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Cryptococcal Meningitis in an Immunocompetant Patient: A Case Report

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ABSTRACT
Cryptococcal meningitis is a rare infection in immunocompetent patients and it is mainly a disease of immuno compromised patients. It is an infection of the central nervous system caused by an encapsulated yeast like fungus Cryptococcus neoformans. It is a saprophyte and is found in soil contaminated with pigeon droppings. Prognosis is usually considered good in patients with intact immune system. Since the outcome of the disease can be fatal a high index of suspicion, rapid diagnosis and initiation of the specific antifungal therapy is very important. We report a case of meningitis in an immunocompetent adult female caused by Cryptococcus neoformans.
Keywords: *Cryptococcus neoformans, immunocompetant patient, fungal meningitis.*

Introduction

Cryptococcal meningitis is a potentially fatal fungal infection of the central nervous system and is cause by the encapsulated yeast Cryptococcus neoformans[1]. It is a defining opportunistic infection in patients with HIV/AIDS. It is not uncommon in other immunocompromised patients as those with lymphomas, (e.g Hodgkon's Lymphoma), sarcodosis, liver cirrhosis, organ transplantation and patients on long term corticosteroid therapy[2]. We report a case of meningitis in an immunocompetent adult female caused by Cryptococcus neoformans.

Case Report

A 54 year female, house wife, presented with complaints of high grade fever and headache since last 25 days. Headache had worsened over the last 3-4 days and was associated with multiple episodes of vomiting, non projectile in nature, not associated with blood or bile since last 2-3 days. There was no history of altered sensorium, loss of consciousness, seizure, ear discharge or earache, no focal neurological deficit, chronic cough, head trauma, and weight loss. Patient had no history suggestive of chronic lung disease, malignancy, diabetes or any other immunocompromised condition. There was no history of exposure to bird or pigeon droppings. Patient visited a neurologist two weeks earlier. MRI brain was normal and patient was managed conservatively as tension type of headache.

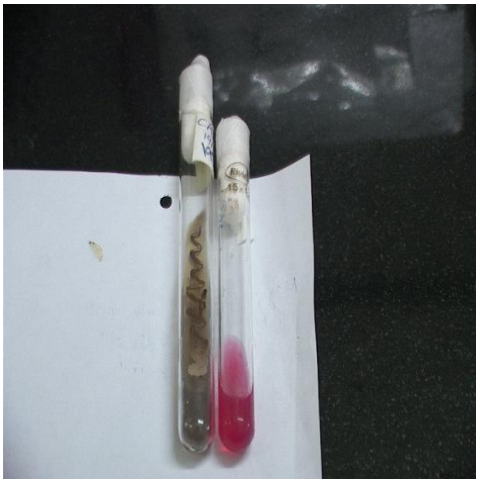
General physical and cardiorespiratory examinations were normal. Central nervous system examination revealed papilledema with signs of meningeal irritation (neck rigidity, Brudziński's

neck sign) and bilateral plantars were not elicitable. Pupillary response was adequate. Sensory and motor system examination was normal.

Routine laboratory examination revealed total leukocyte count of11, 470 with 90% Neutrophils, ESR-43mm in 1st hour. Renal Function tests, liver function tests and serum electrolytes were within normal limits. Other investigations e.g peripheral smear for malarial parasite, Typhoid and Widal test were negative. X-RAY Chest was Normal.

Lumbar Puncture was performed and CSF was sent to the laboratory for examination. Analysis of CSF showed an elevated cell count of 30 cells /mm3 (Polymorphonuclear cells 86%, lympho-cytes 14%), low glucose (01mg/dl), and high protein concentration (253mg/dl).CSF adenosine deaminase (ADA) level was 11u/L. Microbiological examination did not reveal the presence of any organism on Grams stain and Ziehl Neelsons stain for mycobacteria was also negative. India Ink examination however showed the presence of characteristic round budding yeast cells with district halos and classical narrow based budding. Bacterial Culture was sterile. and Real Time PCR for tuberculosis was negative for both mycobacterium tuberculosis complex and non tuberculosis mycobacteria. Mantoux Test was negative. Capsular Polysaccharide antigen for Cryptococcal antigen in CSF was positive by lateral flow assay. Patient was found to be negative for HIV P24 antigen and antibodies to HIV1 &2 after due consent.

Fungal Cultures of CSF on Saborauds Dextrose agar media (SDA), incubated at 37^0C and 25^0 C yielded pure growth of colonies which on Gram stain were found to be large round budding yeast cells morphologically resembling Cryptococcus species. Urease Test of this isolate was positive and the fungus showed characteristic coffee brown coloured colonies on Caffeic acid agar media. The isolate was identified as Cryptococcus neoformans by using MALDI-TOF (matrix assisted laser desorption-ionization time of flight) analysis. The isolate was susceptible to flucanozole, voriconazole, flucytocine and amphotericin B with MIC values were 1ug/ml, 0.12ug/ml, <ugml and 1ug/ml respectively (Vitek 2, Biomerieux, France). Culture of Blood, Urine and Sputum did not Yield any bacterial or fungal etiology.



Treatment was started with Liposomal amphotercin B, 5mg/kg i.u and Tab. Flucytosine 100mg/kg/day. During treatment, kidney

functions test and Serum Electrolyte were monitored.

On day 18 of admission, repeat lumbar puncture was performed. CSF analysis showed Sugar 79mg/dl, Protein 56mg/dl, Cell Count-4cells/cumm, (lymphocyte 100%). CSF fungal culture was done and single colony of Cryptococcus neoformans was isolated on 10^{th} day incubation at 35^0C. Detection of HIV antibodies was repeated on day 20 of admission by ELISA method and results were non reactive. The patient was discharged in a stable condition.

Discussion

Cryptococcus Neoformans is usually isolated from soil contaminated with Pigeon excreta and also from the flower and back of eucalyptus trees[3]. Inhalation of this encapsulated yeast leads to a short lived and silent pulmonary infection in immunocomptent patients[4]. In our patient there is no history of exposure to avion drippings and no history suggestive of immunosuppressive conditions. The patient is HIV negative with no underlying lung disorder and X-Ray Chest findings are were normal.

Our patients presented with the typical signs and symptoms of Cryptococcal meningitis in an immunocomptent adult. Fever, stiff neck and headache and the time to diagnosis from symptom onset was 25 days.

Magnetic resonance imaging (MRI) findings was normal in our patient. Normal MRI findings do not exclude Cryptococcal meningitis, because the typical features of this infection occur in only 40% of cases[5].

Diagnostic evaluation for Cryptococcus Meningitis requires of LP with analysis of CSF including cells counts protein and glucose levels. India Ink showing Fungal Culture and Cryptococcal antigen[6]. The CSF of our patient was clear with increased lymphocyte and protein and decreased CSF Glucose. India ink staining Cryptococcal antigen and fungal culture was positive. A definite diagnosis of Cryptococcus meningitis was made by visualizing the budding yeast cells with a distinct of the polysaccharide capsule on Indian Ink staining (75-85% sensitive). Cryptococcal antigen detection (95% sensitive) anda positive fungal culture for Cryptococcus Neoformans[6].

Our Patient was treated with the standard therapy of combination of liposomal amphotericin B and oral flucytosine[7]. The patient responded well to therapy as was evident on decrease in headache, neck rigidity repeat CSF analysisand fungal culture. After that patient was discharged.

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