

Aspergillosis of the Lung Presenting as Hemoptysis

R. L. Gupta, N. Saxena, Sharad Kumar, Monika Mahajan

Abstract

Among mycotic diseases of the lung, pulmonary aspergillosis caused by aspergilloma fumigatus is the one encountered most frequently. An unusual case with a cystic lesion in the lung which turned out to be an aspergilloma is presented here.

Key Words

Aspergilloma, Haemoptysis, Fungus infections.

Introduction

Pulmonary Aspergillosis is commonly present in patients who are immunosuppressed or have chronic lung diseases. Majority of these patients present with hemoptysis. Although a routine chest radiograph may suggest the diagnosis of aspergillosis, CT scan is the best investigation to confirm it and plan the extent of surgery. Operative resection is the best modality of treatment as it offers permanent cure and avoids any need for antifungal therapy.

Case Report

A 30 year old lady presented with complaints of hemoptysis for last 12 years. This was occasional i. e. once in 3-4 months. She had no other associated complaints like chest pain, breathlessness. There was no history of fever, nausea, vomiting, loss of appetite or

loss of weight. She had past history of pulmonary Koch's 12 years ago and had received a full course of antitubercular therapy.

She was investigated for the cause of hemoptysis. Routine blood investigations like Hemogram, blood urea, sugar, liver function tests were within normal limits except a raised ESR (60 mm in 1st hr.). Sputum for AFB was negative. Chest x-ray revealed a cavity in the right perihilar region with an eccentric soft density mass in it suggesting a possibility of hydatid cyst or a fungal infection.

Bronchoscopy did not reveal any growth but fresh bleeding was spotted from the opening of superior segment of right lower lobe. Bronchial aspirate and sputum were negative for AFB, malignant cells and

angus. CT scan of the chest revealed a right sided anteriorly placed irregular thick walled cavity at hilar level having a dependent solid component that changed position with change in posture. Other lung fields were clear and there was no mediastinal lymphadenopathy (Fig. 1).



Fig. 1. Contrast enhanced CT scan chest showing irregular thick walled cavity at hilar level in the posterior segment of right lung.

The patient was taken up for surgery after investigations. A right posterolateral thoractomy was performed through the 5th intercostal space. The lung surface appeared normal in appearance. On palpation, there was a thickening in the upper posterior part of lower lobe. Lung tissue was incised at the site and it revealed a cyst like structure unlike a hydatid cyst, approximately 5 cm in diameter, which was excised (Fig. 2). Hemostasis was ensured and air leaks were sutured and chest was closed with an intercostal tube drainage. Post operative recovery was uneventful and chest tube was removed on the 5th day. The histopathology showed the removed cyst to be an aspergilloma. Subsequently in 5 years follow-up, the patient has had no hemoptysis and is absolutely

symptomatic.



Fig. 2. Showing excised specimen of the aspergilloma.

Discussion

Aspergillosis is a fungal infection usually caused by *aspergillus fumigatus*. Two forms of aspergillosis are recognised—primary and secondary. Secondary occurs in damaged lungs or in lungs of host with impaired defence mechanisms due to AIDS, malignant disease such as leukaemia or lymphoma or to therapeutic agents such as steroids, anti-metabolites, cytotoxic drugs, antibiotics or other drugs causing bone marrow depression (1,2,3). More frequently, it occurs in chronic lung disease as a saprophytic coloniser of pre-existing cavities e. g. caused by tuberculosis, bronchiectasis etc. (4,5). Aspergillomas commonly grow in tuberculous cavities. A British Tuberculosis Association report (4) states that aspergillomas occur in 15% of open negative cavities larger than 2.5 cm with the highest incidence in cavities of seven to eleven years duration. North American series have less incidence of tuberculosis (33%) as reported by Faulkner and Colleagues (6) and there, aspergillosis is seen most commonly in association with histoplasmosis (19%), sarcoidosis and ankylosing spondylitis (7). Pleural aspergillomas most often develop in a residual pleural space after operation (or formerly after collapse therapy

for tuberculosis) and is favoured by a bronchopleural fistula (8).

The predominant symptoms of aspergillosis are hemoptysis, bronchorrhoea, fever and weight loss. Hemoptysis occurs in 50 to 80% of patients (1,9). It can be so severe as to be fatal and therefore aspergillomas are best treated surgically (10).

Diagnosis is based on repeated isolation of the fungus from the sputum (11), transbronchial lavage or biopsy, chest x-ray, CT scan, complement fixation test and aspergillus skin test. Chest x-ray shows an air crescent sign that is a cavity with an eccentric shadow of a fungus ball (mycetoma) in it (12). Similar appearance is seen on a CT scan which is good for localisation and determining the surgical approach (13). Differential diagnosis includes intracavitary blood clots, liquefying pulmonary infection and hydatid cyst (14).

Treatment of pulmonary or pleural aspergilloma is primarily surgical. The surgical mortality is low (less than 7%) as reported by Kilman (15), potential for cure is excellent and the danger of antifungal chemotherapy is obviated. Surgery is recommended when the following criteria are satisfied (16) :-

1. Aspergilloma and underlying lung disease are not widespread.
2. Patient has recurrent episodes of hemoptysis or chronic production of purulent sputum.
3. Patients is in good health.

Mortality rates are high (38-44%) when operating on symptomatic patients specially when functional and nutritional status of the patients are bad (17-19). However, operation is advised because symptomatic manifestations may become life threatening. A segmental or lobar resection may be attempted only if the lesions

are confined to a single lobe and if the functional and nutritional status of the patient are consistent with a major surgical procedure. In all other cases a pleuropneumonectomy for removal of the mycetoma followed by immediate thoracoplasty is recommended (20-21). The most appropriate procedure recommended for aspergillus empyema is a generous thoracoplasty (20).

In asymptomatic patients mortality rates are low (7%) as reported by Daly *et. al.* (17). Such patients should undergo operation on principle. The ideal procedure is segmental or lobar resection (20). Lobectomy is the preferred procedure. Pneumonectomy has been done for widespread disease (1). The extent of resection of intrapulmonary aspergilloma depends on the severity of the underlying lung pathology as well as the aspergilloma itself (22). Because of the saprophytic nature of the organism, resection should be limited so as not to decrease lung function but since the organism can be invasive, a segmental or wedge resection can sometimes be dangerous (16).

There is no alternative to operative treatment. Systemic administration of amphotericin-B or itraconazole (23) is currently beneficial only for invasive aspergillosis. It has a questionable action on the mycetoma. Direct intracavitary instillation of antifungal agents such as amphotericin B, sodium iodide should be resorted to as primary therapy in patients whose general medical status or poor pulmonary reserve makes the operative risk prohibitive (24).

References

1. Eastridge LE, Young JM, Cole F *et. al.* Pulmonary Aspergillosis. *Ann Thorac Surg* 1972 ; 13 : 397.
2. Symmers WS. Histopathologic aspects of the pathogenesis of some opportunistic fungal infections as exemplified in the pathology of aspergillosis and phycomycetosis. *Lab Invest* 1962 ; 11 : 1073.

3. Addrizzo-Harris DJ, Harkin TJ *et. al.* Pulmonary aspergilloma and AIDS. *Chest* 1997 ; 111(3) : 612-8.
4. The Research Committee of the British Tuberculosis Association. Aspergillus in persistent lung cavities after tuberculosis. *Tubercle* 1968 ; 49 : 1.
5. Carbone PP, Seymour MS, Sidramsky H *et. al.* Secondary aspergillosis. *Ann Intern Med* 1964 ; 50 : 556.
6. Faulkner SL, Vernon R, Brown PP, Fisher RD, Bender HW. Hemoptysis and pulmonary aspergilloma : operative versus nonoperative treatment. *Ann Thorac Surg* 1978 ; 25 : 389-92.
7. Tomlinson JR, Sahn SA. Aspergilloma in sarcoid and tuberculosis. *Chest* 1987 ; 92 : 505-8.
8. Krakowka P, Rowinska E, Halweg H. Infection of the pleura by aspergillus fumigatus. *Thorax* 1970 ; 25 : 245-53.
9. Aslam PA, Eastridge CE, Hughes FA. Aspergillosis of the lung : an eighteen year experience. *Chest* 1971 ; 59 : 28.
10. Karas A, Hankins JR. Pulmonary aspergilloma, an analysis of 41 patients. *Ann Thorac Surg* 1976 ; 22 : 1-7.
11. Treger TR, Visscher DW *et. al.* Diagnosis of pulmonary infection caused by aspergillus. Usefulness of respiratory cultures. *J Infect Dis* 1985 ; 152 : 572.
12. Segretain G. Pulmonary aspergillosis. *Lab Invest* 1962 ; 11 : 1047.
13. Roberts CM, Citron KM, Strickland B. Intrathoracic aspergilloma. Role of CT in diagnosis and treatment. *Radiol* 1987 ; 165 : 123-8.
14. Irwin A. Radiology of the aspergilloma. *Clin Radiol* 1966 ; 18 : 432.
15. Kilman JW, Ahn C, Andrews NC *et. al.* Surgery for pulmonary aspergillosis. *J Thorac Cardiovasc Surg* 1969 ; 57 : 642.
16. Shirakusa T, Ueda H, Suto T *et. al.* Surgical treatment of pulmonary aspergilloma and Aspergillus empyema. *Ann Thorac Surg* 1989 ; 48 : 779-82.
17. Daly PC, Pairolero PC *et. al.* Pulmonary aspergilloma. Results of surgical treatment. *J Thorac Cardiovasc Surg* 1986 ; 92 : 981-8.
18. Jewkes J, Kay PH, Paneth M, Citron KM. Pulmonary aspergilloma, analysis of prognosis in relation to hemoptysis and survey of treatment. *Thorax* 1983 ; 38 : 572-8.
19. Henderson RD, Deslauriers J, Ritcey EL, Delarue NC, Pearson FG. Surgery in pulmonary aspergillosis. *J Thorac Cardiovasc Surg* 1975 ; 70 : 1088-92.
20. Massard G, Roeslin N, Jeen MW *et. al.* Pleuropulmonary aspergilloma, clinical spectrum and results of surgical treatment. *Ann Thorac Surg* 1992 ; 54 (6) : 1159-64.
21. Horio H, Nomori H, Hasegawa T. Cavernostomy, thoracoplasty for pulmonary aspergilloma. *Kyobu-Geka* 1997 ; 50 (5) : 377-80.
22. Garvey J, Crastnopol P, Weioz D *et. al.* The surgical treatment of pulmonary aspergillomas. *J Thorac Cardiovasc Surg* 1977 ; 74 : 542-7.
23. Jennings TS *et. al.* Treatment of aspergillosis with itraconazole. *Ann Pharmacother* 1993 ; 27(10) : 1206-11.
24. Shapiro MJ, Albeda SM *et. al.* Severe hemoptysis associated with pulmonary aspergilloma. Percutaneous intracavitary treatment. *Chest* 1988 ; 94 : 1225-31.



NOZCON – 2000

Annual Conference

INTERNATIONAL COLLEGE OF SURGEONS

INDIAN SECTION-NORTH ZONE

in collaboration with

REGIONAL SURGEONS ASSOCIATION

JAMMU (J&K), INDIA. 7TH & 8TH APRIL, 2000



Address for correspondence :

Dr. R. K. Chrungoo, 60, Mohinder Nagar, Canal Road, Jammu J&K-180001, Tel : 0191-555373

Dr. B. S. Pathania, 21, A/D Gandhi Nagar, Jammu J&K-180004. Tel : 0191-432298 Fax : 0191-454041, E-mail: nozcon@grabmail.com