

# Lung cancer masquerading as fungus-associated mucoid impaction

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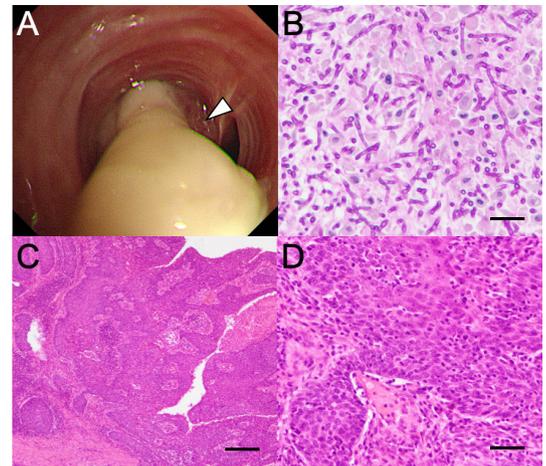
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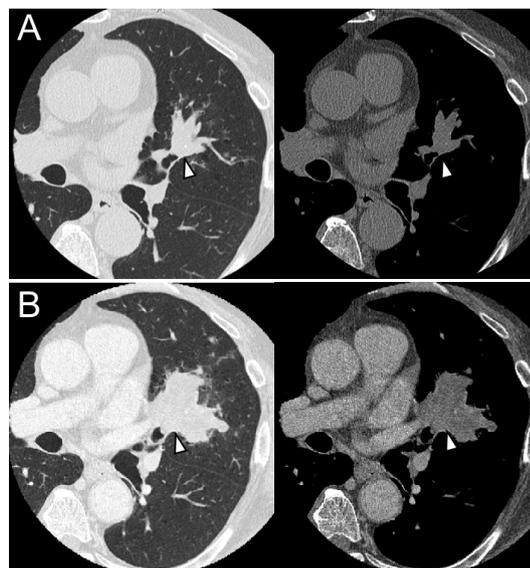
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## DESCRIPTION

A 64-year-old healthy man with mild haemoptysis for a month was referred to our hospital. He had no other symptoms, and physical examination was unremarkable. He had a 40-pack-year smoking history. Chest CT showed mucoid impaction-like consolidation from the bronchus to the lingular segment but no lymphadenopathy (figure 1A). Bronchoscopy was not performed as he refused further investigations owing to improvement in haemoptysis, and he was lost to follow-up. Eight months later, he was readmitted to our hospital due to deterioration of chest radiograph findings. Chest CT revealed a large mass in the lingular segment (figure 1B). Laboratory examination revealed a total leucocyte count of  $6.3 \times 10^9/L$  (range:  $3.5\text{--}8.5 \times 10^9/L$ ) with a total eosinophil percentage of 2.6% (range: 1%–6%), total serum IgE levels of 1370 IU/mL (range: <173 IU/mL), and *Aspergillus fumigatus*-specific IgE of <0.10 kUA/L (range: <0.35 kUA/L). Serum tumour markers, including carcinoembryonic antigen, cytokeratin 19 fragments and pro-gastrin-releasing peptide, were within normal levels and were similar to the levels 8 months before admission. Bronchoscopy revealed a tumour obstructing the lingular bronchus with a thick mucus plug (figure 2A). Pathological examination of the mucus plug revealed fungal filaments (figure 2B). Transbronchial biopsy specimen of the tumour showed squamous cell carcinoma (SCC)



**Figure 2** Bronchoscopy revealed a tumour (arrow) obstructing the lingular bronchus with thick mucus plug in the lingular segment (A). Periodic acid–Schiff staining of the mucus plug revealed a distinct dichotomous acute angle branching of the septate hyphae with orientation of branches in similar direction (B) (scale bar=25 µm). Surgical specimen of the tumour stained with H&E showed the presence of squamous cell carcinoma (C,D) (scale bar=200 µm (C),=50 µm (D)). Horiuchi K *et al.*



**Figure 1** Chest CT at the referral showed mucoid impaction-like consolidation (arrow) in the distal bronchus of the lingular segment (A); 8 months later, a mass was noted in the lingular segment (arrow) (B). Horiuchi K *et al.*

of the lung. He underwent left upper lobe lobectomy to treat obstructive pneumonia which developed after SCC diagnosis. Analysis of surgical specimens revealed SCC (figure 2C, D) without any lymphatic or vessel involvements; there were no evidence of eosinophilic inflammation and fungal infection. The patient was followed up without any complication 1 month after the surgery.

This case revealed evidence of mucoid impaction associated with fungal infection in a patient with lung SCC. Mucoid impaction, a clinical radiographic syndrome manifested by inspissated mucus plugs of the bronchi, most commonly occurs in patients with inflammatory conditions such as allergic bronchopulmonary aspergillosis (ABPA)/mycosis (ABPM); however, as in this case, it is also observed in patients with benign and malignant conditions causing airway obstruction.<sup>1</sup> Although the morphology of the filamentous fungus was similar to that of *Aspergillus*, we were unable to confirm the species, as the culture result from the bronchial wash was not positive for any fungus. Further molecular tests were not available at our clinical site. When tests were performed using sputum-derived cultures obtained from 213 Japanese patients with ABPA/ABPM, *Aspergillus* species and *Schizophyllum commune* were identified in 126 (59%) and 12



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## Images in...

(6%) patients, respectively.<sup>2</sup> Although the morphological differentiation between *S. commune* and *Aspergillus*<sup>3</sup> was found to be difficult in previous cases, both species could be identified as filamentous fungus in our case.

A previous study conducted in patients with bronchogenic carcinoma, most commonly those with SCC, showed a high prevalence of *Aspergillus* colonisation in the bronchoalveolar lavage.<sup>4</sup> Additionally, another study revealed that subacute invasive aspergillosis can occur in patients with primary lung cancer owing to the anatomical changes and systemic factors compromising the immune response.<sup>5</sup>

### Learning points

- ▶ Physicians should rule out lung cancer in patients presenting with mucoid impaction.
- ▶ Lung cancer, especially bronchogenic squamous cell carcinoma, can cause fungal colonisation with mucoid impaction.

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