



A Ball in a Hole

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Case Presentation

This 40-year-old diabetic man presented with sudden onset of hemoptysis. On arrival, his consciousness was clear. Other vitals were respiration 20 breaths/min, pulse 107 beats/min, blood pressure 136/83 mmHg, temperature 35.9°C, and SpO₂ 97% on room air. A poorly defined opacity in the right upper lung was revealed by chest radiography (CXR) (Fig. 1). To better define the lesion, computed tomography

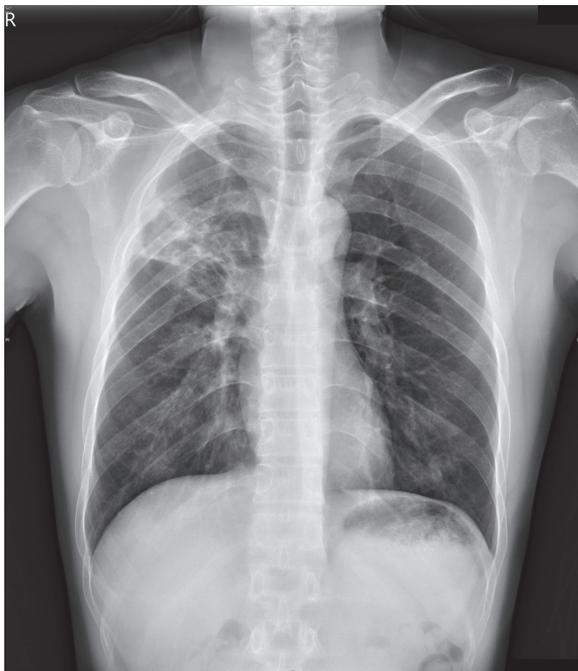


Fig. 1. Chest radiography (CXR) showed a poorly defined opacity in the right upper lung. A soft tissue mass in a cavity can vaguely be seen.

(CT) was undertaken and showed a “ball in a hole” of this lesion (Fig. 2). Abnormal laboratory results were hemoglobin 9.2 g/dL, aspartate/alanine transaminases (AST/ALT) 68/21 IU/L, and glucose 165 mg/dL. Parenteral antibiotics, tranexamic acid, insulin, and erythrocyte transfusion were provided. On the 8th hospital day, right upper lung lobectomy was undertaken during thoracoscopic surgery. He was thereafter admitted on the intensive care unit for respiratory and circulatory supports. He was discharged home after 16 days of hospitalization. Histopathological studies confirmed the suspected pulmonary aspergillosis. Studies about *Mycobacterium tuberculosis* were all negative.

Discussion

Aspergillosis is a wide variety of diseases caused by infection by fungi of the genus *Aspergillus* which consisting a few hundred species. *Aspergillus fumigatus* is the most frequently identified pathogen in human aspergillosis and is largely responsible for the increased incidence of invasive aspergillosis in immunocompromised patients.¹ Exposure to the *Aspergillus* is often through the respiratory tract. Manifestation of aspergillosis depends on the patient immune status, the load of the fungus and the underlying condition of the lungs. In patients with hyper-immunity, hypersensitivity pneumonitis, and allergic bronchopulmonary aspergillosis are typically seen. Invasive aspergillosis can be encountered in patients with compromised immunity. Aspergillomas are encountered in patients with preexisting lung damage, most commonly cavi-

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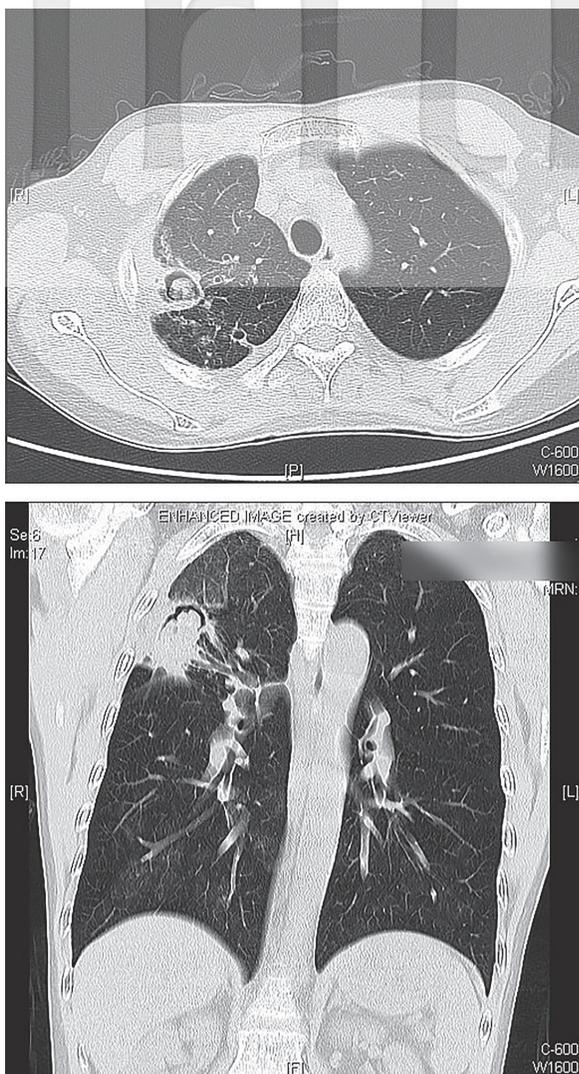


Fig. 2. In cross-sectional and reconstructed coronal computed tomography (CT), a round, soft tissue mass is seen in the cavity. This heterogeneous mass is in a dependent position with an adjacent crescent of air, which is so called “ball in a hole,” a characteristic image finding of pulmonary aspergilloma. Local, extensive thickening of pleura can also be identified.

ties from prior tuberculosis, sarcoidosis, pneumatoceles, pulmonary sequestration, or bronchogenic cyst.

The most common presenting symptom in patients with an aspergilloma is hemoptysis. CXR shows

a radiopaque lesion, usually in the upper lung. A soft tissue mass in a pre-existing cavity is the characteristic finding; however, it is not universal. On CT, a round, soft tissue mass is seen within a cavity. This heterogeneous mass is often in a dependent position with an adjacent crescent of air, and sometimes some internal flecks of gas can be seen. Local, extensive pleural thickening can usually be found.² Although these radiological features are characteristic, they are not diagnostic because other filamentous fungi, such as *Zygomycetes*, *Fusarium* species, and *Scedosporium* species, as well as to *Pseudomonas aeruginosa* and *Nocardia* species, may cause a similar picture.² Pharmacological treatment is essential in invasive aspergillosis; however, it has limited activity in patients with a single aspergilloma while surgical resection may offer definitive treatment. However, risks of lung function compromise, bronchopleural fistula, and infection of the pleural space must be weighed against the benefits on an individual base.³ In pulmonary aspergilloma complicated with hemorrhage, bronchial artery embolization is usually unsuccessful or only temporarily effective because of complex vasculature. Thus, bronchial artery embolization should be considered as a temporizing procedure in a patient with life-threatening hemoptysis who might be eligible for more medical therapy or surgical resection if there is a single aspergilloma.^{3,4}

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