

# A Case of Endobronchial Aspergilloma Coexisting with Lung Adenocarcinoma

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## Abstract

*Aspergillus* species can cause a variety of lung diseases. However endobronchial aspergilloma is an entity rarely encountered in clinical practice. An 82-year-old woman presented to the outpatient setting with wheezing, shortness of breath and productive cough. CT of the chest showed the presence of airway enlargement in a finger in glove pattern in the right upper lobe suggestive of allergic bronchopulmonary aspergillosis. Despite adequate treatment the abnormality persisted on repeat imaging. Bronchoscopy with biopsies eventually revealed the presence of hyphal elements suggestive of *Aspergillus* and poorly differentiated adenocarcinoma. Endobronchial aspergilloma is rare and not included in the classification of *Aspergillus* lung diseases. It is thought to result from airway colonization by *Aspergillus* species. Occasionally it can obscure an underlying lung carcinoma and thus delay the diagnosis. Diagnosis is made by pathological examination of biopsy specimens. Optimal treatment is not well established.

**Keywords:** Lung cancer • Aspergilloma • Aspergillosis • Bronchoscopy

## Introduction

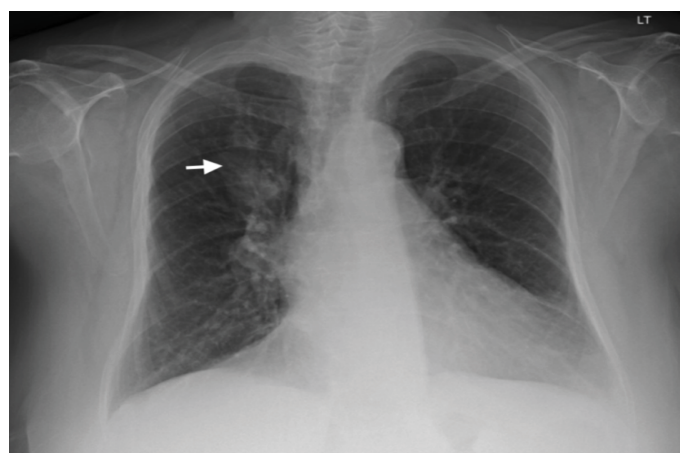
*Aspergillus* is a ubiquitous fungus that can cause a variety of clinical syndromes. The disease spectrum includes invasive pulmonary aspergillosis which is an invasive disease that occurs in patients with severe immune system suppression, chronic necrotizing aspergillosis that affects patients with mild immunosuppression, and allergic bronchopulmonary aspergillosis which is an hypersensitivity reaction to the *Aspergillus* species [1]. Aspergilloma is a mass like fungus ball and represents a non-invasive form of pulmonary aspergillosis. It occurs primarily in patients with underlying structural lung disease, especially in those with previous infections causing lung cavities such as tuberculosis [2]. Endobronchial aspergilloma is less well described in the literature. It is the result of a non-invasive overgrowth of the *aspergillus* species in the airway lumen [3]. We herein present an interesting case of a dual diagnosis endobronchial aspergilloma and endobronchial adenocarcinoma.

## Case Presentation

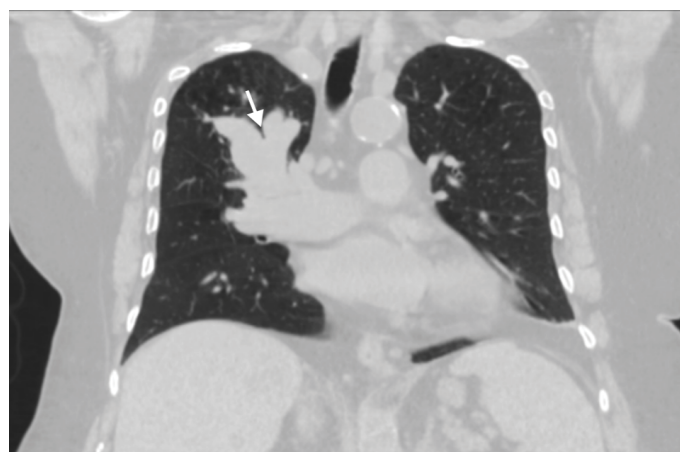
An 82-year-old female with a history of heavy smoking, never formally diagnosed with chronic obstructive lung disease was referred to the outpatient pulmonary clinic for wheezing and shortness of breath that was most notable with exertion. She had a chest x-ray prior to presentation showing the presence of a right upper lobe opacity (Figure 1).

She also had computed tomography (CT) of the chest ordered by her primary care physician. The CT of the chest revealed a mass like enlargement of the right upper lobe bronchi suggestive of ABPA (Figure 2).

On physical exam she was clearly wheezing, had significant shortness of breath, and a cough productive of dark yellow mucus. A battery of tests



**Figure 1.** Chest X-ray demonstrating a right upper lobe opacity (white arrow).



**Figure 2.** CT of the chest showing mass like enlargement of the right upper airway in a finger in glove like pattern (white arrow) suggestive of ABPA. Underlying mass cannot be excluded.

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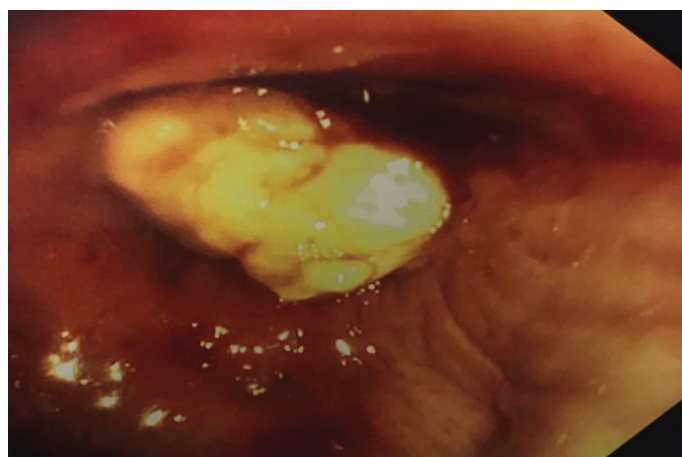
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was ordered including complete blood count with differential, Immunoglobulin E level and pulmonary function tests. She was immediately started on maintenance inhalers, antibiotics, as well as systemic steroids given the gravity of her symptoms. Within a week she reported dramatic improvement in her cough, wheezing and dyspnea. The CBC and IgE level were within normal limits, albeit this was on systemic corticosteroids, which could have been a confounding factor. The working diagnosis at that time was ABPA. At that point, the patient was kept on a slow steroid taper, and maintenance inhalers, with plans to repeat the CT chest in a month. Clinically she was doing better. She presented a month later with improving symptoms, but her repeat CT scan of the chest showed the persistence of the mass-like right upper lobe airway enlargement, again described as fingers in glove pattern suggestive of ABPA. Concerned that the opacity persisted with no reduction in size, she was scheduled for bronchoscopy with possible biopsy. Bronchoscopy done under conscious sedation, revealed the presence of a yellowish friable tissue occluding the opening of the right upper lobe (Figure 3).

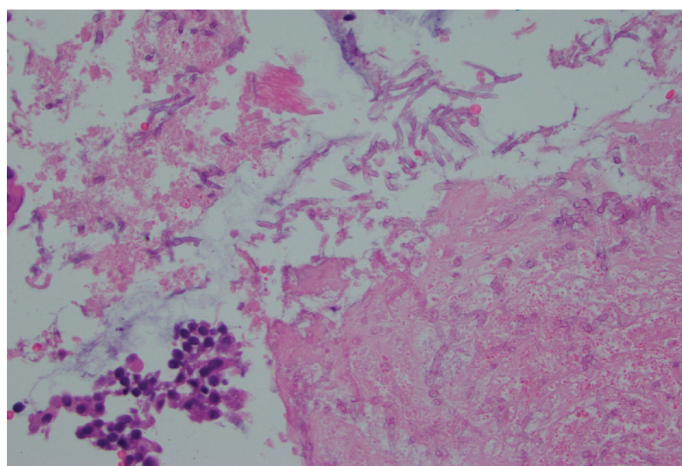
Multiple biopsies were easily performed at that site. The final pathology result showed the presence of poorly differentiated adenocarcinoma with neuroendocrine features. Interestingly cytopathologic examination also revealed the presence of fungal hyphal elements and tissue necrosis (Figure 4). Our final diagnosis was endobronchial aspergilloma accompanying a poorly differentiated lung adenocarcinoma.

## Discussion

Endobronchial aspergilloma is rare disease entity not well defined in



**Figure 3.** Bronchoscopic examination showing a whitish mass occluding the opening of the right upper airway bronchus. Multiple biopsies were performed at that site.



**Figure 4.** Right upper lobe bronchoscopic biopsy shows poorly differentiated adenocarcinoma (black arrow), evidence of necrosis (white arrow), and hyphal elements branching at an acute angle (red arrow).

the literature. It is not usually classified with the other forms of pulmonary aspergillosis [4]. It is considered to be the unusual endobronchial form of the *Aspergillus* fungus ball [5]. In immunocompetent patients, aspergillomas requires structural damage to the lungs causing airway stasis allowing for endobronchial colonization by the fungus [6]. The diagnosis is made with bronchoscopy and endobronchial biopsies. The bronchoscopy usually reveals an endobronchial white appearing mass causing airway occlusion [5]. Cytopathological examination reveals the presence of hyphal elements with an acute branching angle. Endobronchial tumors can obstruct the airway lumen, and provide a nidus for colonization by the *Aspergillus* species. A few cases of endobronchial aspergillosis coexisting with lung tumors have been reported in the literature [5,7]. When lung cancer is associated with *aspergillus* colonization, it may be obscured by endobronchial aspergilloma, and the diagnosis of lung cancer can be delayed [7-9]. The treatment of these cases is not well defined. It is unknown whether antifungal therapy is effective. Bronchoscopic and/or surgical resection can be considered as an alternative therapy in symptomatic patients with a good lung reserve [10].

## Conclusion

Endobronchial aspergillosis is a rare entity that occurs in immunocompetent patients with underlying lung disease. In rare occasions, it can obscure and delay the crucial diagnosis of lung cancer. Bronchoscopy reveals a necrotic mass causing endobronchial obstruction. Endobronchial biopsies can confirm the diagnosis and rule out any underlying malignancy.

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