Case Report of Lower Respiratory Tract Infection Improved Only on Empirical Antifungal Agent

Bashyal R[1], Sunari R[2], Poudel R[3]
1. Odari Health Care Pvt Ltd, Kapilvastu
2. Universal College of Medical Sciences, Bhairahawa
3. Pipara Hospital, Kapilvastu

ABSTRACT

Introduction: Fungal pneumonia is an infection of the lungs brought on by natural or opportunistic fungi. It is mostly airborne and commonly affects those who are susceptible to infection or are immunocompromised.

Clinical case: A patient presented with a clinical symptom of pneumonia, who, after evaluation was suspected with fungal pneumonia and treated empirically. The patient improved and recovered.

Discussion: The incidence of invasive fungal infections is rising, and many patients may present with pneumonia-like signs and symptoms that resemble bacterial infections. However, fungal pulmonary infections should also be considered in the differential diagnosis.

Conclusion: Fungal pulmonary infections are prevalent. Hence, recognizing key fungal pathogens and their features is crucial for accurate diagnosis and treatment.

Keywords: Pneumonia; Fungal pulmonary infection; Fungal pneumonia; Opportunistic infection

INTRODUCTION

Pneumonia, an infection of the lungs affecting the alveolar spaces, remains one of the leading causes of death globally. It can be classified microbiologically into bacterial, viral, fungal, mycobacterial, and parasitic types.[1] Invasive fungal infections are on the rise, with increasing prevalence, particularly in low- and middle-income countries.[2,3] Fungal pneumonia is caused by either environmental or opportunistic fungi, typically entering the lungs through inhalation of spores or conidia, or through reactivation of a latent infection. While it most commonly affects individuals with congenital or acquired immunodeficiencies, cases have also been documented in immunocompetent adults.[1,4,5] Here, we report a case that was treated as fungal pneumonia.

Corresponding author:
Dr. Ravi Bashyal
Medical officer
Odari Health Care Pvt Ltd, Kapilvastu
Email: ravi.bashyal112@gmail.com
Phone No.: 9847038586

Case Description

A 51-year-old Tharu female from Odari, Kapilvastu, presented to the primary health center with complaints of dry cough, dyspnea, persistent chest pain, and shortness of breath for the past four months, which had also disrupted her sleep. She had previously sought care from various health facilities and was treated with multiple courses of antibiotics, steroids, expectorants, bronchodilators, and proton pump inhibitors, but without significant improvement. She had no known comorbidities, was a non-smoker, and did not consume alcohol. There was no past history of chronic obstructive pulmonary disease (COPD) or asthma.

On examination, she appeared anxious and reported a decreased appetite, though she was afebrile, and her vital signs along with cardiac and systemic examinations were within normal limits. Bilateral crepitations were heard on auscultation; the rest of the respiratory examination was unremarkable.

Investigations

Complete Blood Count (CBC): Hemoglobin – 8.6 g/dL, Total Leukocyte Count –14,600/mm³, Neutrophils – 78%, Lymphocytes – 14%; ESR-50 mm/hr.; C-Reactive Protein (CRP)- Positive; Chest X-ray- Opacity in the right lung suggestive of pneumonitis.

Other investigations- Serum creatinine/ Serum ACE/ECG/Echocardiogram/Chest CT scan/ Absolute eosinophil count/ANA and ENA panel — all within normal limits.

GeneXpert for TB: Negative

A home visit was conducted, given the proximity to the health center. While goats were kept away from the house, pigeons were being raised near the home as a source of income, with a significant presence of pigeon droppings noted—suggesting potential exposure to fungal pathogens such as *Cryptococcus* or *Histoplasma.*

Given the failure to respond to broad-spectrum treatments and the environmental risk factors, an empirical antifungal therapy was initiated with Itraconazole 200 mg twice daily for 14 days. Clinical follow-ups showed progressive symptomatic and clinical improvement.

DISCUSSION

Although opportunistic fungal infections are more prevalent in immunocompromised patients, infections in immunocompetent individuals are not uncommon.[4,5] Both groups are susceptible to endemic fungal pathogens. Typically, diagnosis involves evaluating respiratory symptoms, radiological evidence, pathogen identification, and treatment response. However, in primary care settings, where microbiological tests are often unavailable, diagnosis may rely heavily on clinical judgment.[1]

In this case, diagnosing fungal pneumonia was particularly challenging due to the absence of direct microbiological evidence. However, the clinical presentation, lack of response to conventional therapies, and environmental exposure supported the presumptive diagnosis of a fungal lung infection. Differential diagnoses such as bacterial pneumonia, tuberculosis, sarcoidosis, and systemic inflammatory diseases were considered and ruled out based on history, test results, and treatment response.

Emerging evidence indicates that fungal infections are increasingly recognized in Nepal, with 1.87% of patients suffering serious fungal infections including invasive aspergillosis, and some developing allergic bronchopulmonary aspergillosis.[6] A recent study from Nepal reported the its prevalence of 6.70% in COVID-positive and 22.77% in COVID-negative cases, with no significant association with age or gender.[7] Given the patient's improvement on antifungal therapy, fungal pneumonia remains the most likely diagnosis, despite the absence of microbiological confirmation. This case highlights the importance of considering empirical, preventive, and targeted treatment strategies when managing suspected fungal infections.

CONCLUSION

In patients who present with persistent respiratory symptoms and fail to respond to broad-spectrum antibiotics across multiple treatment settings, fungal pneumonia should be considered. Early clinical suspicion and empirical treatment can significantly improve outcomes, particularly in resource-limited settings where diagnostic tools are limited.

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