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Case Report

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CRYPTOCOCCAL MENINGITIS IN AN IMMUNOCOMPETENT PATIENT: A CASE REPORT

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ABSTRACT

Cryptococcal Meningitis (CM) is a rare infection in immunocompetent patients. A kind of central nervous system infection caused by encapsulated yeast-like fungus *Cryptococcus.* Chronic high-dose steroid may precipitate such an immunocompetent state and thus create susceptibility to fungal infections. Prognosis in immunocompetent patients is generally considered good. Suspicion to diagnose begins with clinical symptoms that can be non-specific such as fevers, cough, and headaches. We present a case of steroid-induced cryptococcal infection in a non-HIV-infected person.

KEYWORDS: Cryptococcal in immunocompetent cryptococcal non-HIV-infected person.

INTRODUCTION

The incidence of cryptococcal meningitis has increased in recent years, both in human immunodeficiency virus (HIV) positive and negative patients. Among all fungi causing meningitis, Cryptococcus neoformans remains the most common.[1] Recent data indicates that the incidence of cryptococcal infection is high in developing countries such as India.[3,4] Cryptococcal meningitis is generally considered rare in immunocompetent patients; therefore, specific treatment is not implemented until the organism is identified or a cryptococcal antigen is detected.[1]

Amphotericin B, fluconazole, and amphotericin B in combination with flucytosine have been used in the treatment of cryptococcal meningitis with and without coexisting HIV infection, with significant improvements in the management of cryptococcal meningitis.[4]

We report here a rare case of Cryptococcus neoformans as the cause of meningitis in an immunocompetent adult male.

CASE REPORT

A 54-year-old male resident of a rural area in kolar, Karnataka, India, who was a farmer by occupation, was admitted to the internal medicine department with chief complaints of high-grade fever, intermittent, moderately severe headache lasting 7 weeks associated with multiple episodes of vomiting 5-6 episodes, and altered sensorium for four days. Patient is on chronic steroid use Tab prednisolone 10 mg for 3 years. He had history of injury in the right foot below ankle joint. He had no history of seizures, ear discharge or earache, nor any focal neurological deficit, head trauma, weight loss, chronic cough, blood transfusion, or high-risk behavior. The further study done after taking ethical clearance from institutional ethical committee and consent from patient and patient relatives.

On examination, the patient was febrile and conscious, with a Glasgow coma scale of E4M5V6. Neck rigidity and Kernig's sign were positive. Pupillary response was bilaterally sluggish, plantars were bilaterally extensor, and all deep tendon reflexes were normal. A sensory and motor system examination normal. Fundus examination showed no evidence of papilloedema. Examination of other systems revealed no obvious abnormality. Laboratory investigations revealed raised total leukocyte count (12,100/mm cu.) with 84% neutrophils. Serum electrolytes, renal function tests, and liver function tests were within normal limits. A cerebrospinal fluid (CSF) examination revealed 06 cells, occasional lymphocytes, with protein of 90 mg/dl and glucose of 28 mg/dl (corresponding blood glucose was 136 mg/dl). A computerized tomography (CT) scan of the head and a chest X ray were both normal.

The CSF specimen was sent to microbiology department, and processed. Upon examination, the CSF was clear and without coagulum. With microscopy, occasional mononuclear cells were seen. There were no

microorganisms on Gram and Ziehl-Neelsen (Z-N) stains. India ink preparation showed characteristic predominant round budding yeast cells ranging from 5-20 mm in size with distinct halos(fig 1).

A bacterial culture was sterile. A culture was performed on Sabouraud's dextrose agar (SDA), which yielded smooth colonies of yeast after five days of incubation at 37°C.

The patient was tested for HIV antibodies and found to be non-reactive. His immunoglobulin levels (IgG, IgA, IgM), complement levels, CD3 and CD4 cell counts were found to be within normal limits, thus ruling out any immune deficiency.

Treatment was started with Amp B at 1 mg/kg per day as an intravenous infusion along with intravenous fluids and mannitol. Serum electrolytes and renal functions were monitored on a daily basis. Patient was on Amphotericin B for 10 days later patient continued to have headache and MRI scan was done which showed raised signs of ICT and repeated lumbar puncture was done to releave the pressure later was continued with amphotericin b and mannitol and later patient continued to have headache and on 18th day repeat Lumbar puncture was done and which showed pressure of 340 mmhg and was referred to higher center for further management and patient did not return back.

DISCUSSION

Most cases of cryptococcal meningitis occur in patients with conditions that weaken their immune system, such as acquired immunodeficiency syndrome (AIDS). Cryptococcal meningitis has also been sporadically reported in HIV-negative patients caused by organ transplant and chemotherapy related immunosuppression, reticuloendothelial malignancies, corticosteroid therapy and sarcoidosis.[4] Occasionally, no obvious underlying cause can be detected.[7,8] Immunocompetent hosts are reported to be infected with *C.* neoformans is usually implicated, accounting for 70-80% of cryptococcal infections in such hosts.[6]. The patient in this case report was also immunocompetent and developed meningitis due to *C. neoformans.* In addition, more than half of the isolates studiedwere derived from patients who had no known impairment of their immune systems.

Despite all the measures taken, our patient could not survive and died of respiratory failure. Despite the availability of newer antifungal agents such as fluconazole, cryptococcal disease in HIV-negative hosts continues to be associated with substantial morbidity and mortality.[2] Mortality rates can vary from 0 to 47% in non-HIV-infected patients. Moreover, in tropical countries it can vary from 0 to 38% where a low percentage of patients have underlying diseases.[3] Several factors are associated with mortality in the overall population and among specific groups of patients with central nervous system (CNS), pulmonary, or other sites of cryptococcosis. These include age over 60 years and the presence of significant underlying disease, especially organ failure syndromes and hematologic malignancy.[5] In our patient, no underlying disease was found.

Because the signs and symptoms of cryptococcal meningitis presents late in the course of disease and has a shorter duration of symptoms in AIDS patients. In contrast, in non-AIDS patients, the onset is insidious with a chronic course. Symptoms of meningitis may begin months to years before clinical diagnosis. CT findings may also be normal in 50% of the cases.[2] Our patient had subacute presentation with a history of headaches over a duration of 25 days. The CT scan was also normal in our patient. And MRI showed signs of raised ICT and repeated lumbar puncture was done and patient was symptom free for 5-6 days.

Current practices of anti-cryptococcal therapy in India for immunocompetent patients generally include Amp B alone or with flucytosine (5-fluorocytosine) and sometimes followed by fluconazole.[2] Flucytosine is not routinely used in India because of its unavailability and high cost.

In immunocompetent patients, initial therapy should be Amphotericin B (0.7-1 mg/kg per day) alone or in combination with flucytosine (100 mg/kg per day in four divided doses). Amphotericin B can be administered alone for six to ten weeks or in conjunction with flucytosine for two weeks, followed by fluconazole for a minimum of ten weeks.[2]

Our patient was treated with Amphotericin B with flucanazole, but patient developed complications like raised ICT and patient had to be referred for higher center for v-p shunt. With early diagnosis, cryptococcal infections, including CNS and disseminated infections, are usually amenable to therapy. In patients with no demonstrable immunosuppression, Amphotericin B therapy, with or without flucytosine, is effective in controlling or terminating infection in 70 - 75% of patients.[3] The patient in this case report could have been prevented if he had been diagnosed with cryptococcal meningitis early in the course of disease. Therefore, whether the patient is immunocompromised or immunocompetent, the outcome can be severe unless the disease is diagnosed early in the course of illness.

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