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Pulmonary Medicine

A CASE OF EOSINOPHILIA WITH PULMONARY INFILTRATES MIMICKING TUBERCULOSIS

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ABSTRACT Eosinophilia-associated pulmonary infiltrates present a diagnostic challenge due to a broad spectrum of underlying causes. Chronic eosinophilic pneumonia (CEP) is an uncommon condition characterized by eosinophil accumulation in the lungs without an apparent trigger. The clinical and radiological similarities between CEP and pulmonary tuberculosis often lead to diagnostic delays and inappropriate treatments, especially in tuberculosis-endemic regions. We report a case of a 56-year-old woman with bronchial asthma who experienced persistent fever, cough, weight loss, and appetite loss for two months. Imaging revealed right upper lobe consolidation with bilateral ground-glass opacities. Despite multiple antibiotic courses, her symptoms persisted. Laboratory findings showed marked eosinophilia, elevated IgE levels, and thrombocytosis. Bronchoalveolar lavage (BAL) analysis excluded tuberculosis but confirmed eosinophilic infiltration. She was diagnosed with CEP and showed significant clinical and radiological improvement following corticosteroid therapy.

KEYWORDS : Eosinophilia, chronic eosinophilic pneumonia, pulmonary infiltrates, bronchoalveolar lavage, corticosteroid

INTRODUCTION

Eosinophilia accompanied by pulmonary infiltrates presents a significant diagnostic challenge due to its diverse etiology. Conditions associated with pulmonary eosinophilia include parasitic infections, drug reactions, allergic bronchopulmonary aspergillosis (ABPA), connective tissue disorders, hypersensitivity pneumonitis, and eosinophilic pneumonias. Among these, chronic eosinophilic pneumonia (CEP) is an uncommon and poorly understood disease, marked by eosinophilic accumulation in the lung parenchyma without an identifiable external trigger.

CEP typically manifests with non-specific symptoms, such as fever, cough, fatigue, and weight loss, closely resembling pulmonary tuberculosis. Radiological findings, including consolidation and ground-glass opacities, further contribute to diagnostic confusion, particularly in regions where tuberculosis is highly prevalent. This diagnostic overlap may result in delayed identification, inappropriate therapy, and unnecessary use of antibiotics or anti-tubercular drugs.

This case report emphasizes the need to consider eosinophilic lung diseases in differential diagnoses of pulmonary infiltrates, particularly when tuberculosis and other common infections are not confirmed through initial investigations. Early identification and timely initiation of corticosteroid therapy can significantly improve patient outcomes.

Case Report

A 56-year-old woman with a known history of bronchial asthma presented with a two-month history of persistent cough, low -grade fever, loss of appetite and weight loss. The cough, initially dry, later became productive with scanty mucoid sputum, no diurnal or postural variation of symptoms. Fever was low grade, not associated with chills and rigor, no diurnal variation of fever. She had experienced an unintentional weight loss of approximately 5 kg over the past two months. She had already undergone multiple courses of oral antibiotics without clinical improvement.

There was no history of haemoptysis, night sweats, or chest pain. She denied recent travel, exposure to tuberculosis, or close contact with individuals suffering from chronic cough. Additionally, she had no prior history of tuberculosis or anti-tubercular treatment.

On Examination

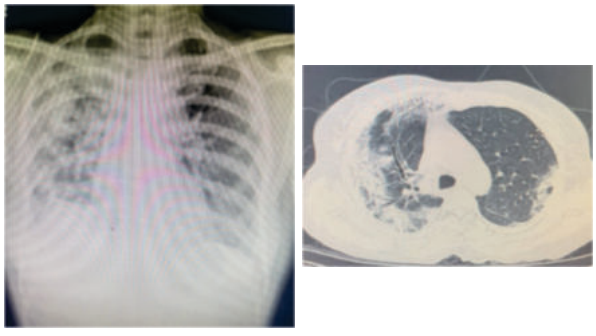
On clinical examination, the patient's vital signs were stable. General physical examination did not reveal any significant abnormalities. Respiratory system evaluation showed increased vocal fremitus over the right interscapular region. Auscultation revealed coarse crepitations in the right suprascapular, right interscapular, and left infrascapular areas, along with increased vocal resonance in the right interscapular region. There were no signs suggestive of volume loss or mediastinal shift.

Blood Investigations

Laboratory investigations demonstrated elevated erythrocyte sedimentation rate (ESR-94), elevated C-reactive protein (CRP-67), peripheral eosinophilia(1200/mm) and increased eosinophil differential count(Eosinophil 8.5%),and elevated immunoglobulin E (IgE-1100) levels.

Imaging

Chest radiography taken initially revealed bilateral upper zone opacities more on right side (right-sided peripheral and central opacities, predominantly in the upper zone). High-resolution computed tomography (HRCT) of the thorax showed consolidation in the right upper lobe with multiple bilateral ground-glass opacities.



Fig(1)a: Frontal chest radiograph showing peripheral and central opacities on right side along with bilateral upper zone opacities, Fig (1) b: CT Thorax taken later showing peripheral consolidation and ground glass opacities in bilateral upper lobe

Source: Image from the author's clinical case, Department of Respiratory Medicine, Travancore Medical College,with appropriate consent

Diagnosis & Management

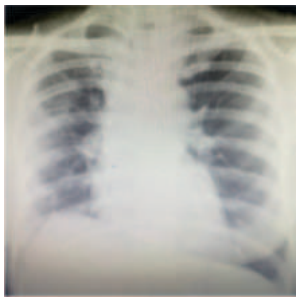
Given a presumptive diagnosis of pneumonia, the patient was started on broad-spectrum antibiotics. However, her condition did not improve. Microbiological analysis of sputum was unremarkable. Sputum culture and sensitivity and sputum CB-NAAT done was sterile.

Bronchoscopy was performed, and bronchoalveolar lavage (BAL) samples were analysed. The BAL culture and CBNAAT for tuberculosis were negative, while cytological analysis revealed a significant presence of eosinophils.

Based on these findings, a diagnosis of Chronic eosinophilic pneumonia was established. The patient was initiated on oral corticosteroids and sent home

Follow up

The patient was followed up in the outpatient department with continued oral corticosteroid therapy. Her symptoms gradually improved with treatment. Serial chest X-rays during follow-up revealed significant radiological improvement, and after six months, near-complete resolution of the lung opacities was observed.



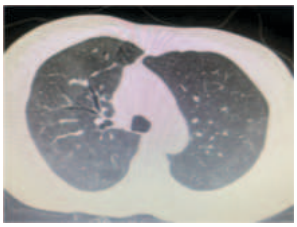


Fig. 2a: Frontal chest radiograph obtained after one month of corticosteroid therapy demonstrates near-complete resolution of pulmonary opacities.
Fig. 2b: CT thorax performed at six months reveals marked reduction in ground-glass opacities and consolidative changes.
Source: Image from the author's clinical case, Department of Respiratory Medicine, Travancore Medical College,with appropriate consent

DISCUSSION

Eosinophilia with pulmonary infiltrates encompasses a broad spectrum of conditions, including infectious diseases, hypersensitivity reactions, and primary eosinophilic lung disorders. In tuberculosis-endemic regions, chronic pulmonary symptoms and abnormal radiographic findings frequently lead clinicians to consider tuberculosis as a primary diagnosis. However, eosinophilic pneumonias, including CEP, should be actively considered when conventional treatments fail.

Chronic Eosinophilic Pneumonia (CEP) and its Diagnostic Challenges
CEP is an idiopathic disorder characterized by subacute respiratory symptoms, peripheral eosinophilia, and distinct radiological findings. It predominantly affects middle-aged women and is commonly associated with a history of asthma or allergic disorders.

CEP often mimics tuberculosis due to overlapping clinical manifestations such as chronic cough, fever, weight loss, and fatigue. Imaging findings, including consolidation and bilateral peripheral opacities, further complicate diagnosis. Ground-glass opacities, as observed in this case, may be mistaken for tuberculosis or interstitial lung diseases.

Key Diagnostic Features of CEP

Differentiating CEP from tuberculosis and other infectious conditions requires a systematic diagnostic approach, including:

- Blood Investigations: Marked peripheral eosinophilia (>1000/mm³) and elevated IgE levels.
- Radiological Findings: Peripheral consolidation and ground-glass opacities that persist despite antibiotic therapy.
- Bronchoalveolar Lavage (BAL): Eosinophilic infiltration without microbiological evidence of infection. BAL cytology plays a crucial role in ruling out infections, particularly tuberculosis.

In this case, the persistence of symptoms despite multiple courses of antibiotics, negative tuberculosis tests, and elevated eosinophil counts led to the diagnosis of eosinophilic lung disease. The presence of eosinophilia in both blood and BAL fluid, along with characteristic imaging findings, confirmed CEP.

Management and Outcome

Corticosteroids form the mainstay of treatment for CEP, leading to rapid symptomatic and radiological improvement. However, long-term follow-up is necessary due to the potential for relapse in a significant proportion of patients. Misdiagnosis as tuberculosis or other infections can result in inappropriate treatment, delayed recovery, and increased healthcare burden.

This case underscores the importance of recognizing eosinophilic pneumonia as a differential diagnosis in patients with pulmonary infiltrates, particularly in regions where tuberculosis is highly prevalent.

CONCLUSION

Eosinophilia associated with pulmonary infiltrates presents a diagnostic challenge, particularly in areas with a high prevalence of tuberculosis, where clinical and radiological features often overlap. Chronic eosinophilic pneumonia, though rare, is a treatable condition that should be considered in patients who fail to respond to antibiotics or anti-tubercular therapy.

A systematic diagnostic approach, including peripheral eosinophil counts, imaging studies, and bronchoalveolar lavage analysis, is essential to distinguish CEP from infectious causes such as tuberculosis. Prompt recognition and corticosteroid initiation result in significant clinical improvement. Raising awareness about this condition among clinicians is crucial to minimizing misdiagnosis and ensuring timely intervention.

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Declarations

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