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Clinicopathological analysis of cases of pulmonary aspergilloma

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Abstract

Background: Aspergillus has a ubiquitous distribution in nature, aspergillous fungal balls are more common and are referred to as aspergillomas. The present study was conducted to study the cases of aspergilloma in study population.

Materials & Methods: It included 35 cases of pulmonary aspergillosis. The hematological and radiological investigations were done in all patients. The lesions were classified as cavitary and non-cavitary lesions. The number, location, site, shape, nature of the inner lining and thickness of the wall, communication with the bronchial tree or vasculature and surrounding parenchyma were recorded.

Results: Out of 35 patients, males were 22 and females were 13. The difference was significant ($P < 0.05$). 28 patients had hemoptysis and 7 had not. Accompanying features in hemoptysis patients were cough (22), short breath (7), chest pain (8), fever (12), loss of appetite & weight (9), right heart failure (2) and gasping state (1). Accompanying features in patient who had not hemoptysis was cough (5), short breath (4), fever (2), right heart failure (1) and right heart failure (1). 27 patients had complex aspergilloma while 8 had simple. The difference was significant ($P < 0.05$). The causative agent was tuberculosis (25), chronic lung abscess (5) and bronchiectasis (5). The difference was significant ($P < 0.05$).

Conclusion: It is a fungal overgrowth in humans. The most common clinical features were cough, fever, loss of appetite, shortness of breath and right heart failure. Tuberculosis is the main cause.

Keywords: aspergillus, hemoptysis, tuberculosis

Introduction

A fungal ball is a term that describes a spatial configuration of saprophytic fungal overgrowth that occurs most frequently in the upper respiratory passages or the lungs. As the fungus *Aspergillus* has a ubiquitous distribution in nature, aspergillous fungal balls are more common and are referred to as aspergillomas. A fungus ball in the lungs may cause no symptoms and may be discovered only with a chest X-ray, or it may cause repeated coughing up of blood, chest pain, and occasionally severe, even fatal, bleeding. A rapidly invasive *Aspergillus* infection in the lungs often causes cough, fever, chest pain, and difficulty breathing^[1].

Damage to the bronchial tree and cavitary/cystic parenchymal disease predisposes to aspergilloma in some patients. However, despite the saprophytic nature, aspergilloma can produce significant morbidity, which may require surgical intervention, a stand advocated even in the earlier years. There is a paucity of data on both clinical and pathological studies of aspergilloma in India, which prompted us to analyze cases of aspergilloma in surgical and autopsy material^[2].

Aspergillosis is the name given to a wide variety of diseases caused by infection by fungi of the genus *Aspergillus*. The majority of cases occur in people with underlying illnesses such as tuberculosis or chronic obstructive pulmonary disease (COPD), but with otherwise healthy immune systems. Most commonly, aspergillosis occurs in the form of chronic pulmonary aspergillosis (CPA), aspergilloma or allergic bronchopulmonary aspergillosis (ABPA). Some forms are intertwined; for example ABPA and simple aspergilloma can progress to CPA^[3].

Other, non-invasive manifestations include fungal sinusitis (both allergic in nature and with established fungal balls), otomycosis (ear infection), keratitis (eye infection) and onychomycosis (nail infection). In most instances these are less severe, and curable with

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effective antifungal treatment [4]. The present study was conducted to study the cases of aspergiloma in study population.

Materials & Methods

This study was conducted in the department of general pathology. It included 35 cases of pulmonary aspergillosis. All were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee.

General information such as name, age, gender, clinical features etc. was recorded. The hematological and radiological investigations were done in all patients.

The lesions were classified as cavitary and non-cavitary lesions. The number, location, site, shape, nature of the inner lining and thickness of the wall, communication with the bronchial tree or vasculature and surrounding parenchyma were recorded. Results were subjected to statistical analysis using chi square test. P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

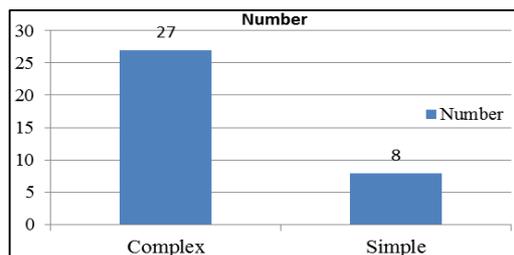
Total- 35		
Male	Female	P value
22	13	0.05

Table I shows that out of 35 patients, males were 22 and females were 13. The difference was significant (P<0.05).

Table II: Clinical features

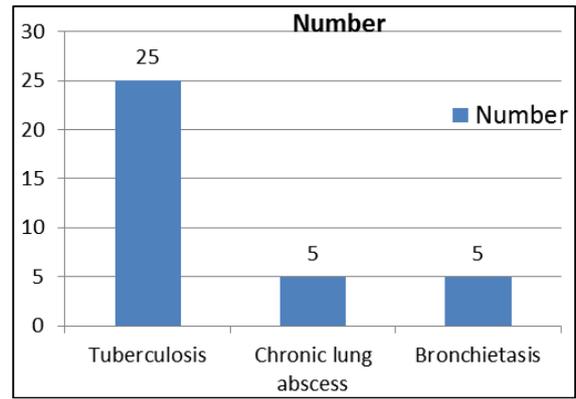
Presentation	Accompanying Features	Number
Hemoptysis		28
	Cough	22
	Short breadth	7
	Chest pain	8
	Fever	12
	Loss of appetite & weight	9
	Right heart failure	2
	Gaspig state	1
No hemoptysis		7
	Cough	5
	Short breadth	4
	Right heart failure	1
	Fever	2
	Acute coronary insufficiency	6

Table II shows that 28 patients had hemoptysis and 7 had not. Accompanying features in hemoptysis patients were cough (22), short breadth (7), chest pain (8), fever (12), loss of apetite & weight (9), right heart failure (2) and gasping state (1). Accompanying features in patient who had not hemoptysis was cough (5), short breadth (4), fever (2), right heart failure (1) and right heart failure (1).



Graph I: Nature of aspergiloma

Graph I shows that 27 patients had complex aspergiloma while 8 had simple. The difference was significant (P<0.05).



Graph II: Causative agent in patients

Graph II shows that causative agent was tuberculosis (25), chronic lung abscess (5) and bronchiectasis (5). The difference was significant (P<0.05).

Discussion

Poorly controlled aspergillosis can disseminate through the blood stream to cause widespread organ damage. Symptoms include fever, chills, shock, delirium, seizures and blood clots. The person may develop kidney failure, liver failure (causing jaundice), and breathing difficulties. Death can occur quickly [5]. Aspergillosis of the ear canal causes itching and occasionally pain. Fluid draining overnight from the ear may leave a stain on the pillow. Aspergillosis of the sinuses causes a feeling of congestion and sometimes pain or discharge. It can extend beyond the sinuses [6]. The present study was conducted to study the cases of aspergiloma in study population.

In our study, out of 35 patients, males were 22 and females were 13. We found that 28 patients had hemoptysis and 7 had not. Accompanying features in hemoptysis patients were cough, short breadth, chest pain, fever, loss of apetite & weight, right heart failure and gasping state. Similarly accompanying features in patient who had not hemoptysis was cough, short breadth, fever, right heart failure and right heart failure. This is similar to Lee SH [7]. In addition to the symptoms, an X-ray or computerised tomography (CT) scan of the infected area provides clues for making the diagnosis. Whenever possible, a doctor sends a sample of infected material to a laboratory to confirm identification of the fungus [8].

We found that 27 patients had complex aspergiloma while 8 had simple aspergiloma. The study by Park CK found similar results. We observed that causative agent was tuberculosis (25), chronic lung abscess (5) and bronchiectasis (5). Most common reason in our study was tuberculosis, results are in agreement with Babatasi *et al* [9].

Other forms in humans are allergic bronchopulmonary aspergillosis, which affects patients with respiratory diseases such as asthma, cystic fibrosis, and sinusitis. Acute invasive aspergillosis, a form that grows into surrounding tissue, more common in those with weakened immune systems such as AIDS or chemotherapy patients. Disseminated invasive aspergillosis, an infection spread widely through the body. Aspergilloma, a "fungus ball" that can form within cavities such as the lung. Aspergillosis of the air passages is also frequently reported in birds, and

certain species of *Aspergillus* have been known to infect insects^[10].

Conclusion

It is a fungal overgrowth in humans. The most common clinical features were cough, fever, loss of appetite, shortness of breath and right heart failure. Tuberculosis is the main cause.

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