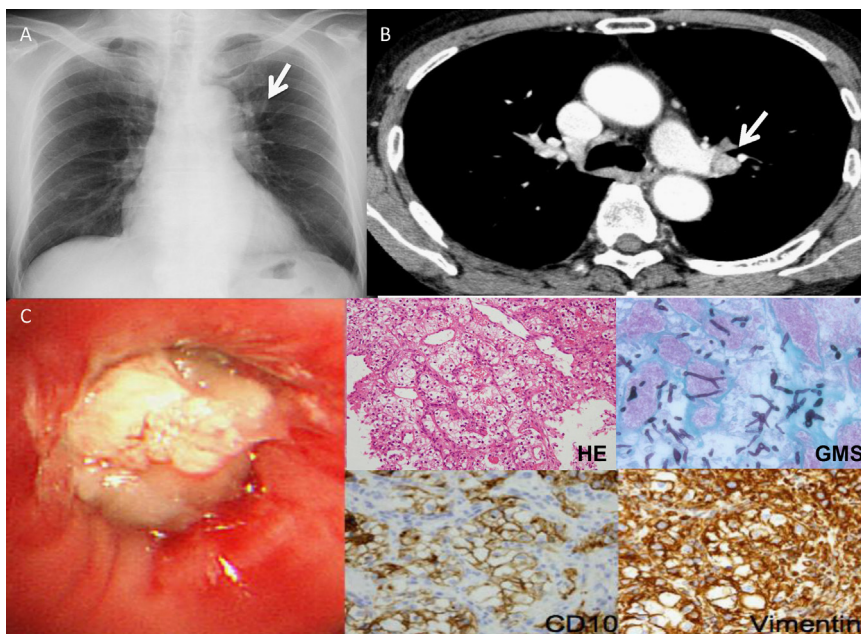
### 2.1. Case 1

A 71-year-old Japanese non-smoking man presented to our hospital with recurrent mild hemoptysis and persistent cough since approximately one month. He had undergone a nephrectomy for left renal cancer at the age of 51. The patient's vital signs and physical examination findings were normal. The laboratory examinations did not show any abnormal results including tumor markers, except that the *Aspergillus* antigen level was 0.5 ng/mL. The sputum culture did not reveal any particular microorganism that could cause an infectious lung disease. Chest radiography revealed a nodular shadow (15 mm × 15 mm) on the left upper lung field (Fig. 1A). Computed tomography revealed a well-defined tumor shadow with mucus retention that was enhanced by contrast material and obstructed the left superior bronchus (Fig. 1B). We performed a bronchoscopy and found a mass covered with necrotic tissue in the left superior bronchial lobe (Fig. 1C). Histological examinations of the biopsy specimens suggested the presence of *Aspergillus* species (Fig. 1D). Therefore, we diagnosed the patient with endobronchial aspergilloma and started intravenous administration of voriconazole at a dose of 200 mg/day for the first 18 days,

followed by oral administration at the same dose because the patient consented to surgical treatment. After two months, the symptoms and radiological findings were only slightly improved. We then performed bronchoscopy again and found that the left bronchial branch B<sup>1+2</sup> was re-opened, but B<sup>3</sup> was still obstructed by a hemorrhagic tumor lesion. We performed a biopsy of the tumor lesion, and a histological examination of the specimen revealed carcinoma with a clear cytoplasm. Immunohistochemistry staining of the specimen was positive for AE1, AE3, p53, ki-67, vimentin, and CD10 and negative for CK7 and CK20 (Fig. 1E-G). Therefore, the patient was diagnosed with endobronchial metastasis of the renal clear cell carcinoma, complicated by aspergilloma masking the neoplastic lesion.

### 2.2. Case 2

An 85-year-old Japanese non-smoking man presented to our hospital with recurrent hemoptysis that started approximately one month previously. The patient had a history of bronchial asthma from the age of 83 and was administered an inhalable corticosteroid. A physical examination, including chest auscultation, revealed no abnormal findings. Laboratory tests showed only a slight increase of carcinoembryonic antigen (CEA) level (6.0 ng/mL), and the *Aspergillus* antigen level was 0.6 ng/mL. The sputum culture did not suggest any particular pathogenic microorganisms. Chest radiography revealed an abnormal shadow around a left hilar lesion (Fig. 2A) and computed tomography revealed an obstructive lesion in the left superior bronchus (B). Positron



**Fig. 1** – Chest radiography (A) and computed tomography (CT) (B) obtained on admission in the first case. The chest radiography image shows a micronodule on the upper lung field (arrow). The CT shows a well-defined mass that was enhanced by contrast material (arrow). Bronchoscopy (C) and histopathology findings of the lesion obtained on admission and after treatment with anti-fungal medication (D-G). The bronchoscopy shows a mass covered with a white necrotic substance obstructing the left superior lobe bronchus. The histopathology findings (hematoxylin and eosin [HE] and Grocott methenamine silver stain [GMS]) show many filamentous fungi with separate hyphae in the necrotic lesion and carcinoma, with a clear cytoplasm morphologically. Immunohistochemical staining for vimentin and CD10 were positive.

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