Dengue virus encephalitis presenting as Artery of Percheron infarct: A case report

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Abstract
Dengue is a common viral infection and it occurs worldwide. It can present from a clinically silent infection to dengue fever, dengue hemorrhagic fever and fulminant dengue shock syndrome. Dengue viral infection can involve brain by either causing encephalopathy or encephalitis. Here we report case of a 40 years old female who presented with complaints of fever for two days followed by ptosis of left eye and altered levels of consciousness which were sudden in onset. MRI Brain was done which was showing hyperintensity in T2W/FLAIR and restricted diffusion on DW images in bilateral thalamus and midbrain. Serology came out to be positive for dengue IgM antibody. So on the basis of clinical history, MRI findings, positive serology and exclusion of other causes, diagnosis of dengue virus encephalitis was made.

Keywords: Dengue Virus, Dengue Virus Encephalitis, Artery of Percheron, Infarct.

Introduction
Dengue fever is a common viral infection and occurs worldwide but is even more common in the tropical countries. Course of dengue viral infection is often unpredictable. It can vary from clinically silent infection to uncomplicated dengue fever, dengue hemorrhagic fever, and fulminant dengue shock syndrome. Neurological manifestations in dengue viral fever usually occurs with multisystem dysfunction. It can cause electrolyte imbalance, shock associated with vascular leak leading to cerebral hypoperfusion, cerebral edema, and haemorrhage.[1-3] Previously encephalitis was considered a rare manifestation of dengue viral infection but recently there have been many case reports of dengue viral encephalitis, so now it is important to consider it in the differential diagnosis of encephalitis and know the Brain imaging findings so as to reach a proper diagnosis. Here we present a case of dengue virus encephalitis with involvement of the bilateral thalamus and midbrain.

Case Report
A 40 years old normotensive, normoglycemic female presented with chief complaints of fever for two days followed by sudden onset diplopia and inability to open the left eye along with slurring of speech and altered levels of consciousness. There was no history of headache, vomiting, seizures or trauma preceding the complaints of altered sensorium. On examination, patient's vitals were within normal limits. She was confused and was not responding to the verbal commands appropriately. Speech was dysarthric and left eye ptosis along with pupillary asymmetry with left eye pupil dilated and non-reactive to light. She was moving all the four limbs on painful stimuli.

Her Hemoglobin was 10.5g%, Total leucocyte count was 11300cumm/l, Platelet count was 236000cumm/l, Fasting Blood Glucose was 80mg%, Blood Urea was 25mg%, Serum creatinine was 0.7mg%, Serum Bilirubin was 0.3mg%, SGOT was 27IU/L, SGPT was 24IU/L, Serum Sodium was 134 meq/l and Serum Potassium was 4.0meq/l. Cerebrospinal fluid studies showed Total cell count of 4 cells/cumm, proteins- 53 mg/dl, sugar- 108mg/dl and adenosine deaminase activity- 4.2U/L. MRI Brain was done which was showing hyper intensity in T2W/FLAIR and restricted diffusion on DW images in either side of mid brain and bilateral thalamus with possibility of Artery of percheron infarct. As the complaints were preceded by fever for two days so CSF for west nile virus, herpes simplex virus, chandipura virus, Japanese encephalitis virus along with dengue virus serology were sent. Patient came out to be positive for IgM antibody for degue virus and all other tests were negative. Patient was given supportive treatment during hospital stay and she improved to some extent in form of improved levels of consciousness, became responsive to verbal commands and started taking orally during hospital stay and was discharged.

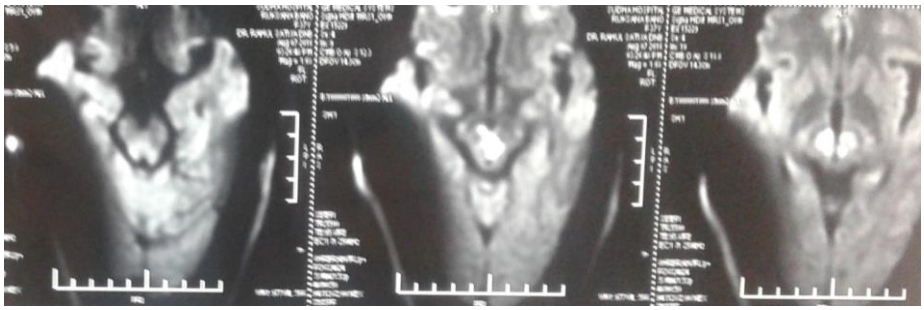

Fig. 1: Diffusion weighted imaging of MRI brain (axial sections) showing hyper intensity in bilateral thalami and midbrain.

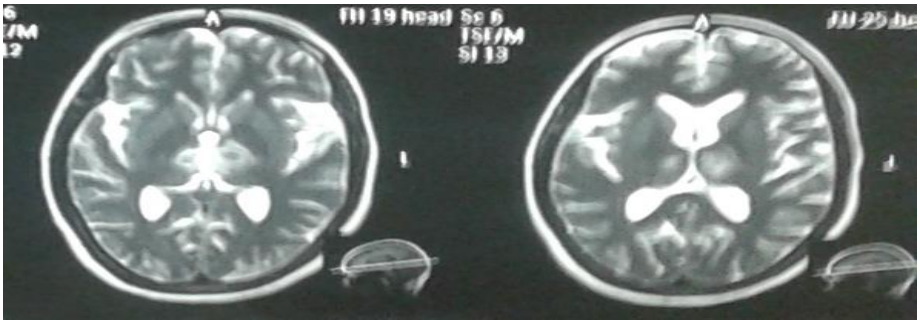

Fig. 2: T2 weighted image of MRI Brain showing hyper intensity involving bilateral thalami

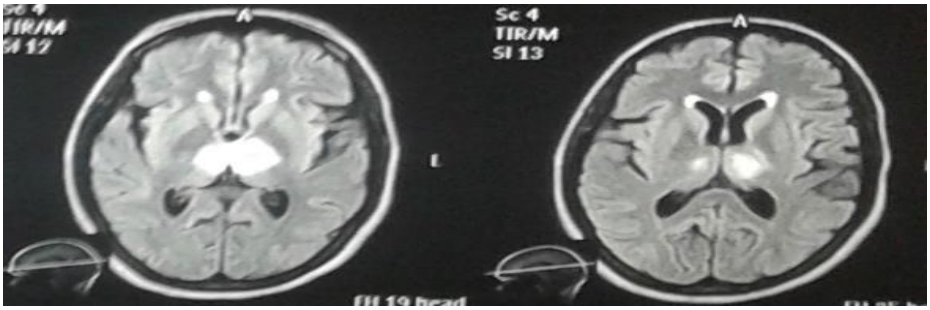

Fig. 3: FLAIR images showing involvement of either side of mid brain and bilateral thalami

Discussion

Dengue virus is a single-stranded RNA virus belonging to Flaviviridae family. Dengue viral infections are very common in Southeast Asia and all 4 serotypes are found. Most commonly serotypes 2 and 3 cause neurological involvement. Headache, alteration of consciousness, irritability, insomnia, seizures, focal neurological deficits associated with encephalitis and encephlalopathy are the most common neurological manifestations observed in dengue fever. Numerous other neurological manifestations like transverse myelitis,[4] myositis[4] and Guillian-Barre syndrome[5] have been reported. Dengue encephalitis is a well-recognized entity with incidence ranging from 0.5 to 6.2%. Although the exact mechanism by which the blood brain barrier is crossed by the virus is unclear, the most common accepted theory is that the entry occurs through infected macrophages.[6] MRI is preferred over CT for better visualization of white matter changes and posterior fossa lesions. It also excludes other differential diagnoses. MRI findings of Dengue encephalitis are not very well described in literature.

Our patient presented with history of fever followed by ptosis of left eye and altered sensorium along with MRI findings of hyper intensity in bilateral thalami and midbrain on T2/FLAIR images with restriction in DW images which can be seen with artery of percheron infarct. Similar findings can be seen in viral encephalitis so CSF and serology for viral infections was sent. We are reporting this case to highlight the occurrence of artery of percheron infarct and its MRI finding which has not been previously reported in cases of dengue virus encephalitis.

Conclusion

Dengue virus infection as cause of encephalitis is rare. It should be suspected in patients from endemic region who present with characteristic clinical and imaging features. Although previously considered to be non-neurotropic, now there is increasing evidence of neurotropic nature of the dengue virus as it has been

isolated from CSF of the affected patients and can lead to different array of clinical features along with corresponding imaging features which were previously not recognised. The case highlights occurrence of Artery of Percheron infarct in case of Dengue virus encephalitis.

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