

## Primary Amebic Meningoencephalitis

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### ABSTRACT

We report an 8 month-old infant with primary amebic meningoencephalitis (PAME) due to *Naegleria fowleri*. The child was treated with amphotericin B, chloramphenicol and rifampicin for 3 weeks. PAME is an almost universally fatal condition with very few survivors till date. Our patient was one of the rare survivors who recovered after treatment and was discharged without any residual neurological deficit.

**Key words:** *Ameba, Naegleria, Meningoencephalitis.*

*Naegleria fowleri* is a rare cause of meningoencephalitis in humans. It is capable of producing a fatal fulminant primary amebic meningoencephalitis, which usually results in death in 5-10 days(1). Very few patients are reported to survive after acquiring this infection(2,3). We report a rare case of an 8 month old infant who survived *Naegleria* meningoencephalitis.

### CASE REPORT

An 8-month old male baby weighing 6 kg presented with high grade fever for 4 days, one episode of convulsion and altered sensorium. There was history of giving bath in pond water many times in last 1 month. On admission, the child was febrile with tachycardia and tachypnea. Anterior fontanel was level and patient had mild pallor. Glasgow coma

scale was 8 and there was generalized hypertonia without any neurological deficits. Pupils were normal and there was no cranial nerve palsy. Liver was palpable 4 cm below the costal margin and the spleen was palpable 2 cm below the costal margin. A provisional diagnosis of pyogenic meningitis was made, a lumbar puncture was done and the patient was started on antibiotics along with intravenous fluids and supportive therapy. Investigations revealed: hemoglobin 8g/dL, total leukocyte count 12,800/mm<sup>3</sup> with 58% neutrophils and 37% lymphocytes, platelet count 3.8lacs/mm<sup>3</sup>, serum sodium 133.8 meq/L and serum potassium 3.4 meq/L. Urine examination was normal, and renal and liver functions were normal. The cerebrospinal fluid (CSF) examination showed a sugar of 109.8 mg/dL, protein of 63.9 mg/dL with a cell count of 50 cells/mm<sup>3</sup> (90% lymphocytes and 10% poly-morphs). Gram stain and culture of the CSF did not reveal any bacteria. An India ink preparation was made to look for fungus which incidentally showed flagellate form of the motile *Naegleria fowleri* (**Fig.1**). The child was started on amphotericin B (1.5mg/kg/day) and intravenous chloramphenicol (100mg/kg/day) and oral rifampicin (20mg/kg/day) from day 2 of admission. The patient's sensorium gradually improved and he became afebrile and fully conscious by day 7. MRI revealed a small focal well defined rounded lesion (9mm) in the left frontal lobe with peripheral hypointense rim and central hyperintensity (**Fig.2**). There was also a focal ill defined T<sub>2</sub> hyperintense lesion seen in the left cerebellar hemisphere. Treatment was continued for 21 days and the patient was discharged. The patient came for follow up and was well 2 months after discharge.

### DISCUSSION

Many free living small ameba like *Naegleria fowleri*, *Acanthamoeba* and *Balamuthia* are capable of causing disease in humans. They infect the central nervous system and cause 2 types of infections. One is the more acute form which is almost universally fatal and occurs in previously healthy individual. This form is known as PAME and is caused by *Naegleria*. The other form is a more chronic form known as chronic granulomatous amebic meningoencephalitis. This is caused by *Acanthameba* and

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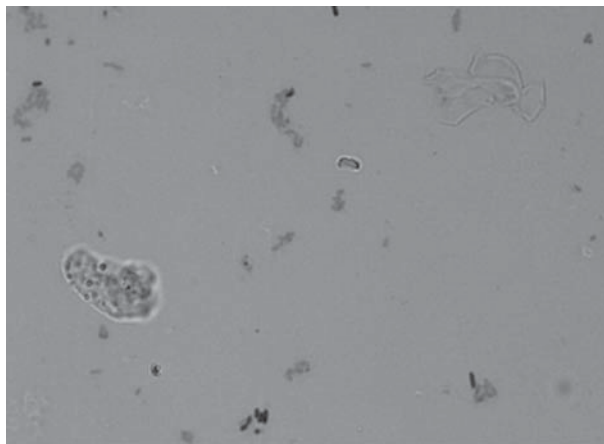


FIG. 1 Motile form of *Naegleria fowleri* in cerebrospinal fluid.



FIG. 2 MRI Brain showing well-defined lesion with a peripheral hypointense rim and central hyperintensity.

*balamuthia*(4). These free living amebas can be found in natural bodies of water and usually there is history of bathing in a river or a pond.

The incubation period of PAME is 5-15 days. The clinical picture is similar to that of pyogenic meningitis. Routine laboratory tests are not helpful in distinguishing it from other causes of meningoencephalitis. The cerebrospinal fluid shows raised

proteins, normal or decreased glucose, pleocytosis with high count of white as well as red blood cells. *Naegleria* can be identified on a wet mount examination of the CSF by its morphology and motility(5). PAME caused by *Naegleria* is a medical emergency. Only few patients have survived till date. Early diagnosis and treatment may have played a role in their survival. Several drugs like amphotericin B, miconazole, and rifampicin have been used(6). Amphotericin B at a dose of 1-1.5mg/kg/day alone or in combination with miconazole, rifampicin, and sulpha drugs may be used(7).

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