Dengue Encephalitis

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Abstract
Dengue infection accompanied by unusual complications and manifestations has been described before. Here we report a case of dengue encephalitis who was IgM positive for dengue serology and had presented to us with only motor weakness after an acute febrile episode. Dengue presenting as encephalitis is in itself a very rare feature and that too, pure motor weakness has hardly ever been reported before.

Introduction
Dengue encephalitis as a manifestation of dengue is a rare entity, the incidence being about 4-5% only. Dengue encephalitis can present with different manifestations, the commonest being alteration of consciousness seen in 52.3% cases. Others include meningitis (34%), seizures (11.2%), acute flaccid paralysis in 4% cases, myositis in 4% cases. Our patient was a case of dengue encephalitis with only left motor hemiplegia with no sensory or cranial nerve involvement. The purpose of writing this was to sensitize ourselves that out of the myriad presentations, dengue encephalitis can also present with only motor symptoms without any other neurological manifestations.

Case
A 38 years old previously healthy male presented to us with fever (100-102°F) since 7 days and weakness of left arm and leg since 2 days. His fever used to get relieved with paracetamol. Five days after the onset of fever he had 2-3 episodes of vomiting followed by loss of consciousness which lasted for about 20 to 30 minutes. This was associated with clenching of teeth and tightening of limbs. On regaining consciousness the patient noted left sided weakness. Urgent CT brain raised suspicious of an inflammatory granuloma in right high parietal region with edema. His platelet count was 59000 cumm with NS1 positive for dengue by ELISA. Other blood parameters were within normal limits. There was no history of petechiae or bleeding from any site and his vital parameters were stable. Therefore, he came to our hospital where he was admitted as a case of dengue with left hemiplegia. There was no history of bleeding from any site. He was conscious, cooperative, well oriented in time, place and person. BP - 120/80 mm Hg, temperature - 100° F, pulse -90 beats /min.

On nervous system examination - power was 0/5 in both left upper and lower limbs and 5/5 in right upper and lower limbs. Left plantar showed absent and right plantar showed flexor response. B/L pupils had normal size with normal reaction to light and no cranial nerve deficit. There were no meningeal signs or any sensory loss. Gait and coordination could not be assessed. Other systems had no significant findings. At our centre median platelet count was 1.5-1.9 lacs/cumm and IgM for dengue was positive. CSF was done showed an albumin-cytological dissociation. Cytology- no cells and biochemistry - sugar 69 mg/dl, protein 105 mg/dl. Malaria card test was negative. Other viral markers and rickettsial serology was negative.

MRI (Figure 1) brain was suggestive of patchy discrete and confluent T2W/FLAIR hyperintensities seen involving the periventricular, subcortical and deep white matter, B/L frontoparietal region, B/L thalami and B/L cerebellar hemispheres. There was patchy restriction involving the B/L frontal region and B/L cerebellar hemispheres. Patchy areas of blooming (likely haemorrhage) involving right centrum semiovale and B/L cerebellar hemispheres was also reported. These findings raised a possibility of haemorrhagic encephalitis was given.

The patient was treated on the lines of dengue with paracetamol and i.v. fluids only. There was reduction in spikes of fever with a sense of well-being and improvement in power. On the 5th day after admission-His power: Left LL/ Left UL = 4/5 and 2/5.

On the 12th day after admission,

Fig. 1: Patchy discrete and confluent T2W/FLAIR hyperintensities (arrows) involving b/l cerebellar hemispheres, subcortical and deep white matter of b/l frontoparietal region

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patient was discharged. He was afebrile and power was the same as above. About 10 days after discharge when the patient followed up in the OPD, he had completely recovered and had regained his full power in left upper and lower limb.

**Discussion**

Dengue virus belongs to family Flaviviridae, which also includes yellow fever, Japanese encephalitis, West Nile virus. Usually it is considered as a non-neurotropic virus, though nowadays neuroinvasion has been reported. Dengue encephalitis is classified as severe dengue in the latest WHO classification 2009.

The pathogenesis of dengue encephalitis has been postulated to be the transient compromise in the integrity of the blood brain barrier with infiltration of dengue virus infected macrophages in CNS. Vasculitis with resultant fluid extravasation also has a role in its manifestations.

**Diagnosis**

The gold standard for diagnosis of any viral encephalitis is virus isolation in cell culture (Class 1a). Since newer methods like polymerase chain reaction (PCR) assay are quicker, more widely available and they are more often used. Class 1b evidence suggests intrathecal antibody production to a specific virus.

This said, the published literature for dengue encephalitis in itself, has shown very low yield of evidence for dengue in CSF. In Vietnam, Solomon et al. made a clinical diagnosis of dengue encephalitis in nine encephalopathic patients. All had dengue confirmed in the serum. However, virus and/or antibody were found in the CSF of only two of these patients. Also, seven patients showed no classic features of dengue infection, leading the authors to suggest that dengue be considered in all encephalitic patients in endemic areas, regardless of the presence or absence of classical features.

Back home, a study conducted in SGPGI Lucknow, included 16 confirmed dengue patients by serology with encephalopathy. Out of these 6 patients had a metabolic and hypoxic cause, 2 had intracranial haemorrhage as the cause while 8 patients had no cause. Out of these 8 cases, only 3 patients had CSF IgM ELISA for dengue positive.

In our patient also, CSF anti dengue antibody was negative but his IgM serology was positive.

**Brain Imaging**

In our patient, MRI Brain also helped us in confirming the diagnosis of dengue encephalitis. Although there are no pathognomonic findings of the same, but general findings consistent with viral encephalitis include cerebral edema, white matter changes, and (later) necrosis and brain atrophy. Infarction or hemorrhage may also be visible. Breakdown of the blood-brain barrier may be visualized as signal enhancement on MRI with gadolinium contrast. MRI lesions in the hippocampi, temporal lobes, pons, and spinal cord can also be seen.

**Prognosis**

Reported mortality and morbidity due to dengue encephalitis itself is low with most survivors recovering fully. In the studies mentioned above all patients recovered completely with residual symptoms in only 3 patients in one study.

Neurologic manifestations in dengue are increasingly being recognized but remain relatively poorly understood. Though the common presenting features of dengue encephalitis are fever, headache, reduced consciousness and seizures, other neurologic manifestations may also be evident and classical features of dengue may not always be present. Virus or antibody is reliably isolated from the serum although CSF samples are often negative. Thus dengue infection should be considered in cases of encephalitis in the tropics in which the disease is endemic as echoed by Solomon et al and Hommel et al.

**References**