

## Extensive Pulmonary Cryptococcosis as a Presentation in an Immunocompetent Young Male: A Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography Finding

### Abstract

A 42-year-old male presented with a dry cough, breathlessness, and fever. He underwent a computed tomography that revealed large consolidation in the right lung. Biopsy revealed *Cryptococcus neoformans*. He was on antifungal for 4 months with no clinicoradiological improvement. <sup>18</sup>F- fluorodeoxyglucose positron emission tomography/computed tomography (<sup>18</sup>F-FDG PET/CT) showed consolidations in the right lung with multiple lung nodules. <sup>18</sup>F-FDG PET/CT ascertains the diagnosis of residual fungal infection and rules out extrapulmonary involvement.

**Keywords:** CD4 lymphocytopenia, fluorodeoxyglucose positron emission tomography/computed tomography, fungal infections, pulmonary cryptococcosis

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A 42-year-old male farmer presented with a 6-month history of progressive dry cough, breathlessness, and low-grade fever. Computed tomography (CT) thorax revealed a large right lung mass suspected to be malignant. However, biopsy results indicated cryptococcosis. The patient showed no improvement after 4 months of antifungal treatment (Fluconazole 400 mg/day). He had low CD4 + lymphocyte counts (173 cells/mm<sup>3</sup>) and mildly deranged liver function with raised serum IgE levels (1790 iu/ml). Viral markers for HIV and hepatitis B and C were nonreactive. He had no history of recurrent infections. <sup>18</sup>F- fluorodeoxyglucose positron emission tomography/CT (<sup>18</sup>F-FDG PET/CT) scan was done to evaluate the residual disease and extent [Figure 1]. It revealed an FDG-avid mass-like consolidation in the right lung with multiple lung nodules. Magnetic resonance imaging brain was normal, ruling out asymptomatic central nervous system (CNS) dissemination. The patient was started on liposomal amphotericin B with oral flucytosine for 1 month. The patient's symptoms resolved, and he is currently being treated with oral fluconazole.

Cryptococcus is a Basidiomycetous fungus that causes human disease through two species, *Cryptococcus neoformans*

and *Cryptococcus gatti*.<sup>[1]</sup> It affects immunocompromised individuals,<sup>[2]</sup> with low CD4+ T lymphocytes.<sup>[3]</sup> Risk factors include primary and secondary immunodeficiency, such as acquired immunodeficiency syndrome, immunosuppressive therapies, and autoimmune disorders.<sup>[1]</sup> The infection usually affects the CNS and the lungs but can also involve the skin, musculoskeletal system, kidney, and liver.<sup>[4]</sup> Immunocompromised patients without CNS involvement commonly present with cough and fever.

Asymptomatic presentation is common in immunocompetent hosts. Immunocompromised patients present with solitary nodular lesions with cavitation and pneumonic infiltrates.<sup>[5]</sup> Pleural effusion, ground-glass attenuation, and mediastinal lymph node enlargement are infrequent in immunocompromised.<sup>[6]</sup> On <sup>18</sup>F-FDG PET/CT, a solitary metabolically active nodule (SUV: 5.7 ± 3.3) is the most typical presentation. Multiple nodules, bronchopneumonia, and mass-like presentations are infrequent in immunocompetent hosts. The lesions may mimic malignancy.<sup>[7]</sup> <sup>18</sup>F-FDG PET/CT assists in detecting the systemic extent, aiding in biopsy, evaluating therapy response, and assessing the residual lesions.<sup>[8]</sup> This case shows a rare presentation of pulmonary cryptococcosis in an adult immunocompetent patient. The CD4 lymphocytes lymphocytopenia can be idiopathic or secondary, attributed to

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Received: 05-04-2023

Revised: 08-05-2023

Accepted: 29-05-2023

Published: 20-12-2023

### Access this article online

Website: www.ijnm.in

DOI: 10.4103/ijnm.ijnm\_47\_23

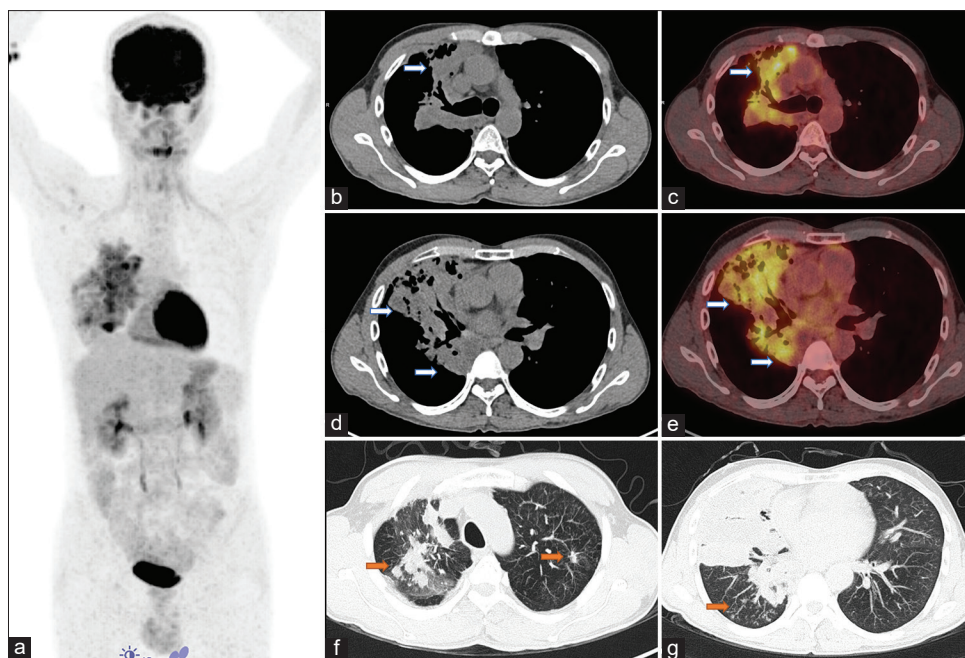
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**How to cite this article:** Chauhan P, Singh V, De SK, Gupta M, Nath A, Ora M. Extensive pulmonary cryptococcosis as a presentation in an immunocompetent young male: A fluorodeoxyglucose positron emission tomography/computed tomography finding. Indian J Nucl Med 2023;38:394-5.

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**Figure 1:** 18-FDG PET/CT scan (MIP, a) shows a large area of heterogeneous uptake in the right lung. Axial CT image (b and d) and Fused PET/CT (c and e) show FDG avid (SUVmax: 8.5) large areas of consolidation with air bronchograms involving the upper, middle, and medial basal segment of the lower lobe of the right lung. Axial CT images in lung window (f and g) show variable-sized non-FDG avid nodular opacities in both lungs. Few of them show a tree-in-bud appearance. There was no mediastinal lymphadenopathy, cavitation, or pleural effusion. 18-FDG PET/CT: <sup>18</sup>F- fluorodeoxyglucose positron emission tomography/computed tomography

acute and chronic infections. A follow-up is required to confirm the diagnosis of idiopathic CD4 lymphocytopenia. The <sup>18</sup>F-FDG PET/CT, although mimicking malignancy, helps evaluate the extent of residual disease.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

#### Financial support and sponsorship

Nil.

#### Conflicts of interest

There are no conflicts of interest.

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