Case Report

Cryptococcosis with bird's eye manifestation: A case report

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ABSTRACT

Cryptococcosis is a menacing opportunistic infection most commonly affecting immunocompromised individuals. Its occurrence in immunocompetant individuals is uncustomary. Disseminated cryptococcosis is subtile in immunocompetent individuals. Cryptococcosis presenting with myriad of symptoms with involvement of lung, meninges, hematological system is rare. We present to you a unique case of disseminated cryptococcosis presenting as bilateral pulmonary nodular opacities with peripheral eosinophilia and meningitis along with a narration of the enthralling diagnostic process.

KEY WORDS: Cryptococcosis, eosinophilia, meningitis

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INTRODUCTION

Disseminated cryptococcosis is a perpetually encountered complication in immunocompromised patients. However, sporadically, it can be seen in the immunocompetent host as well. *Cryptococcus* is ubiquitous as far as organ involvement is concerned; although, meninges, lungs, and lymph nodes are the most commonly affected. Disseminated cryptococcosis exhibits a huge camouflage with a multitude of disseminated infections, including tuberculosis, metastatic malignancies, and immunological disorders. This can lead to a delay in diagnosis. We present to you an intriguing case of bilateral nodular opacities with eosinophilia with meningitis due to cryptococcal infection.

CASE REPORT

A 19-year-old nonaddict boy presented with the chief complaints of the neck pain, headache, vomiting, fever, diplopia, and cough for the past 4 weeks. There was no significant past, personal, and family history. On central nervous system examination, there was the presence of neck stiffness with positive Kernig's sign and Brudzinski's sign with bilateral lateral rectus palsy. Rest of the systemic examination was within the normal limits.

Complete hemogram revealed leukocytosis and raised absolute eosinophil count of 11,760 cells/ccmm. Serial hemograms done demonstrated persistent eosinophilia. As the patient presented with the signs of meningitis, he underwent a lumbar puncture. The cerebrospinal fluid (CSF) opening pressures were 90 cm of water. The CSF analysis showed a cell count of 50 cells with eosinophil count of 21 cells, elevated proteins and glucose levels with normal adenosine deaminase levels. CSF was negative for genexpert and acid-fast bacilli smear and culture. Computed tomography (CT) and magnetic resonance imaging of the brain was within the normal limits. The chest X-ray showed bilateral nodular opacities [Figure 1]. High-resolution CT of the thorax was suggestive of nodular opacities diffusely distributed in bilateral lungs [Figure 2]. We made a provisional diagnosis of pulmonary infiltrates with eosinophilia syndrome with eosinophilic meningitis.

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We further evaluated with serum immunoglobulin E which was 1445 units elevated. Differentials of tropical pulmonary eosinophilia (TPE) and hypereosinophilic syndrome (HES) were ruled out as serum for anti-filarial antibodies against microfilaria was negative, and bone marrow aspiration/biopsy showed only elevated levels of eosinophil precursors with normal blast count. CSF sent for cytology as one of the differential diagnoses of CSF eosinophilia was negative for malignant cells. The CSF, however, strikingly showed budding round yeast cells which on further analysis by India ink staining was positive for *Cryptococcus* [Figure 3]. The CSF fungal culture confirmed the growth of *Cryptococcus neoformans*. The local laboratory drug susceptibility tests demonstrated the sensitivity of the strain to amphotericin B, flucytosine, and azoles.

Diagnosis

Diagnosis disseminated cryptococcosis with bilateral lung nodular opacities, eosinophilia, and meningitis in an immunocompetent host.

The patient was initiated on liposomal amphotericin B (3 mg/kg/day) along with flucytosine (100 mg/kg/day). He required repeated therapeutic lumbar punctures to relieve the raised intracranial tension (ICT). The patient responded clinically with waxing and waning of symptoms. The patient was afebrile and the CSF fungal culture was negative for *Cryptococcus* only after 8 weeks of induction phase therapy. The patient was shifted on maintenance phase with oral fluconazole therapy (400 mg/day) for 6 months and discharged in a stable state.

DISCUSSION

Cryptococcosis is an infection caused by the fungus *Cryptococcus* which is an encapsulated saprophytic organism occurring in mainly two species, namely, *C. neoformans* var neoformans and *C. neoformans* var gattii.[1] *Cryptococcus* is notoriously known to afflict immunocompromised individuals. The organism frequently pitches itself in the meninges, lungs, bones, adrenals, kidneys, liver, and spleen. Of late, there has been a snowballing in the incidence of cryptococcosis in immunocompetent individuals as seen in our case. The infections occurring in immunocompetent individuals have been perceived to be more resistant. The therapy is formidable in terms of the longer duration and fortuitous response to treatment as compared to in immunosuppressed individuals. *C. neoformans* spreads through the inhalational route.[2] The most common site of involvement in an immunocompetent individual is lungs characterized by the presence of consolidation or nodules.[3] Involvement of central nervous system is rare. Clinical manifestations of the infection vary depending on the organs affected and the immunity of the host. Furthermore, the clinical picture parades a significant overlap with other multisystemic aliments

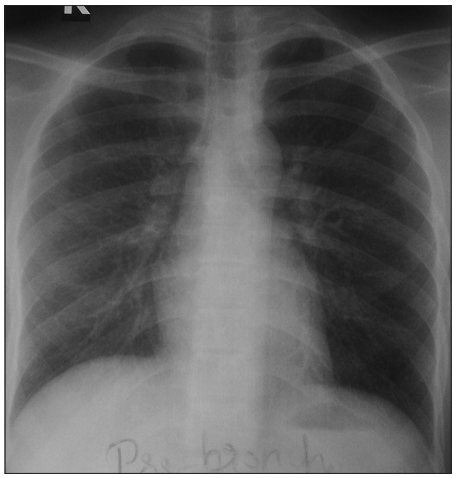

Figure 1: Chest X-ray showing bilateral nodular opacities

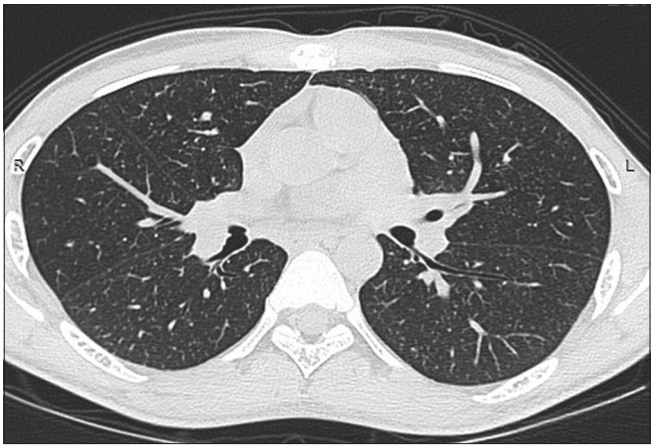

Figure 2: High resolution computed tomography thorax image showing bilateral randomly distributed nodules

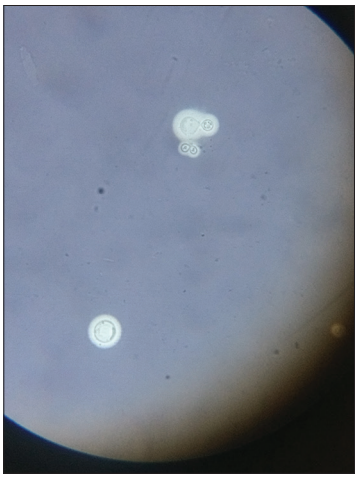

Figure 3: India ink preparation showing *Cryptococcus*

such as tuberculosis, other tropical infections, and malignancies. The diagnosis of cryptococcosis is clinched by the isolation of the yeast in biological fluids like the CSF or in histopathological specimen stained with India ink.[4]

The patient presented with bilateral randomly distributed lung nodules along with the presence of signs and symptoms of meningitis. In addition, he strikingly had persistent peripheral eosinophilia which is another offbeat manifestation seen in a case of cryptococcal infection.[5] Hence, our patient had a disseminated cryptococcal infection with involvement of meninges, lungs and the hematological system. Taking into account, the multisystem involvement various differentials were deliberated. Disseminated tuberculosis, TPE, HES, and malignancy were systematically ruled out. A high index of suspicion in spite of the immunocompetent status of the patient and the CSF picture resolved the dilemma by demonstrating the presence of cryptococcal organism on India ink staining and the fungal culture being positive for *C. neoformans* clinched the diagnosis. Hence, opportune therapy was possible which expedited the recovery ameliorated the prognosis.

Treatment of cryptococcal infection depends on the immune status of the patient. It is deciphered that in an immunocompetent patient the management of infection is operose and usually requires protracted therapy. According to the recent WHO and IDSA 2015 guidelines, the therapy for cryptococcosis involves three phases; induction phase, consolidation phase, and maintenance phase.[6,7] The prime drug used for therapy in both immunocompetent and immunosuppressed individuals is amphotericin B along with flucytosine used in the induction phase for culture conversion and fluconazole used in consolidation and maintenance phase to prevent relapse. In our patient, culture conversion was seen at the end of 8 weeks and hence, he was shifted to maintenance therapy after the same. One of the habitual challenges encountered while treating the infection is the indefatigably raised ICT. The most competent method for tackling this prodigiously raised ICT is to perform frequent therapeutic lumbar punctures. Sometimes, the aspirations may be required daily to relieve the pressure and mollify the wearisome symptoms as was seen in our case. Other modalities available for treating raised ICT are pharmacotherapy with mannitol, acetazolamide and in resistant cases, the use of ventriculoperitoneal shunt.[8] Mortality associated with untreated cases is said to be 5%–10%. Those patients presenting with altered sensorium are known to have a poor prognosis.[9] Timely diagnosis and prompt initiation of therapy are pivotal in salvaging life and minimizing complications. The patient serves as a landmark case due to multiple unorthodox manifestations associated with this labyrinthine infection. We hereby insist to deem this infection in cases with multisystem involvement and to bear in mind the possibilities of unconventional presentations as well.

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.

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Conflicts of interest

There are no conflicts of interest.

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