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RESEARCH ARTICLE
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FUNGAL PNEUMONIA: A CASE OF RECURRENT RESPIRATORY INFECTION IN AN ELDERLY WOMAN

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Abstract

Background: Candida species are commonly isolated from respiratory specimens, yet true Candida pneumonia remains rare and difficult to diagnose. Accurate identification is particularly challenging in non-immunocompromised individuals.

Case Presentation: We report a case of a 75-year-old Saudi woman with hypothyroidism, a large goiter, and a prior COVID-19 infection, presenting with recurrent respiratory failure initially misdiagnosed as bronchial asthma. Radiological findings revealed diffuse bilateral ground-glass opacities. Despite initial empirical antibiotics, her condition did not improve.

Intervention: A multidisciplinary team including a clinical pharmacist suspected fungal pneumonia and recommended empirical antifungal treatment. Fungal hyphae were later confirmed in sputum cytology, and fungal culture supported the diagnosis.

Outcome: The patient showed rapid clinical improvement following antifungal therapy. Radiographic and symptomatic resolution was observed, confirming the diagnosis of Candida pneumonia.

Conclusion: This case highlights the importance of considering fungal pathogens in patients with recurrent pneumonia unresponsive to antibiotics, even in the absence of classical immunosuppression. Early clinical pharmacist involvement may facilitate timely diagnosis and improve outcomes.
Candidiasis is an infection caused by Candida species, most commonly Candida albicans. True Candida pneumonia is rare. Our aim is to report a case of Candida pneumonia who experienced recurrent pneumonia after Covid19 infection.

Case Summary: This case details a 75-year-old Saudi female with hypothyroidism and a large goiter, presenting with recurrent severe respiratory symptoms, including exertional dyspnea and wheezing, leading to multiple hospital admissions for pneumonia and respiratory failure, previously managed as bronchial asthma. Extensive bilateral lung opacities and ground-glass alterations were found on imaging and examination after readmission with severe discomfort. Initial investigations came back inconclusive, and differential diagnosis was thought less likely. After multidisciplinary evaluation, a

clinical pharmacist suspected fungal pneumonia and advised empirical antifungal medication, which greatly improved patient condition. Fungal hyphae and organism were confirmed by later sputum cytology and fungal culture, therefore identifying fungal pneumonia as the source of her repeated severe respiratory problem

Conclusion: Although Candida should be taken into account in the differential diagnosis for lung infection, it hardly causes clinically severe pneumonia in people.

Introduction

Fungal pneumonia is an infectious process in the lungs caused by one or more endemic or opportunistic fungi. Fungal infection occurs following the inhalation of spores, after the inhalation of conidia, or by the reactivation of a latent infection.[1] A recent clinical practice guideline from the Infectious Diseases Society of America indicates that Candida is often isolated from the respiratory tracts of intubated patients or those with persistent tracheostomies in the intensive care unit.[2] Reported cases of candida pneumonia included patients with malignant tumors, extremely low birth weight babies, and severely immunocompromised people with widespread illness.[3–6] Though it is somewhat unusual, isolated pulmonary illness without dissemination has been reported. This type of the disease has been related to the aspiration of organisms into the lungs from the upper respiratory system.[7,8] This report presents a case of a 75-year-old female with hypothyroidism, a large goiter, and post Covid 19 infection who experienced recurrent pneumonia, with Candida Pneumonia identified as the causative organism.

Case Report

A 75-year-old Saudi female patient with a history of hypothyroidism managed with Eltroxin 25 mcg orally and a large goiter scheduled for thyroidectomy previously underwent bilateral knee joint replacement seven years ago. Additionally, she experienced a Covid-19 infection two years prior, which she managed at home. She presented with exertional dyspnea and recurrent respiratory symptoms, including wheezing, occasional hemoptysis, cough, and expectoration.

Her medical history includes recurrent hospital and emergency room visits for these issues, notably a prior admission to King Khalid Hospital Hail in July 2023 for severe pneumonia and type 1 respiratory failure, necessitating intensive care unit admission and non-invasive ventilation, followed by a ten-day discharge with resolving pneumonia, managed with inhalers and chest clinic follow-up under a bronchial asthma diagnosis. She was readmitted on 28/10/2024 from Samira Hospital with severe respiratory distress and type 1 respiratory failure.

Upon assessment, the patient was aware, attentive, oriented, and positioned supine in bed. She was observed to be obese and displayed inspiratory stridor. She had respiratory distress, characterized by a respiratory rate of 30 breaths per minute and an SpO_2 of 94% while receiving 12 liters of oxygen via a non-rebreathing face mask.

A neck examination indicated diffuse enlargement of the thyroid gland, characterized by smoothness and the absence of nodularity, with no palpable nodules or retrosternal extension (the bottom border of the gland was palpable). No discernible cervical lymphadenopathy was present.

Chest examination demonstrated adequate air entry, absent of wheezes or crepitations. The lower extremities exhibited minor pitting edema. The abdomen was relaxed. No clubbing or lymphadenopathy was observed, and the breast examination yielded ordinary findings.

The chest X-ray revealed bilateral heterogeneous opacities. A conventional CT scan of the chest demonstrated ground-glass opacification in both lung parenchyma, accompanied by extensive peribronchial thickening and opacifications affecting the apico-posterior segment of the right upper lobe, the middle and lateral segments of the right middle lobe, and all segments of the left lower lobe, with minimal involvement of the right lower lobe. Regions exhibiting soft tissue density and evidence

of air bronchograms were seen. Severe bronchopneumonitis accompanied with ground-glass opacity was seen. Enlargement of the mediastinal lymph nodes was also observed. (Figure 1).

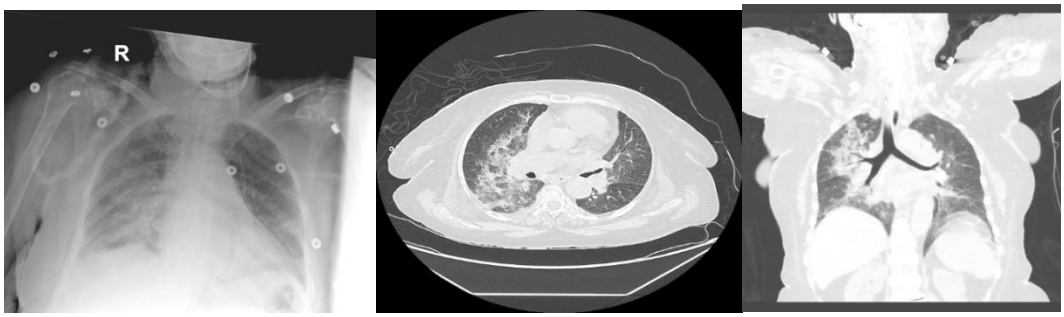

Figure 1: patient's initial computed tomography (CT) scan Notable for bilateral, patchy, and diffuse ground glass opacities

The left cardiac border was expanded, with the primary pulmonary artery exhibiting an increased anteroposterior dimension of 43 mm. A marginal calcified hypodense lesion was detected in hepatic segment VII, accompanied by a calculous gallbladder and a left cortical renal cyst. There was generalized thyroid hypertrophy accompanied by right-sided tracheal deviation.

The lab results revealed that thyroid function tests were normal. The sputum culture revealed normal flora, and the AFB PCR test for sputum was negative. The findings of the autoimmune profile are forthcoming. The erythrocyte sedimentation rate (ESR) was 75, but C-reactive protein (CRP) was negative, having been 6.8 during the last stay. Other laboratory results were inconsequential.

The differential diagnosis comprised recurrent community-acquired pneumonia (CAP), hypersensitivity pneumonitis, interstitial lung disease, and lymphangitis carcinomatosis. Hypersensitivity pneumonitis was considered, despite the patient denying recent exposure to birds and reporting only distant exposure to sheep from a decade ago. Interstitial lung disease was thought about as a possible diagnosis, but the patient showed no signs like clubbing, cyanosis, or symptoms that would point to drug-related issues or connective tissue diseases. Lymphangitis carcinomatosis, potentially resulting from a suspected malignant goiter, was examined; however, this diagnosis was judged improbable, as fine needle aspiration (FNA) of the thyroid and sputum cytology yielded negative results for malignant cells.As a multidisciplinary team, urgent consultation to ID physician and clinical pharmacist was done. Despite pending laboratory results, the clinical pharmacists identified a high suspicion of fungal pneumonia and promptly recommended empirical treatment with anti- fungal. On November 3, 2024, the histopathologist identified fungal hyphae in the sputum cytology sample. The findings of the sputum fungal culture are shown in Figure 2. The image illustrates the proliferation of fungal colonies on a culture medium, corroborating the histopathologist's findings of many fungal hyphae in the patient's sputum cytology. This discovery, along with the patient's clinical manifestation of severe pneumonia and subsequent enhancement upon antifungal treatment, strongly indicates a fungal origin for the patient's recurring respiratory infection. The fungal culture results confirm the existence of a fungal organism.

Figure 2: Sputum smear showing abundance of fungal hyphae in a background of few polymorphonuclear leukocytes, alveolar macrophage, and a few squamous epithelial cells. No atypical cell could be detected.

The patient exhibited progress after starting antifungal treatment. Upon evaluation, the patient was breathing fresh air with a SpO2 of 97%. The chest examination indicated clean lung fields with adequate bilateral air entry and sharp vesicular breath sounds; previously observed scattered crepitus had disappeared after coughing. (Figure 3).

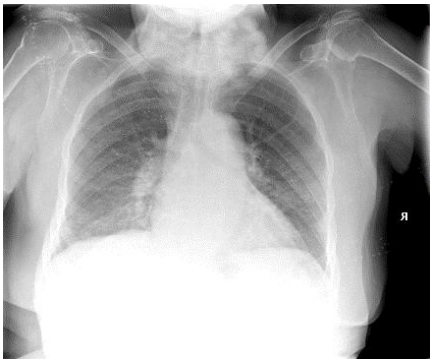

Figure 3 : Chest X-ray three days after receiving antifungal

Discussion

Furthermore, a recent JPTCP case series emphasized the role of clinical pharmacists in managing infectious diseases in elderly patients, highlighting their value in similar clinical decision-making processes.[17]

The primary microorganisms linked to fungal pneumonia include Aspergillus, Cryptococcus, Mucor, and Pneumocystis jirovecii. Candida accounts for about two-thirds of fungal infections; nevertheless, invasive candidiasis rarely manifests as Candida pneumonia.[9] Candida pneumonia is infrequently diagnosed, mostly because of the challenges in acquiring conclusive proof of an actual infection. These results are usually taken as contaminants originating from colonization by Gramme stains showing yeast grows or Candida is identified from sputum cultures.[10] For clinicians diagnosing pneumonia and determining the particular bacterium causing it, bronchial lavages (BALs) are absolutely vital.

For bacterial colony-forming units, a particular culture threshold is defined; for fungal species, no such barrier exists. Differentiating between fungal infections and colonization becomes difficult without a detailed description.[11]

This is a complicated case of recurrent pneumonia in a 75-year-old woman with other co-morbidities, such as hypothyroidism, a large goiter, and a history of Covid-19 infection. The patient's history of numerous hospital visits for respiratory problems, including past related to severe pneumonia, emphasizes the ongoing characteristics of her disease and the challenges in reaching a definitive diagnosis. The first presentation showed a recurrent community-acquired pneumonia (CAP), under control with antibiotics. The patient's lack of response to this treatment, together with radiographic evidence of ground-glass opacification and the later detection of fungal hyphae in sputum cytology, indicated an alternate cause.

The presence of a large goiter with tracheal deviation is a significant finding in this case. The goiter might have caused the patient's respiratory problems and raised her risk to pulmonary infections. Compression of the trachea can compromise airway clearance and cause recurring infections. But lymphangitis carcinomatosis was less likely in the thyroid FNA and sputum cytology lack of malignant cells.

Clearly reveals fungal pneumonia the presence of fungal hyphae in the sputum coupled with the patient's clinical enhancement after starting antifungal medication. This conclusion is supported by the data on fungal cultures showing the expansion of fungal colonies. Although upper airway flora

may occasionally contaminate sputum cultures, the clinical appearance, radiological data, and positive cytology strongly suggest that in this case the fungus was the etiological cause.

Fungal pneumonia, although less prevalent than bacterial pneumonia, is a significant concern, especially in immunocompromised individuals. However, a case reported that Candida pneumonia can occur in patients without obvious immunodeficiency, although that case was in a younger patient.[12] Candida pneumonia has been reported as a complication of severe COVID-19 pneumonia and has correlated with other fungal infections in a COVID-19 patient.[13,14] Furthermore, cases address Candida pneumonia in the context of diabetic ketoacidosis and subsequent to a urological operation, indicating that healthcare-related factors may potentially be influential.[15,16]
This case highlights several significant aspects. It underscores the significance of including fungal infections in the differential diagnosis of recurrent pneumonia, especially in patients with airway structural abnormalities or those unresponsive to antibacterial treatment. Moreover, it emphasizes the importance of sputum cytology and fungal cultures in identifying fungal pathogens even in cases when first sputum cultures provide negative findings about bacterial development.

Conclusion:
In conclusion, this case emphasizes the rare incidence of Candida pneumonia in an elderly patient with a large goiter and a past of recurrent pneumonia. The patient's complicated medical background and the first presentation resembling bacterial pneumonia made the diagnosis difficult. But the diagnosis was confirmed by the discovery of fungal hyphae in sputum cytology and resulting positive fungal culture as well as by the patient's clinical improvement after antifungal treatment. This example emphasizes the need of adding fungal diseases, especially Candida pneumonia, into the differential diagnosis of recurrent pneumonia even in non-immunocompromised people.

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