Thoracoscopic Resection of the Pulmonary Aspergilloma*  
Report of Two Cases  
Jun Nakajima, MD; Shinichi Takamoto, MD; Makoto Tanaka, MD; Eriho Takeuchi, MD; and Tomohiro Murakawa, MD

Pulmonary aspergillomas causing hemoptysis were successfully resected through videothoracoscopy in two cases. We removed an aspergilloma located in the right lower lobe of the lung in a 48-year-old woman with a bronchial cyst and rheumatoid arthritis. We also removed an aspergilloma located in the left upper lobe of the lung in a 59-year-old man with emphysematous bullae and diabetes mellitus. In both cases, the aspergillomas were removed by pulmonary wedge resection through scheduled thoracoscopy. (CHEST 2000; 118:1490-1492)

Key words: aspergillosis; lung diseases, fungal; surgical procedures, endoscopic, minimally invasive; thoracoscopy

Pulmonary aspergilloma is a chronic fungal infection characterized by intractable hemoptysis and by an “air-crescent” sign in the chest roentgenogram or CT.1 Surgical resection of the aspergilloma is the best treatment, as antifungal agents are usually ineffective against this lesion.2 We report here two successful cases of surgical aspergilloma resection employing videothoracoscopy.

CASE 1

A 48-year-old woman was admitted to our hospital because of intractable hemoptysis. She had suffered from chronic rheumatoid arthritis for 12 years and had been treated with prednisolone, 7.5 mg/d, salazosulfapyridine, 1000 mg/d, and methotrexate, 7.5 mg/wk. She had experienced hemoptysis for 3 years. Chest CT showed a solitary cavitary lesion with a typical air-crescent sign in the azygoesophageal recess region of the right lung (Fig 1, left). Culture study of a specimen obtained at bronchoscopy was positive for aspergillus species. Videothoracoscopic surgery was performed for removal of the pulmonary nodule suspected of an aspergilloma. Under general anesthesia, three small skin incisions (7, 10, and 20 mm) were made on the right lateral chest wall. There was no adhesion in the thoracic cavity. The aspergilloma was easily identified and was trapped in a grasping forceps (Fig 2), then resected with ENDOPATH ETS-45 (Ethicon Endo-Surgery Inc; Cincinnati, OH) without exposing the fungal ball. The resected specimen was wrapped in plastic and removed from the thoracic cavity. The operative time was 60 min, and blood loss was minor. The postoperative course was uneventful, and the patient was discharged on the sixth postoperative day. She has remained well for the 1 year since the operation. The resected lung included a 35 x 15 x 8-mm cavity containing a fungus ball. Grocott staining showed massive septate mycelia of the aspergilloma in the fungus ball. The lumen of the cavity was covered with stratified ciliary epithelium, suspected of being a bronchogenic cyst.

CASE 2

A 59-year-old man was admitted to the hospital in April 1998 because of massive hemoptysis. He had suffered from diabetes mellitus since 1991. He had experienced hemoptysis amounting to approximately 200 mL of blood since December 1997. He had smoked 20 cigarettes per day for 40 years. The patient’s blood sugar was 200 mg/dL; his glycosylated hemoglobin was 9.1%. Chest roentgenography and CT showed an abnormal cavity with a fungal ball in the apical region of the left lung, surrounded by emphysematous bullae (Fig 1, right). The sputum culture was positive for Aspergillus species. Videothoracoscopic was employed as in the first case. The visceral pleura showed dense adhesion to the chest wall around the aspergilloma, but this was successfully lysed by electrocautery, through a thoracoscopic trocar. Pulmonary wedge resection was performed without exposing the fungus ball. The operative time was 125 min, and the blood loss was 150 g. The postsurgical course was uneventful, and the patient was active enough to run in the Honolulu marathon 1 year after the operation. No recurrence has been observed to date.

*From the Department of Cardiothoracic Surgery, Faculty of Medicine, University of Tokyo, Tokyo, Japan. Manuscript received April 10, 2000; revision accepted May 5, 2000.

Correspondence to: Jun Nakajima, MD, Assistant Professor, Department of Cardiothoracic Surgery, Faculty of Medicine, University of Tokyo, 7–3–1, Hongo, Bunkyo-ku, Tokyo, 113-8655, Japan; e-mail: nakajima-tho@h.u-tokyo.ac.jp

Minimally Invasive Techniques

Downloaded From: http://journal.publications.chestnet.org/pdfaccess.ashx?url=/data/journals/chest/21954/ on 06/26/2017
Figure 1. The chest CT scans of case 1 (left) and case 2 (right). Case 1: A cavitary lesion showing an “air-crescent shadow” (arrow) was seen in the azygoesophageal recess of the right lower lobe of the lung. Case 2: A cavitary lesion containing a saprophytic mass (arrow) was discernible in the apical region of the left lung.

Figure 2. Operative and pathologic findings of case 1. Left: Through videothoracoscopy, the nodule suspected of being an aspergilloma was captured by a grasping forceps. Then, pulmonary wedge resection was performed. Right: Resected specimen. A fungus ball was apparent within the cavity. Surgical margin was negative for fungal infection.
specimen included a fungus ball, 20 mm in diameter. Pathohistologically, the aspergilloma of this case had been grown in an emphysematosus bulla under conditions of poorly controlled diabetes mellitus.

COMMENT

Aspergillomas can grow in preexisting pulmonary cavity lesions of any etiology. Tuberculosis is often a cause of such cavity formation. It is the most frequent cause in the East Asian area, with approximately 80% of the pulmonary aspergillomas being preceded by tuberculosis. Emphysematosus bullae, pneumatocele, and bronchial cysts infrequently precede the aspergillomas.

Systemic antifungal therapy is usually ineffective for aspergilloma. Therefore, it is left untouched if asymptomatic or is surgically resected when life-threatening events such as severe hemoptysis occur. Hemoptysis, a common symptom, is experienced by the vast majority of patients with aspergilloma. As the prognosis of symptomatic aspergilloma is poor, surgical resection is indicated in such cases. Recently, thoracoscopic surgery has become prevalent worldwide for pulmonary surgery because of its minimal invasiveness. Based on its advantages in preserving postsurgical respiratory function and activity, as noted by thoracic surgeons, thoracoscopic surgery has been applied to surgical treatment of intrathoracic lesions. Because postsurgical respiratory failure is the most frequent cause of death among patients with pulmonary aspergilloma, videothoracoscopy is anticipated to be beneficial for compromised patients suffering from pulmonary aspergilloma. Pulmonary wedge resection through videothoracoscopy is one of the easiest surgical procedures to perform and is applicable to the resection of aspergilloma when the aspergilloma is sufficiently small and is located in the lung periphery, and when the pleural cavity is not so obliterated with the dense fibrous adhesions that are often observed in pulmonary tuberculosis.

REFERENCES

1. Miller WT. Aspergillosis; a disease with many faces. Semin Roentgenol 1996; 31:52–66