

## Aspergillus of the Lung with Haemoptysis: A surgical emergency

Mohamed Yusuf Hassan<sup>1</sup> MD, Marco Baldan<sup>2</sup> MD

<sup>1</sup>Consultant Surgeon Medina Hospital, Mogadishu Somalia, <sup>2</sup>Regional Surgeon, ICRC, Nairobi Kenya.

**Background:** Aspergillus is an important pathogen in patients with impaired host defences. These mycelial fungi can cause local as well disseminated disease. Two forms of pulmonary aspergillosis are frequently seen : 1. pulmonary or bronchial aspergilloma (fungus ball) due to secondary invasion of a a tuberculous cavity and 2. allergic bronchopulmonary aspergilosis. The aim study was to evaluate the outcome of surgical management in patients with Aspergillomas of the lung with recurrent and severe Haemoptysis.

**Methods:** Eight patients were treated surgically for Aspergillomas of the lung; six of them in Maputo Central Hospital and the other two in Medina Hospital in Somalia. These Aspergillomas lesions were located in the upper lobe as a fungal ball. In five of the patients the lesions were located in the right upper lobe while in the other three the left upper lobe was involved. In Maputo Central Hospital, investigations done in all six patients included the plain chest X-rays, CT scans, bronchoscopy and common laboratory exams. The two patients in Medina Hospital had only plain X-rays and common laboratory exams. All the eight patients had upper lobectomy. No intrathoracic contamination occurred during surgery.

**Results:** Eight patients with recurrent and severe Haemoptysis had surgical treatment (upper lobectomies) without intrathoracic contamination. All the patients had an average of ten days of postoperative hospital.

**Complications:** One patient has died for postoperative haemorrhage among those patients treated in Maputo Central Hospital.

**Conclusion:** Our limited experience of 8 patients showed that surgical treatment is effective and leads to a complete recovery and rehabilitation of the patient

### Introduction

Aspergilloma is the most common and best-recognized form of pulmonary involvement by Aspergillus. The aspergilloma (fungal ball) consists of masses of fungal mycelia, inflammatory cells, fibrin, mucus and tissue debris, usually developing in a preformed lung cavity. Although other fungi may cause the formation of the fungal ball such as Zygomycetes and Fusarium. Aspergillus spp (specifically, *A. fumigatus*) are by far the most common etiologic agents.

### Patients and Methods

The cases studied included eight patients who had been treated surgically for Aspergillomas of the lung; six of them in Maputo Central Hospital and the remaining two in Medina Hospital. Of the 8 patients 2 were female and 6 were male, aged between 22 – 38 years old, mean age is 30 years old. The most complained of symptoms with massive Haemoptysis and a dyspnoea. The six patients from Maputo Central Hospital among them the two females were referred by the pneumology ward of the same hospital and all had a history of treatment for tuberculosis.

The six patients had all possible investigations including chest X-rays, CT-scan, bronchoscopy and the required common laboratory tests. Chest radiographs showed cavities with fungal balls in the upper lobes.

The 2 patients from Medina Hospital had only plain chest X-rays which confirmed the presence of apical cavities with fungal balls. The cavities were located: in the right upper lobe in five and in the left upper lobe in three patients respectively.

### Results

All eight patients with recurrent and severe haemoptysis had upper lobectomy. During surgery, adhesions of the upper lobe to the chest wall were carefully removed. Single ligation and division of the hilar elements was performed avoiding intrapleural spillage and cavity contamination. Seven of the patients stayed in the hospital for not more than 10 days and had fully recovered on discharge. They were able to return to normal routine activities. In these patients, the aspergilloma was confined to the apical lobes and therefore they were good candidates for surgery. One patients among

those treated in Maputo Central Hospital died of severe postoperative haemorrhage.

### Discussion

The true incidence of aspergilloma is unknown. In a study of 544 patients with pulmonary cavities secondary to tuberculosis, 11% had radiologic evidence of aspergilloma. The most common predisposing factor was the presence of a pre-existing lung cavity formed secondary to tuberculosis, sarcoidosis, bronchiectasis or bronchial cysts<sup>1</sup>. Of these, tuberculosis is the most frequently associated condition as observed in our cases.

Occasionally aspergilloma might be described in cavities caused by other fungal infections. It is believed that inadequate drainage facilitates the growth of *Aspergillus* on the walls of these cavities. Usually, the fungus does not invade the surrounding lung parenchyma or blood vessels; exceptions, however, have been noted. The natural history of aspergilloma is variable. In the majority of cases, the lesion remains stable, however, in approximately 10% of cases it may decrease in size or resolve spontaneously without treatment. Rarely, the aspergilloma increases in size.

An aspergilloma may exist for years without causing symptoms. Most patients will experience mild haemoptysis, but severe haemoptysis may occur, particularly in patients with underlying tuberculosis. Bleeding usually occurs from bronchial blood vessels lining the cavity, endotoxins released by the fungus with haemolytic properties, and mechanical friction of the aspergilloma with the cavity wall blood vessels. The cough and dyspnea are probably more related to the underlying lung disease. Fever is rare unless there is a secondary bacterial infection.

Whenever massive and severe haemoptysis starts, there should be delay with a prolonged observation and conservative treatment in the cases where aspergilloma is resectable and the remaining lung has a good predictable function. Surgery is the best choice as aspergilloma treatment.

### References

1. Soubani: "The Clinical Spectrum of Pulmonary Aspergillosis" *Chest*, Volume 121(6). June 2002
2. Roberts CM, Citron KM, Strickland B. Intrathoracic aspergilloma: role of CT in diagnosis and treatment. *Radiology* 1987 165: 123-128
3. Bandoh S, Fujita J, Fukunaga Y, et al. Cavitary lung cancer with an aspergilloma-like shadow. *Lung Cancer* 1999; 26:195-198
4. Le Thi HD, Wechsler B, Chamuzeau JP, et al. Pulmonary aspergilloma complicating Wegner's granulomatosis [letter]. *Scand J Rheumatol* 1995; 24:260
5. McCarthy DS, Pepys J. Pulmonary aspergilloma: clinical immunology. *Clin allergy* 1973; 3:57-70
6. Pennington JE. Aspergilloma lung disease. *Med Clin North Am* 1980; 64:475-490
7. Yamada H, Kohno S, Koga H, et al. Topical treatment of pulmonary aspergilloma by antifungals: relationship between duration of the disease and efficacy of therapy. *Chest* 1993; 103:1421-1425.
8. Munk PL, Vellet AD, Rankin RN et al. Interactivity aspergilloma: transthoracic percutaneous injection of amphotericin gelatine solution, *Radiology* 1993; 188:821 – 823.