Central Bronchiectasis with Allergic Broncho-pulmonary Aspergillosis- A Case Report and Review of the Literature

Pavan Kumar Kalaskar1*, Vikas Chennamaneni2

1Resident MD, Department of Radiodiagnosis, Pratima Institute of Medical Sciences, Karimnagar, Telangana State, India
2Professor, Department of Radiodiagnosis, Pratima Institute of Medical Sciences, Karimnagar, Telangana State, India

ABSTRACT

Allergic bronchopulmonary aspergillosis is an allergic immune response to colonization of the airways with Aspergillus fumigatus. It is a complex disease characterised by cough with mucus production in the form of characteristic plugs and bronchiectasis. Here we report a case of Allergic bronchopulmonary aspergillosis in a 58 year old female patient and review its clinical, radiological, cytological features and treatment aspects.

Keywords: Aspergillus, Allergic bronchopulmonary aspergillosis, Asthma, Bronchiectasis, Cystic fibrosis.

Introduction

Patients with bronchiectasis show permanent dilatation of bronchi, which is due to the damage of bronchial and bronchiolar walls due to inflammation and infectious processes.[1] Allergic bronchopulmonary aspergillosis (ABPA) is a pulmonary disorder due to a hypersensitivity reaction to persistent Aspergillus fumigatus in the airways.[2] ABPA is usually seen in patients suffering from asthma or cystic fibrosis (CF), particularly those associated with atopy. Patients complain of symptoms that are due to their primary disease. Management is directed against the allergic inflammatory response. Early diagnosis and treatment is necessary to prevent progression of disease, parenchymal damage and loss of lung function.[3] ABPA has a complex pathophysiology. In an allergic person, the persistence of A Fumigatus in the lung leads to T lymphocyte activation and immunoglobulin (Ig), cytokine release and inflammatory cell infiltration. This results in mucus production, airway hyper reactivity and eventually bronchiectasis.[4]

Case Report

A 68 year old female patient came to the department of pulmonology, Prathima Institute of Medical Sciences,
Karimnagar, Telangana State, with complaints of cough with expectoration, shortness of breath and fever since 10 days. The cough was insidious in onset. It was mucoid initially, mucopurulent later. Sputum was of moderate quantity, non foul smelling. There was shortness of breath, which was sudden in onset, gradually progressed to Grade III-IV, and was associated with wheeze. Fever was insidious in onset, low grade, continuous and not associated with chills. She gave a history of similar complaints last year, which subsided with medication. There is no history of hypertension, diabetes, bronchial Asthma, epilepsy and tuberculosis.

**Examination:** Examination of the patient revealed that the patient was conscious, coherent, cooperative, moderately built, well nourished. Vital signs were BP : 120/80 mm, PR : 106/min, Temperature was 98.4°F, SpO2 – 92% on room air. Lungs examination showed decreased breath sounds in right infra-scapular and infra-axillary areas, bilateral rhonchi present. Patients coughed up well-formed, tan to brownish-black mucus plugs (Fig 1).

Differential diagnosis of Right lower lobe collapse with Pleural effusion, Right Pleuro-parenchymal fibrosis and Right lower lobe mass with Pleural effusion was given.

**Investigations:** CECT chest revealed bilateral central bronchiectasis and mucous plugging of the right bronchus intermedius causing collapse of the right lower and middle lobes. Collapsed lung showed contrast enhancement with crowding of the dilated bronchioles (Fig 2 and 3). Hence bronchoscopic intervention might save the function of the collapsed lobes.

Fibro-Optic Bronchoscopy revealed copious amount of thick mucopurulent secretion in right upper lobe, intermediate and lower lobe bronchi. Cytological examination revealed multiple aggregates of eosinophils and Charcot-Leyden crystals present in a background of mucus. Several fungal hyphae with features of *Aspergillus* were also seen (Fig 4).
A final diagnosis of Central Bronchiectasis with Allergic Broncho-pulmonary Aspergillosis was given.

Discussion

Aspergillus is a fungus that is seen all over the world and grows optimally at body temperature. Spores are small and easily aerosolized and get deposited in distal and terminal airways. ABPA is an idiopathic pulmonary disease, characterized by an allergic inflammatory response to colonization of the airways by A. fumigatus. [2, 8, 9]

ABPA can exist in two diverse forms [5, 6]

1. ABPA-seropositive (S): Patients have a history of asthma, investigations show total IgE >1000 IU/mL, elevated serum anti- AF IgE and IgG, positive immediate hypersensitivity skin test to A. fumigatus; and/or serum anti-A. fumigatus IgG antibodies.

2. ABPA-central bronchiectasis (CB): Along with the criteria of ABPA-S, characteristic findings of advanced disease like expectoration of mucus plugs, sputum culture positive for A. fumigatus and central bronchiectasis.

Diagnosis of ABPA is made by clinical, radiographic and serologic features. A positive an immediate IgE-mediated response skin test and IgG-mediated late skin test response is variably positive in ABPA. A wheal of minimum 3 mm diameter, elevated total IgE, A. fumigatus specific antibody levels assist to differentiate ABPA from other conditions like asthma with Aspergillus sensitivity.[2, 10]

The differential diagnosis for ABPA comprise of refractory asthma, newly diagnosed cystic fibrosis, tuberculosis, sarcoidosis, infectious pneumonia, eosinophilic pneumonia and Aspergillus sensitive asthma.[2, 11].

The fungal genus Aspergillus is everywhere in the environment and hence Aspergillus spores inhalation is inevitable. ABPA is a complex hypersensitivity response to A. fumigatus. Even now the underlying pathogenesis of ABPA is still not understood properly and it is evolving. We suggest that one has to understand the clinical features of ABPA, so as to
diagnose and treat the disease earlier. In present case we suggest that early detection and radiological diagnosis with the tools like Contrast enhanced CT test and early interventional bronchoscopy save the above patients lung function from permanent disability and improved the quality of life. We suggest that one has to understand the clinical features of ABPA so as to diagnose and to treat the disease earlier.

References

Source of Support: Nil
Conflict of Interest: None