e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2025; 17(8); 1162-1165

Case Report

Co-existing Active Pulmonary Tuberculosis with Aspergilloma in a Diabetic Patient: A Rare Case Report

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Received: 06-07-2025 / Revised: 05-08-2025 / Accepted: 26-08-2025

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Conflict of interest: Nil

Abstract:

Background: Pulmonary aspergilloma typically arises in pre-existing cavities, most often sequelae of tuberculosis (TB). However, simultaneous active pulmonary TB with aspergilloma is uncommon, especially in patients with uncontrolled diabetes.

Case Presentation: We report a 70-year-old diabetic female with poor glycemic control who presented with progressive dyspnea, fever, and hemoptysis. Investigations revealed active pulmonary TB (CBNAAT positive, rifampicin-sensitive) with a right upper lobe cavity containing an intracavitary mass showing the classical air crescent (Monod's sign). Laboratory evaluation showed leukocytosis, elevated HbA1c (10%), and high total IgE. The patient underwent right thoracotomy with lobectomy, followed by anti-tubercular therapy and oral itraconazole. Strict glycemic control with insulin and lifestyle modification was also initiated.

Discussion: TB cavities provide a favorable environment for Aspergillus colonization. In diabetics, impaired neutrophil function and hyperglycemia further increase susceptibility. Medical therapy alone is often inadequate for large symptomatic aspergillomas, whereas surgical resection combined with antifungal and anti-tubercular therapy provides optimal outcomes.

Conclusion: Co-existence of active TB and aspergilloma requires high clinical suspicion, particularly in diabetic patients. Early diagnosis with CT imaging and timely surgical intervention, along with strict glycemic control, are crucial to prevent recurrence and ensure favorable prognosis.

Keywords: Tuberculosis, Aspergilloma, Monod's sign, Diabetes mellitus, Case report

Introduction

Pulmonary aspergilloma is a form of chronic pulmonary aspergillosis in which fungal hyphae proliferate within a pre-existing cavity, usually following pulmonary tuberculosis. Aspergillus fumigatus is the most common etiological agent. While residual post-tubercular cavities are a well-established risk factor, simultaneous occurrence of active pulmonary tuberculosis with aspergilloma is rare. Diabetes mellitus further predisposes patients to fungal infections due to impaired immune defenses. We report a rare case of co-existing active TB and aspergilloma in a poorly controlled diabetic patient.

Case Presentation

A 70-year-old female, known case of type II diabetes mellitus for more than 10 years with poor compliance to oral hypoglycemic agents (HbA1c: 10%), presented to the emergency department with complaints of progressive breathlessness and fever for 2 months and hemoptysis for 3 weeks.

On examination: She was dyspneic, with oxygen saturation of 87% on room air, pulse 106 bpm, respiratory rate 30/min, blood pressure 100/60 mmHg, and temperature 100.3°F. Chest auscultation revealed coarse crackles in the right upper lung field.

Laboratory findings:

- CBNAAT: Mycobacterium tuberculosis detected, rifampicin-sensitive
- Hematology: WBC 15,700/mm³ (N 55%, L 41%), Hb 10.8 g/dL, Platelets 253k/mm³
- Blood sugars: FBS 153 mg/dL, PPBS 334 mg/dL, HbA1c 10%
- Immunology: Total IgE 774 IU/mL, Aspergillus fumigatus-specific IgG 38 U/mL
- Viral markers: Non-reactive

Imaging:

- Chest X-ray: Right upper lobe cavity containing soft tissue mass with surrounding air crescent.

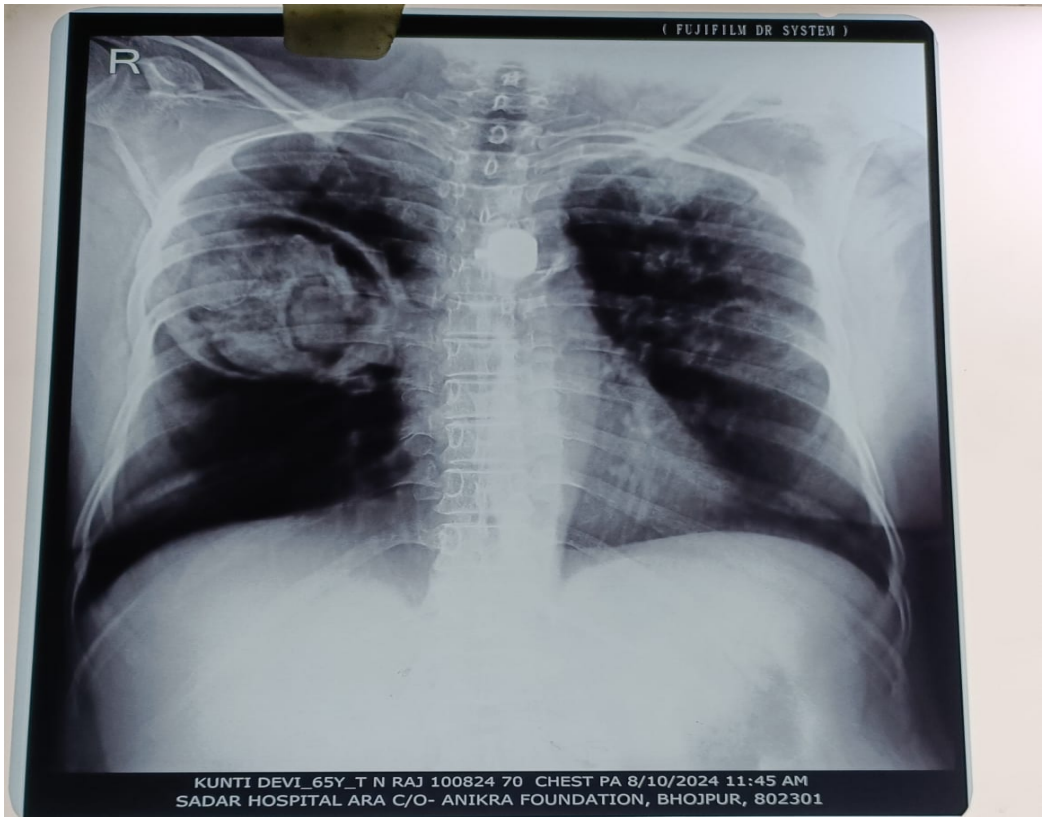

Figure 1: Chest X-ray (PA view) showing a right upper lobe cavity with a soft tissue mass and surrounding air crescent (fungal ball)

- CT thorax (axial, sagittal, coronal): Demonstrated intracavitary mass with air crescent (Monod's sign), consistent with aspergilloma in active tubercular cavity.

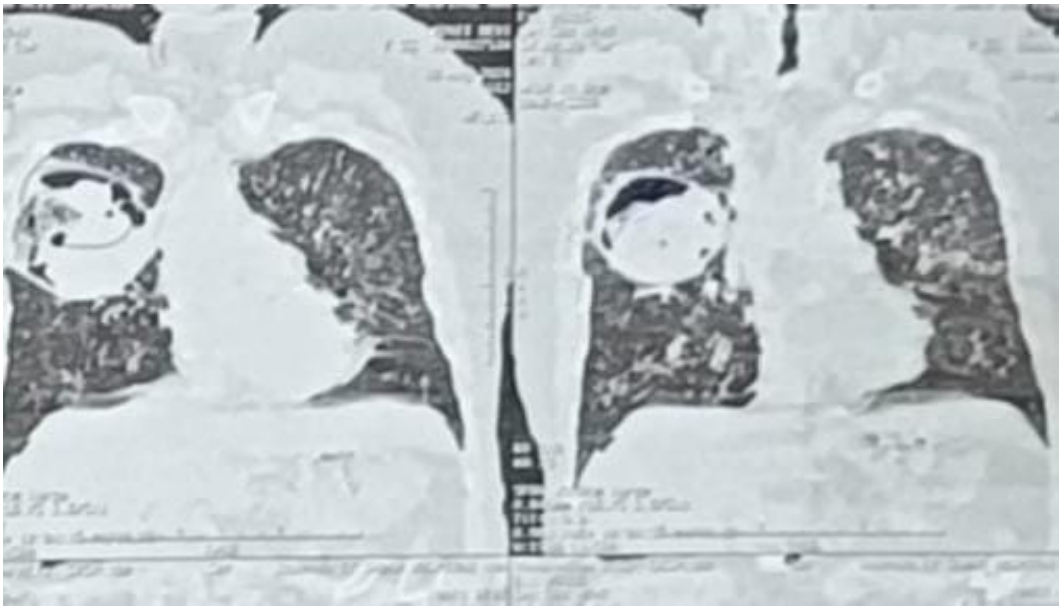

Figure 2: CT thorax (axial, sagittal, and coronal views) demonstrating an intracavitary mass with an air crescent (Monod's sign).

Management:

The patient was initiated on standard anti-tubercular therapy. Surgical management included right thoracotomy with lobectomy. Post-operatively, she received itraconazole 200 mg twice daily for 3 months. Strict glycemic control was achieved with insulin, oral hypoglycemics, and lifestyle modifications.

Discussion

Tuberculosis remains a major global health problem, with India carrying a high burden. TB cavities are prone to secondary infections due to necrotic tissue and high oxygen tension, making them ideal sites for colonization by Aspergillus spp.

In diabetic patients, poor glycemic control further predisposes to fungal infections due to:

- Impaired neutrophil chemotaxis and phagocytosis
- Hyperglycemia-induced immune dysfunction
- Enhanced growth of fungi in hyperglycemic environments

Our patient's uncontrolled diabetes likely facilitated aspergillus colonization of her tubercular cavity.

Radiological hallmark: The Monod's sign, an air crescent surrounding a mobile intracavitary mass, is pathognomonic of aspergilloma.

Management considerations:

- Small, asymptomatic aspergillomas may be managed conservatively.
- In symptomatic or complicated cases (e.g., hemoptysis), surgical resection remains the gold standard, often combined with antifungal therapy and treatment of the underlying disease (in this case, active TB).
- In diabetics, strict glycemic control is essential for successful outcomes and prevention of recurrence.

Our case highlights the importance of a combined approach — ATT for active TB, antifungal therapy, surgical excision, and diabetic control.

Conclusion

Co-existing active pulmonary tuberculosis with aspergilloma is rare but clinically significant, particularly in diabetic patients. High clinical suspicion, prompt imaging with CT, and a multidisciplinary management strategy involving surgery, antifungals, ATT, and glycemic control can significantly improve prognosis.

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