

Case Report of Cryptococcal Meningitis in an Immunocompetent Host

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Abstract

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Meningitis, when caused by the fungal mycoses *Cryptococcus neoformans*, is normally seen in immunocompromised hosts. However, immunocompetent patients are also susceptible to cryptococcal meningitis (CM). In patients with an intact immune system, CM usually presents with the typical signs and symptoms of meningitis: fever, stiff neck, and headache.

Although a recognized cause of meningitis in the immunocompromised patients, the incidence of CM has been on the rise in immunocompetent hosts as well with early diagnosis and adequate treatment greatly reducing the morbidity and disease progression.

We present the case report of a 32 year old female diagnosed as cryptococcal meningitis in absence of any underlying immunodeficiency.

Keywords: Meningitis; *Cryptococcus*; Immunocompetent Hosts.

Introduction

Cryptococcal Meningitis (CM) is a serious subacute or chronic central nervous system infection caused by encapsulated yeast-like fungus, *Cryptococcus neoformans*. The initial infection site is the lungs which may disseminate hematogenously to the brain and meninges. *Cryptococcus* may cause symptomatic disease in other organ systems, including the central nervous system, skin, prostate and eyes. Central-nervous-system involvement often manifests itself as meningitis or meningoencephalitis, but may, in some cases, presents itself as isolated cryptococcomas. There are two varieties of *C. neoformans*, namely "neoformans variety" and "gatti variety". The *C. neoformans* variety, found in aged pigeon droppings, causes disease in immunocompromised patients including AIDS patients. *C. neoformans* variety gatti is not associated with birds, but grows in the litter around certain species of eucalyptus trees causing disease in immunocompetent hosts, although a study in India has found that the hypothesis of global spread of *C. gattii* through export of Australian Eucalyptus infected seeds is rebutted. The yeast grows well at 37°C, its virulence is given in part to its mucopolysaccharide

capsule, which deters phagocytosis. While *C. neoformans* has a worldwide distribution, *C. gattii* was more likely to be predominantly located in tropical and subtropical regions, but a recent outbreak in Vancouver Island, British Columbia, suggested this organism has a wider distribution including the Pacific Northwest and Northern California.

Case Report

A 32 yrs old female patient presented to emergency department with complaints of mild headache since 2 days, associated with fever and generalized body ache. It was not associated with nausea, vomiting, loose stools or loss of consciousness. No history of dysurea, rash, bleed from any site. There was no history of head injury or concussion. No past history of diabetes, hypertension, tuberculosis or similar episode in the past. There was no significant family history. Patient was admitted with above mentioned history and complaints with provisional diagnosis of fever under evaluation. Routine investigations including cultures, sensitivity and serology for viral markers were sent. Patient was put on prophylactic

antibiotics and other supportive measures. The patient's investigation profile was insignificant with negative bacterial cultures and viral markers.

During the course of hospital stay the patient showed poor response to the treatment with persistent increase in symptoms along with progressive increase in headache and blurring of vision.

An urgent neurological review was done and patient was planned for MRI Brain and CSF examination. The patient MRI report showed subtle meningeal enhancement with CSF report showing lymphocytosis, with no significant pathogen identified, and negative for AFB on ZN smear. In view of lymphocytosis CSF was sent for cryptococcal antigen which was tested positive.

The patient was started on i.v. fluid, i.v. amphotericin B for two weeks and other supportive medications. The patient responded well to the above treatment and was discharged in a stable condition on follow up oral medications.

On behalf of positive cryptococcal antigen in CSF, MRI findings, and response to treatment the patient was diagnosed as cryptococcal meningitis.

The patient's clinical, investigations profile showed no evidence of immunocompromised state, leading us to a final diagnosis of cryptococcal meningitis in an immunocompetent host.

Discussion

A patient with Cryptococcal Meningitis (CM) usually is immunocompromised. Until the advent of HIV/AIDS, more than 85% of patients diagnosed with CM had some associated deficiency of cell-mediated immunity, and this number is likely higher today. Other immunocompromised conditions associated with a typical presentation include a history of alcoholism, cancer, or transplantation; sarcoidosis; Hodgkin's lymphoma; collagen vascular disease; splenectomy; chronic organ failure; or systemic corticosteroid treatment.

CM patients with intact immune systems usually present with the typical signs and symptoms of meningitis: fever, stiff neck, and headache. In patients with AIDS, CM symptoms may be subtle and include

fever and lethargy. Signs of a lesion rarely are seen even when cryptococcal elements are present in cerebral spinal fluid. Our's was an atypical case, however. Her immune system was intact, and her first symptom, headache, was subtle and nonspecific. But 1 week later, her symptoms progressed and included nausea, fatigue, lethargy, and blurring of vision. These signs and symptoms are nonspecific for meningitis. At initial presentation, her symptoms seemed more related to the space-occupying lesions than to meningitis. It has been found that patients with *C. neoformans* infection had more nonspecific symptoms at onset and a longer duration of symptoms before presentation in immunocompetent hosts. It has also been shown that it usually takes extra time to assign a diagnosis to these patients.

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