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Dengue encephalitis-A rare manifestation of dengue fever

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PEER REVIEW

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Comments

In this interesting study, a case of dengue encephalitis is reported suggesting that dengue encephalitis should be considered in the differential diagnosis of fever with altered sensorium. Although the case was negative for herpes and JEV test, there is a possibility of a coinfection by these viruses' existence, due to that sample may have been drawn before antibodies were detectable (anti-JEV).
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ABSTRACT

The clinical spectrum of dengue fever ranges from asymptomatic infection to dengue shock syndrome. Dengue is classically considered a non-neurotropic virus. Neurological complications are not commonly seen in dengue. The neurological manifestations seen in dengue are encephalitis, meningitis, encephalopathy, stroke and Guillain-Barré syndrome. Dengue encephalitis is a rare disease. We report an interesting case of dengue encephalitis from Southern India. A 49-year-old gentleman presented with fever, altered sensorium and seizures. Dengue NS-1 antigen test was reactive. Dengue IgM was also positive. CSF PCR was negative for herpes simplex 1 & 2. Dengue encephalitis should be considered in the differential diagnosis of fever with altered sensorium, especially in countries like India where dengue is rampant.

KEYWORDS

Dengue encephalitis, NS1 antigen, Neurological manifestation

1. Introduction

The clinical spectrum of dengue fever ranges from asymptomatic infection to dengue shock syndrome. Unlike other arboviral infections, dengue virus does not usually cause neurological manifestations[1]. However, in

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recent years, neurological manifestations of dengue have been documented.

The spectrum of neurological manifestations seen in dengue has been classified by Murthy into 3 categories[2]. Those related to neurotropic effect of the virus like encephalitis, meningitis, myositis and myelitis. Those due to the systemic complications of infection like encephalopathy, stroke and hypokalemic paralysis. Finally, post-infectious complications like encephalomyelitis, optic neuritis and Guillain Barré syndrome. Dengue encephalitis is an extremely rare disease[3]. We report a case of dengue encephalitis in a 49-year-old gentleman from Southern India.

2. Case report

A 49-year-old gentleman presented with 6 d history of fever and headache. He did not have any addictions. There was no past history of seizures. Clinical examination on admission revealed pulse 110/min, blood pressure 130/80 mm Hg, temperature 100.4 °F. Systemic examination was normal. He developed altered sensorium and later one episode of generalized tonic clonic seizure one day after admission. He was shifted to intensive care unit for further management.

Investigations revealed haemoglobin-14.2 g/dL, total count-2 800 cells/cu.mm, platelets-1.24 lakhs/cu mm, AST-135 U/L, ALT-110 U/L, ALP-45 U/L. Malaria test was negative. Renal function test and electrolytes were normal. Dengue virus NS-1 antigen test was reactive. Dengue-IgM was positive (37.93 panbio units). Cerebrospinal fluid (CSF) analysis showed cell count of 80 cells/microliter and all were lymphocytes. CSF proteins-151.8 mg/dL, CSF glucose-97 mg/dL. CSF Gram staining and culture were negative. CSF PCR was negative for herpes simplex 1 & 2. CSF anti-JEV (Japanese encephalitis) IgM antibody was negative.

Magnetic resonance imaging (MRI) of the brain was normal. Electroencephalogram showed diffuse slow wave discharges. He was treated with antiepileptic drugs and symptomatic treatment was given. He was discharged from the hospital after 12 d. He has no residual neurological deficits.

3. Discussion

Dengue virus has four serotypes (DENV-1 to DENV-4). Dengue usually presents with fever, headache, rashes and hemorrhagic manifestations. Dengue is classically thought to be a non-neurotropic virus[4]. The serotypes, most frequently implicated in causing neurological manifestations are DEN2 and DEN3[5]. Cases of dengue encephalitis has been reported by Solomon *et al.* and recently by Borawake *et al.* from India[6,7]. However, there is hardly any recent data documenting dengue encephalitis in adult patients from India.

The main symptoms of dengue encephalitis are headache, seizures and altered consciousness[8]. Typical symptoms of dengue fever like myalgias, rash and bleeding are seen in less than 50% of encephalitis cases[6]. So Solomon *et al.* have suggested that dengue should be considered in all encephalitic patients in endemic areas, regardless of the presence or absence of classical features. Our patient did not have classical features of dengue like rashes or hypotension.

The criteria for dengue encephalitis are: i) fever; ii) acute signs of cerebral involvement; iii) presence of anti-dengue IgM antibodies or dengue genomic material in the serum and/or cerebrospinal fluid; iv) exclusion of other causes of viral encephalitis and encephalopathy[9]. Varathraj also has defined criteria for dengue encephalitis[8]. Our patient had fever with seizures and altered sensorium and we could demonstrate dengue-IgM in his blood. We also ruled out other causes for encephalitis in our patient by appropriate investigations. So our patient satisfied the criteria for dengue encephalitis.

MRI findings in dengue vary. MRI may be normal but hemorrhages, cerebral edema, and focal abnormalities involving the basal ganglia, hippocampus and thalamus can be seen[10]. MRI brain can also show extensive lesions involving the midbrain, cerebellum, thalamus and medial temporal region on both sides[3]. MRI brain in our patient was normal. Prognosis is good for dengue encephalitis[6,11].

4. Conclusion

Common infections in routine clinical practice that cause fever with altered sensorium in adults in our country are cerebral malaria, herpes encephalitis and pyogenic meningitis. Dengue encephalitis should be considered in the differential diagnosis of fever with

altered sensorium, especially in countries like India where dengue is rampant. Physicians must have a high index of suspicion or else this uncommon manifestation of a common disease can be easily missed.

Conflict of interest statement

We declare that we have no conflict of interest.

Comments

Background

DF is associated with fever, headache, myalgia, bone/joint pain and rash, while DHF is characterized by the symptoms in DF combined with spontaneous bleeding and plasma leakage which may progress to dengue shock syndrome. Dengue encephalitis is a rare disease and their mechanism of pathogenesis has not been understood yet.

Research frontiers

In this study, an interesting case of dengue encephalitis from Southern India is reported. This case was positive for dengue NS1 and dengue IgM test, and negative for other encephalitis viruses such as herpes and JEV. The study suggests a differential diagnosis of neurological disease, where dengue encephalitis is considered.

Related reports

The differential diagnosis of neurological disease in viral infections may be common for others encephalitis viruses such as West Nile virus. Although it has been reported that dengue virus induces encephalitis, the differential diagnosis for dengue encephalitis is not frequent in the laboratories.

Innovations and breakthroughs

The differential diagnosis of neurological disease in viral infections must consider dengue encephalitis due to the number of the cases has increased in the last years. It could be interesting to have the number of the cases of dengue encephalitis considered in the year.

Applications

Dengue encephalitis in the differential diagnosis would offer epidemiological data, which permit better understanding of disease, better intervention to treat patients and prevent or control epidemics.

Peer review

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