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Case Report

Unusual case of coexistent pulmonary cryptococcosis and tuberculosis in an immuno-competent host

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ABSTRACT

Coexistence of pulmonary cryptococcosis with other infections has commonly been described in immuno-suppressed individuals. In immuno-competent hosts, such coexistence is rare and mostly described in disseminated disease or uncommonly involving different sites. The simultaneous coinfection of cryptococcosis and tuberculosis of lung in an immuno-competent host is extremely rare with only one previously reported case in the literature. This is the second such case and the first to be reported in India. We describe a case of a 36-year-old immuno-competent male who presented with haemoptysis and cough. Computed tomography showed a sub-pleural lung nodule. Diagnostic thoracoscopic wedge resection of the right lung nodule revealed granulomatous inflammation with cryptococcus on histopathology. Coexistent tuberculosis was diagnosed by microbiological culture study on lung tissue. The patient responded clinically to fluconazole and anti-tubercular therapy. This case shows that although rare, coexistent infections can occur in immuno-competent persons and highlights the importance of careful evaluation and tissue microbiological culture examination.

1. Introduction

Pulmonary cryptococcosis is a common opportunistic fungal infection in acquired immunodeficiency syndrome (AIDS) and other immuno-suppressed patients. Coexistence of pulmonary cryptococcosis and tuberculosis in an immuno-competent host is very rare.

2. Case report

A 36-year-old male, resident of Delhi, India, presented to the chest medicine out patient department with chief complaints of cough and haemoptysis for 10 days. The haemoptysis was mild in the form of blood-stained sputum and was associated with dry cough. There was no history of fever, weight loss, breathlessness or associated chest pain and no neurological symptoms were present. There was no past history of hypertension, diabetes mellitus or any other systemic disease. No history of any previous lung disease or history of any medication was present. The patient was a non-smoker with no significant travel history. Prior to this episode, the patient was absolutely healthy. At presentation, the patient was conscious and well oriented. Pulse rate was 80 per minute, blood pressure was 126/84 mm of Hg and respiratory rate was 15 per minute. There was no fever, pallor, cyanosis, oedema or any peripheral lymphadenopathy. Respiratory, central

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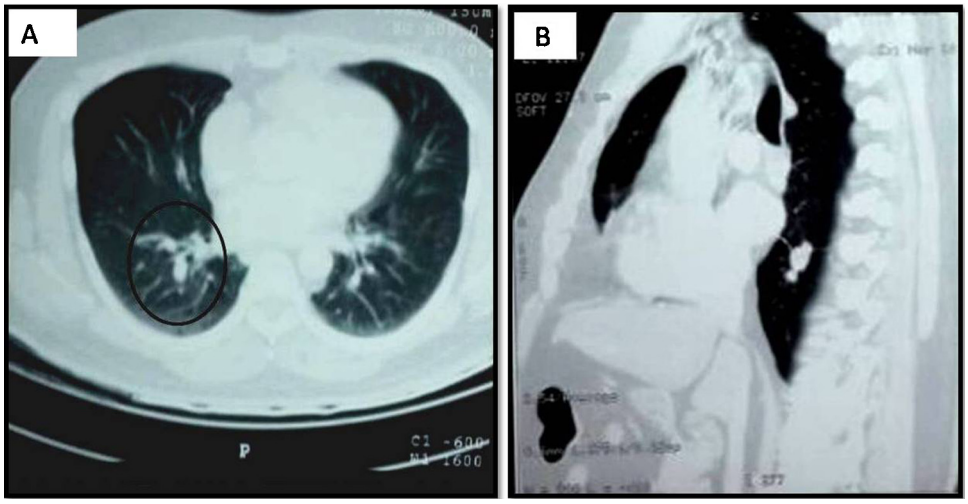

Fig. 1 – Computed tomography (CT) scan of thorax showing a parenchymal nodule in the lung (A – AP view and B – lateral view).

nervous, cardiovascular and abdominal systemic examinations were within normal limits. His haemoglobin was 12.9 g%, the total leucocyte count was 8200/cu mm and differential count was within normal limits. The ESR was mildly increased (45 mm/1st hour) and serum C-reactive proteins were mildly elevated (20 mg/L). Other serum biochemical profiles such as liver function tests, renal function tests and serum electrolytes were within normal limits. Serology for human immunodeficiency virus (HIV) was negative. Mantoux test revealed an induration of 10 mm × 12 mm at 48 h. Echocardiogram was normal. Chest X-ray did not show any significant abnormality. Computed tomography (CT) scan of thorax revealed a bilobed parenchymal nodule with radiating margins measuring 2.5 cm × 1.3 cm in the medial basal segment of right lower lobe of the lung in the sub-pleural location (Fig. 1A and B). Positron emission tomography scan showed increased fluro-deoxy-glucose uptake in the lung lesion along with mediastinal and abdominal lymphadenopathy with the largest node measuring 2.7 cm × 1.3 cm. The radiological findings were suggestive of infective aetiology. The possibility of lymphoma however could not be excluded. Three consecutive sputum samples were negative for acid-fast bacilli (AFB). Cytology of bronchoalveolar lavage yielded scant material and no organisms or tumour was identified. A diagnostic thoracoscopic wedge resection of the right lung nodule was done and the tissue was sent for both histopathological and microbiological studies. Grossly, lung tissue showed a small sub-pleural nodule measuring 2.5 cm × 1 cm × 1 cm, which was grey white and necrotic. Microscopic examination showed an abscess cavity with dense acute and chronic inflammatory infiltrate. There were numerous spherical, budding yeast forms of cryptoccocus present both intracellularly within the histiocytes and giant cells as well as extracellularly. These were encapsulated, with narrow-based budding, and were positive with silver stain for fungus. The capsule was highlighted by mucicarmine stain. The surrounding lung showed chronic interstitial inflammation and multiple epithelioid cell granulomas with Langhans type of giant cells and focal necrosis (Fig. 2A, B and D). Lymph nodes also showed granulomatous inflammation (Fig. 2C). Stain for AFB was negative in both lung and lymph nodes. The histopathological diagnosis was consistent with pulmonary cryptococcosis with granulomatous inflammation of lung and lymph nodes. On reviewing the patient's clinical history, he was found to have long-term exposure to pigeon droppings. He was put on antifungal treatment consisting of oral fluconazole 200 mg/day. Culture for fungus on tissue identified *Cryptococcus neoformans*. Subsequently, his rapid AFB culture at the end of 3 weeks turned out to be positive for Mycobacterium tuberculosis. Hence, this case was of coexistent pulmonary cryptococcosis and tuberculosis in an immuno-competent patient. In view of associated tuberculosis diagnosed on microbiological culture studies, anti-tubercular treatment was added, which comprised of isoniazid, rifampicin, pyrazinamide and ethambutol for first two months followed by two drugs, i.e. rifampicin and isoniazid, for another four months. The patient responded to treatment, and at last follow-up at the end of 6 months, he was well with complete resolution of symptoms and no lesion on contrast enhanced computed tomography chest.

3. Discussion

Cryptococcosis is a common opportunistic fungal infection seen usually in AIDS patients. However, its occurrence in immuno-competent patients is relatively uncommon. In most cases, it is known to be associated with AIDS, but has also been found in other types of immuno-compromised, non-HIV states, which include immuno-suppressive drug treatment, malignancies, cirrhosis and diabetes mellitus. Uncommonly, it can occur in the absence of an apparent immune deficiency. Kiertiburanakul et al. in their 17-year review found that cryptococcosis is not rare in HIV-negative patients.[1] This organism has a worldwide distribution and is often found in soil contaminated by pigeon excreta. Prevalence of this infection has shown an increase over the last two decades.

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