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The Vanishing lung - An Unusual Presentation of Allergic Bronchopulmonary Aspergillosis: A Case Report

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Abstract

Patients with asthma are mostly affected by ABPA (Allergic Bronchopulmonary Aspergillosis), an immunologic condition brought on by hypersensitivity to Aspergillus fumigatus. This report presents a 62-year-old female asthmatic who developed ABPA, resulting in sudden respiratory distress. Early diagnosis through bronchoscopy and appropriate antifungal and corticosteroid treatment led to significant clinical and radiological improvement. This case highlights the importance of timely identification of ABPA in asthmatics with worsening symptoms and the utility of bronchoscopy in diagnosis and treatment.

Keywords: Allergic Bronchopulmonary Aspergillosis, ABPA, Asthma, Aspergillus Fumigatus, Bronchoscopy, Case Report

Introduction

ABPA (Allergic Bronchopulmonary Aspergillosis) is a rare complication of asthma and cystic fibrosis triggered by hypersensitivity to *Aspergillus fumigatus*. It is characterized by recurrent episodes of bronchial obstruction, pulmonary infiltrates, and elevated serum IgE levels. ABPA can cause significant lung damage if left untreated. The prevalence of ABPA in asthmatic patients varies from 1-2% depending on the population studied. [1] Prompt diagnosis and treatment are crucial to prevent irreversible pulmonary damage.[2]

Case Presentation

We present a 62-year-old female with a known history of asthma on regular inhaled corticosteroid (Formoterol/Budesonide) therapy who presented with sudden-onset shortness of breath. She reported no significant past medical history or other comorbidities. On examination, she was conscious, oriented, and afebrile. Her heart rate was 110 beats per minute, her blood pressure was 140/90 mmHg, her respiratory rate was 28 breaths per minute, and her oxygen saturation was 82% on room air. Examination of the respiratory system showed dull percussion notes, reduced breath sounds on the left side, and decreased chest motions. The results of other systematic evaluations were not noteworthy. She had 20% eosinophilia, according to her total blood count. An ECG revealed sinus tachycardia, and a chest x-ray revealed left-sided homogenous opacity (white-out lung) (Figure 1). A large mucus plug blocking

the left upper and lower airways was discovered during bronchoscopy and removed with saline instillation.

Analysis of the bronchial wash revealed septate fungal hyphae, which are indicative of Aspergillus fumigatus. AFB, Genexpert, and culture bronchial wash results were negative. A. fumigatus specific IgE was 14.1 U/mL, while serum IgE levels were noticeably higher (3700 IU/mL). The absolute eosinophil count was 1410 cells/μL, which was high.

The patient's immunological, radiological, and clinical results led to the diagnosis of ABPA.

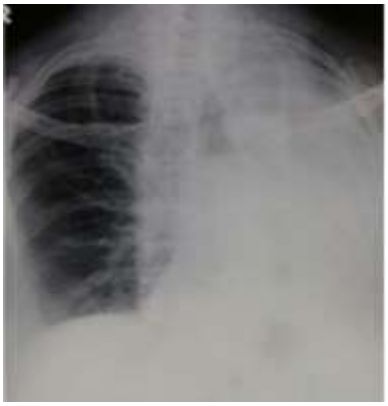

Figure 1: Chest X-ray at the Time of Admission Showing Left Homogeneous Opacity (White-Out Lung)

Treatment was done after the mucus plug was cleared through bronchoscopy. After that, medical management was started in which Itraconazole 200 mg twice daily for 4 months was given along with oral prednisolone at 0.75 mg/kg/day for 2 months, followed by 0.5 mg/kg/day for 2 months, and a tapering dose of 10 mg/day for 2 weeks, 5 mg/day for 2 weeks, and then stopped. Her symptoms improved significantly following bronchoscopy and initiation of antifungal and corticosteroid therapy. A follow-up chest x-ray after 2 weeks of therapy showed complete resolution of the left lung opacity (Figure 2). Repeat serum IgE levels after 2 months of therapy showed a marked reduction. The patient remains stable, on regular inhaler therapy, and is being followed up periodically.

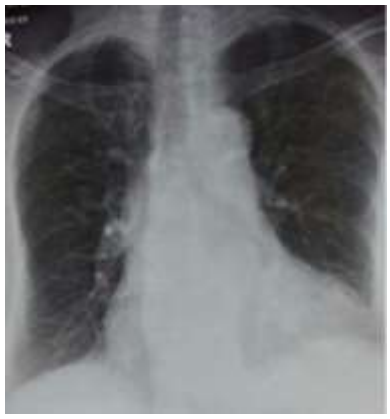

Figure 2: Follow-Up Chest X-Ray after Two Weeks of Therapy, Showing Resolution of the Opacity

Discussion

ABPA was first described by Hinson and colleagues in 1952 and is often associated with chronic lower airway diseases (asthma and cystic fibrosis), which are associated with viscous mucus production and impaired mucociliary clearance, allowing inhaled Aspergillus fumigatus spores to persist in the airways. It may occur infrequently in patients without a history of bronchial asthma. [3] A study concluded that 2.5% of adults with asthma also have ABPA, which is about 4.8 million people worldwide. [4] There is no age or gender predilection for its development.[4] Sputum with brown mucus plugs is a suggestive symptom, but it is seen in only 31 to 69% of patients.5 On auscultation, the most common finding is wheezing.[5]

Regarding radiological investigations, high-resolution chest CT is currently the preferred imaging modality for ABPA. [6] The central bronchiectasis is characteristic and of frequent discovery, but it can reach the periphery in about 40% of the cases. ABPA can occur without any radiological manifestation; thus, it can be diagnosed on an immunological basis only. The importance of MRI in the diagnosis of ABPA is still being evaluated and, therefore, it is not recommended in routine practice. [7]

ABPA treatment aims to manage asthma and cystic fibrosis symptoms, reduce lung inflammation, prevent or treat ABPA-related lung exacerbations, and slow the progression to fibrotic or cavitary disease, which may reach a terminal stage. Therefore, early and exhaustive treatment is essential. [1] The mainstay of treatment for ABPA is still corticosteroids, which target the inflammatory response brought on by **Aspergillus** fumigatus. There is a lack of clarity regarding the dosage of oral steroids for ABPA.

A lower dose is associated with a higher recurrence rate. [8] Antifungal therapies play an important but complementary role. By decreasing fungal colonization and mitigating inflammatory responses, they may reduce the need for prolonged high doses of systemic corticosteroids. [8]

This case illustrates the diagnostic value of bronchoscopy for identifying bronchial obstructions and obtaining samples for fungal cultures. Prompt intervention with antifungal agents and corticosteroids is crucial in preventing long-term pulmonary damage. [9] The long-term prognosis of patients with ABPA is still unclear. Untreated patients progress to irreversible pulmonary fibrosis and respiratory failure. [10]

Conclusion

This case highlights the importance of early recognition and treatment of ABPA in asthmatic patients with deteriorating respiratory symptoms. Timely bronchoscopy, antifungal therapy, and corticosteroid use resulted in clinical and radiological improvement, preventing further complications. Continued follow-up is necessary to monitor the patient for recurrence.

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