ORIGINAL RESEARCH PAPER

Volume-8 | Issue-7 | July - 2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PRIMARY AMOEBIC MENINGOENCEPHALITIS

General Medicine

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ABSTRACT

Primary amoebic meningoencephalitis due to free living amoeba, also called 'brain eating amoeba', Naegleria fowleri, was detected in retroviral disease. Earlier eight cases have been reported from India of which four cases survived the acute episode

KEYWORDS

INTRODUCTION

Primary amoebic menigoencephalitis is rare and dreadful condition affecting central nervous system of the individual.1 It is caused by free living amoeba Naegleria fowleri and occurs most commonly in healthy children and young adults as well as immunocompromised individuals with recent recreational fresh water exposure.2,3 Disease is symptomatic in 2-5 days and rapidly fatal with clinical features of menigoencephalitis.

CASE REPORT

A 40 year male patient of retro viral disease with ART started around 2 months back on ZLN schedule was admitted with history of fever with mild chills and rigors. This was followed by severe headache, both frontal and parietal region, persisting throughout the day with no aggravating and relieving factors. History of slurred speech which recovered within 30 minutes was present at onset of complaints. These complaints were associated with vomiting 10-15 times/day containing food particles and water. Routines investigations along with CT scan, MRI scan brain, fundus and CSF examination done.

Patient's hemogram was normal Hb 9.7 g/dl, liver profile and renal profile was normal. Lipid profile was normal. Urine routine and microscopy was normal. X ray chest showed fine fibrotic band-like opacities in bilateral apical region. CSF examination showed proteins 76 mg/dl, sugar 44 mg/ dl, cells- 82 per cmm polymorphs 3%, lymphocytes 95%, RBCs 1%, monocytes 1%. H & E stain showed mainly lymphocytes on eosinophilic background. CT scan and MRI brain were normal. Fundus was normal. HbsAg was negative. On the basis of above investigations IV antibiotics, antipyretics, and supportive treatment was given and antitubercular therapy was started on basis of CSF examination. But patient repeatedly complained ofsevere headache and vomiting so CSF cryptococcal antigen and wetmount preparation was sent. CSF cryptococcal antigen was negative. CSF India ink preparation showed free moving highly motile amoeba suggestive of Naegleria fowleri infection. Then patient was put on IV Amphotericin B 50 mg along with Fluconazole and Metronidazole. Patient started to respond to the treatment. Patient was known case of retroviral disease and was on ART since. Patient had history of blood transfusion 2 years back in Rajasthan. There was h/o using swimming pool. Source of water was no from tube well. There was h/o travelling outside India. Patients wife was diagnosed as case of RVD in an ANC clinic 2 yrs back. Patient was put on Amphotericin B, Metronidazole in addition to ART and ATT and other supportive medications. Patient improved and his headache, vomiting and fever subsided. Then patient was discharged on request after total duration of stay around 20 days.

DISCUSSION

Primary amoebic meningoencephalitis is a dreadful disease which was first reported in 1962 in Florida USA. N. fowleri was named after Malcom Fowler of Adelaide Children's Hospital, Australia and R. F. Carter who first described the disease primary amoebic meningoencephalitis caused by amoeba flagellates in 1965 in Australia.(2) Since 1965 144 cases have been confirmed from various countries. Primary amoebic meningoencephalitis cases have been reported from 15 countries all continents except Antarctica. (1)Till date 8 cases have been reported in India out of which four patients have survived and 4 died.(4-7) Sadia Shakoor et al reported 13 cases from Karachi, Pakistan. Patients had no history of aquatic activities and proposed mode of infection was tap water.(8)

Life cycle of N. fowleri

It consists of three stages

1. Amoeboid trophozoites,
2. Flagellates,
3. Cysts.

Trophozoites are in infective stage which invades the central nervous system after nasal inoculation with amoebas disrupting the olfactory mucosa.(1) Clinical features of Primary Amoebic Meningoencephalitis Disease usually develop within 1-7 days after exposure but incubation period upto two weeks has been described.

Physical findings are similar to that of bacterial meningitis.(9)

CDC stage I :

1. Fever upto 40 degree centigrade,
2. Alteration in taste or smell,
3. Sudden onset headache,
4. nausea, vomiting.

Stage II:

1. Stiffneck,
2. photophobia,
3. mental changes which progress to encephalitis and eventual herniation, cranial nerve palsies, encephalitis, coma and death.

Our patient also presented with features of meningism, headache, fever, vomiting which subsided after starting treatment with Amphotericin B and Metronidazole.

Diagnosis

Case definition as per CDC requires

1. Organism in CSF, biopsy, tissue specimen
   OR
2. Nucleic acid in CSF or biopsy
   OR
3. Antigen in CSF or biopsy.

CSF diagnosis can be made most quickly by microscopic examination of wet mount preparation of CSF show in gactive lymotile trophozoites in linear forward direction. Also identified with H & E staining nucleus with large centrally located and densely staining nucleus. Similarly in our case wet mount preparation of CSF showed highly motile free living amoeba suggestive of N. fowleri infection.

Treatment

Early diagnosis, treatment, and aggressive supportive care hold the only chance for survival in patients with primary amoebic meningoencephalitis. Treatment with IV and intrathecal Amphotericin B, IV and intrathecal miconazole and oral rifampicin are recommended by authors who have previously reported primary amoebic meningoencephalitis.10,11 Macrolides like Azithromycin are

effective in- vitro in Naegleria sepsis but have poor CSF penetration. Other antimicrobials include Clotrimazole, Cotrimoxazole, Fluconazole, and Ketoconazole with varying degree of efficacy. Similar lyinourcasewe treated with IV Amphotericin B, Metronidazole, Rifampicin, Ceftriaxone. Patient responded gradually and was discharged on request. On further follow-up patient is continuing ART.

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