

Case Report

Dengue encephalitis as a sole presentation of dengue fever in a child, is it a separate clinical entity?

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ABSTRACT

Dengue fever is one of the common viral infections in tropical areas, especially in India. Though classically non-neurotropic in nature, recent literature has documented dengue viral neurotropism, suggesting possible elements of direct encephalitis. However, limited reports are available in paediatric age groups. Here we report a case of dengue encephalitis in a 3-year 6 months-old male child from Imphal, Manipur, India who presented with a history of fever, altered sensorium, and seizures. The anti-dengue immunoglobulin M antibodies were positive in serum. Cerebrospinal fluid analysis showed lymphocytic pleocytosis with elevated proteins and normal glucose. Neuroimaging was unremarkable. We also ruled out other causes of encephalitis by appropriate investigations. Our case did not have the typical salient features of dengue fever and recovered fully with the supportive treatment on time. The case highlights that dengue encephalitis may present even in the absence of neuroimaging findings and classical clinical signs of dengue fever. Hence, dengue encephalitis should be suspected in a child with fever with altered sensorium and seizures, especially in areas where dengue fever is endemic.

Keywords: Dengue encephalitis, Neurotropism, Dengue fever

INTRODUCTION

Dengue virus (serotypes DEN-1, 2, 3, 4) is a Flavivirus, which is transmitted through the bite of an infected *Aedes aegypti* mosquito, and as per world health organization (WHO), the number of dengue cases has increased to eight times in the last two decades.¹ Though classically non-neurotropic in nature, there is increasing evidence of dengue viral neurotropism in recent literatures. Dengue encephalitis has been considered a distinct clinical entity.² However, limited reports are available in paediatric age groups. Here, we report such a case from a dengue endemic north-eastern region of India.

CASE REPORT

A 3 year 6 months old boy with normal birth and developmental history presented with fever for 2 days, one episode of generalized tonic-clonic seizure for a minute and altered sensorium for 1 day. No other significant history was noted. He was hemodynamically stable on examination but poor sensorium with GCS of E1V2M4 without respiratory compromise and meningeal signs. Rest of the systemic examinations were unremarkable. Work up was done in line of possible meningoencephalitis. Dengue encephalitis/Japanese encephalitis was considered being in an endemic zone. Complete blood picture showed mild leukocytosis with normal platelet count.

Liver function test, kidney function test, electrolytes, blood sugar were normal. Fever work up showed positive Dengue immunoglobulin M (IgM). Malaria antigen rapid test, Scrub typhus, Japanese encephalitis IgM were negative. Cerebrospinal fluid (CSF) analysis showed lymphocytic pleocytosis with elevated proteins and normal glucose. CSF analysis excluded other causes like Japanese encephalitis, Herpes CE-MRI brain and Ophthalmology evaluation were unremarkable.

The patient recovered fully with symptomatic and supportive measures. Subsequent follow up did not reveal any abnormality. During the hospital stay, he never had typical findings of dengue fever like rashes, myalgia, arthralgia, leukopenia, thrombocytopenia, haemoconcentration. He did not have any significant hepatic dysfunction, coagulopathy, dyselectrolytemia and shock.

DISCUSSION

The clinical spectrum of dengue infection is broad, ranging from asymptomatic to life-threatening dengue shock syndrome.¹ It can have multisystem involvement. Dengue is primarily thought to be a non-neurotropic virus. But various neurological manifestations are reported including encephalopathy, Guillain-Barre syndrome, acute disseminated encephalomyelitis, transverse myelitis etc. DEN 2 and DEN 3 are the common serotypes causing neurological complications.^{3,4} The incidence rates varied from 0.5% to 20% in recent years.^{3,5}

The most widely recognised reported neurological complication is encephalopathy, mostly secondary to multisystem derangement. And its incidence range between 0.5% and 6.2%.² The detection of dengue virus and anti-dengue IgM in the CSF of patients with encephalopathy emphasise the potential of the viral neurotropism. Direct involvement of the brain was also postulated based on the coincidence of viremia phase with the early onset of encephalitis in the course of illness. Dengue encephalitis with dengue infection as a possible distinct clinical entity is being reported recently.^{2,3} The case definition of dengue encephalitis by Varathraj requires features viz fever, headache, seizure, and reduced consciousness, which were not explained by presence of any liver, kidney, or electrolyte derangement; shock or any intracranial haemorrhage with positive dengue antigen or anti-dengue IgM in the serum/CSF.²

The present case had fever, seizures and altered sensorium, viral encephalitis features in CSF analysis, anti-dengue IgM in blood. So, our patient fulfilled the criteria for dengue encephalitis. Dengue CSF antibodies and polymerase chain reaction was planned but not done as intramurally the tests were not available. Moreover, it has been shown that there is very low yield and poor sensitivity (0-73%) of anti-dengue IgM antibodies in CSF.⁶ So, our diagnosis of dengue encephalitis was kept consistent. Most cases of dengue encephalitis have normal neuroimaging.⁷

But in some cases, MRI may show haemorrhages, cerebral edema, and focal abnormalities involving the basal ganglia, hippocampus, and thalamus.⁸ The cases with normal neuroimaging usually have good prognosis, as in our case.⁴ Less than half of patients with encephalitis have the typical symptoms of dengue like rashes, myalgia, bleeding etc.⁸ These classical signs and symptoms were not seen in our case too. Hereby, even without the presence of these classical features, dengue should be suspected in all patients with encephalitis from endemic regions, as suggested by Solomon et al.⁴

CONCLUSION

Dengue virus, though traditionally non-neurotropic, can cause direct neuronal injury as per recent literature. Dengue encephalitis must be considered in differentials of a child with acute encephalitis even without the presence of its salient features, especially in dengue endemic areas. It is important to recognise uncommon presentations of such a common infection. Early recognition and timely intervention can prevent significant morbidity and mortality.

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