

# Primary pulmonary cryptococcosis in an immunocompetent patient

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## ABSTRACT

Cryptococcosis is an infection caused by yeast like encapsulated fungus *Cryptococcus neoformans*. Isolated primary pulmonary infection in an immunocompetent person is rare. We present a case, which was mistaken as carcinoma of lung and patient underwent pneumonectomy.

**Key words:** Carcinoma of lung, cryptococcosis, immunocompetent

## INTRODUCTION

Cryptococcosis is an infection caused by yeast like encapsulated fungus *Cryptococcus neoformans*. Although respiratory track is the normal portal of entry, pulmonary cryptococcosis is often silent. Isolated pulmonary cryptococcosis is less commonly recognized and tends to occur most often in immunocompromised hosts.<sup>[1-3]</sup> This case highlights a rare instance of primary pulmonary cryptococcosis (PPC) presenting as left upper lobe mass in an immunocompetent patient.

## CASE REPORT

A 50-year-old woman presented with a 3 months history of cough and fever. Her history was unremarkable. Physical examination was near normal. Routine laboratory studies were unrevealing. Sputum cytology for malignant cells and acid-fast stain for acid-fast bacilli was negative. HIV antibody test was negative and CD4 count – 502 cells/microliter. A chest X-ray revealed lobulated nonhomogeneous lesion measuring 5 cm × 3 cm in the left hilum with mediastinal lymphadenopathy

[Figure 1]. Chest computed tomography scan showed a well-defined oval nonenhancing soft tissue lesion measuring 5.8 cm × 3.6 cm (anterior-posterior transverse/cranio) seen involving the anterior segment of left upper lobe.

Bronchoscopic biopsy attempted but could not reach the lesion. Lobectomy of the upper segment of the lung was done with the provisional clinical diagnosis of carcinoma of the lung. Grossly, lobectomy specimen showed a well-circumscribed mass that measured 5 cm × 4 cm × 4 cm in the hilar region filling the entire lumen of the bronchus [Figure 2]. The lesion was gray-white with focal tiny cystic and mucoid areas. The surrounding lung parenchyma was normal and free of invasion by the mass.

Histopathological examination showed numerous fungal elements measuring 3–10 μm with thick capsules present in the alveolar spaces and interstitium. There were also acute and chronic inflammatory cells, chronic granulomatous inflammation, multinucleated giant cells, and foci of necrosis [Figure 3]. The adjacent lung parenchyma showed areas of patchy pneumonia. Special stains periodic acid-Schiff and alcian blue highlighted the mucoid capsule of the organism [Figure 4]. Lymph nodes showed reactive changes. Histological features suggestive of malignancy were not identified. These gross and histological findings were diagnostic of cryptococcosis.

## DISCUSSION

The human pathogen *C. neoformans* is a nonmycelial encapsulated yeast-like fungus. It is found in pigeon and

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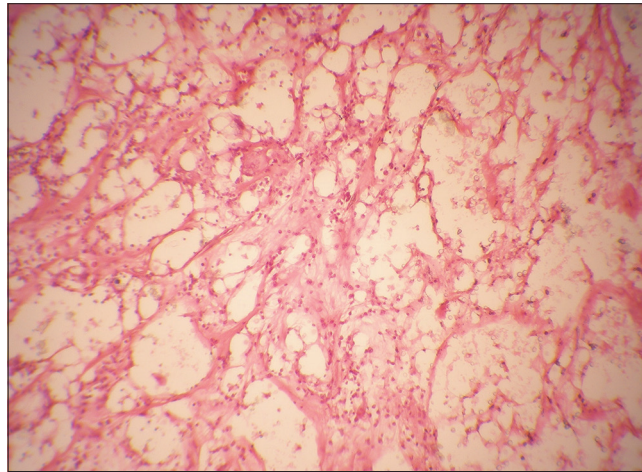
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**Figure 1:** Chest X-ray posteroanterior view



**Figure 3:** Alveolar spaces with cryptococcal colonies (H and E, ×200)

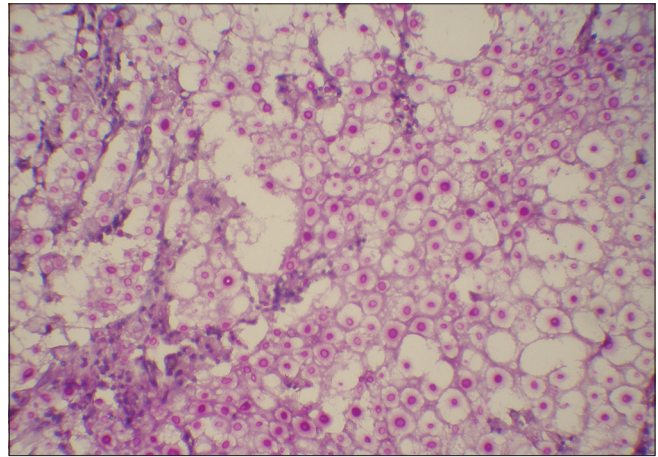
other bird droppings and can be inhaled by humans. Pulmonary infections are rare in individuals with normal immunity.<sup>[3-6]</sup>

Cryptococcal infection limited to the lungs is defined as PPC, is difficult to diagnose because symptoms and radiologic findings are nonspecific.<sup>[4]</sup> Sputum cultures are not reliable, and serum titers are usually not elevated except in disseminated diseases. The yeast grows within the alveoli resulting in an encapsulated mass which is resistant to neutrophil phagocytosis. Cell-mediated immunity plays an important role in arresting the infection. Most clinically apparent cases are diagnosed in immunocompromised patients.<sup>[5-9]</sup> Cryptococcal infection usually affects the central nervous system where it most commonly presents as meningitis and symptomatic pulmonary infections are uncommon.

Primary pulmonary cryptococcosis can cause vague symptoms such as fever, malaise, weight loss, cough or can be asymptomatic and can only be discovered incidentally on radiologic imaging.<sup>[10]</sup> Most common radiologic manifestation of PPC is solitary or multiple pulmonary nodules or masses, which mimics primary or metastatic



**Figure 2:** Lobectomy specimen with a well-defined mass



**Figure 4:** Periodic acid-Schiff stain demonstrating thick capsule of the organism (×400)

malignancy.<sup>[5,9,10]</sup> A large solitary cryptococcoma replacing the majority of a lobe, as seen in our case, is highly unusual.

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