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Research Article

Multiple cranial nerve involvement in a case of dengue meningoencephalitis - a rare presentation

Dr. Amit Daphale [1], Dr. Sourya Acharya[2] , Dr. S. Shukla[3] , Dr. Shahsiraj Lahoti[1]

[1]Junior resident, Department of internal medicine.

[2]Professor, Department of internal medicine.

[3]Professor, Department of pathology.

Acharya Vinoba Bhave Rural Hospital and Jawaharlal Nehru Medical College, Sawangi(meghe), Wardha, Maharashtra

ABSTRACT: Dengue fever, an arboviral infection, is a common infection in tropical countries especially during outbreaks of its epidemics. Caused by dengue viruses of four types, it occurs in humans due to bites from aedes aegyti mosquitoes.

Introduction :

Dengue fever, an arboviral infection, is a common infection in tropical countries especially during outbreaks of its epidemics. Caused by dengue viruses of four types, it occurs in humans due to bites from aedes aegyti mosquitoes. The mosquito feeds during th day and has a propensity for man-made habitats containing water. It ranges from being asymptomatic to life threatening hemorrhagic fever and dengue shock syndrome. Common manifestations are fever, rash , arthralgia, petechial spots etc. However neurological compications, cranial nerve involvement in particular, are unusual. We present such a rare presentation of dengue fever leading to encephalitis leading to multiple cranial nerve palsy.

Case report :

A 28 year old female presented with complaints of fever without chills since 12 days, headache since 10 days, generalized swelling all over the body since 8 days, drooping of right eyelid since 6 days, diplopia since 6 days and drowsiness since 2 days. There was history of persistent vomiting and loss of appetite. On presentation patient's pulse was 104/min, BP was 100/60 mmHg and respiratory rate of 18/min. there was no significant lymphadenoapthy or rash. Her right eye was slightly deviated towards right side(laterally) and she was not able to carry out movements of eyeball in any direction.

CVS, RS and per abdomen systemic examinations were normal. On CNS examination, patient was drowsy but arousable, not following verbal commands but was moving all 4 limbs on deep painful stimulus. DTR was exaggerated in bilateral upper and lower limbs, hypertonia was present in all fourlimbs, bilateral plantars were extensor. She had neck stiffness and a positive kernig sign.

The baseline hemogram showed a Hb of 11 gm%. The platelet count was 46,000/mm^3 for which patient received single donor platelet transfusion. WBC count was 6400/mm^3 with normal differential count and normal WBC morphology. Serum electrolytes were normal. Liver enzymes were also normal. Paracheck and peripheral smear for malarial parasite was negative. ELISA for Leptospirae and widal test was negative. Blood culture, urine culture showed no growth. Sputum for AFB(2 morning samples collected on consecutive days) was also investigated and was normal. Her chest X ray showed no obvious abnormality Patients IgM antibody was positive and she was diagnosed as a probable case of dengue encephalitis.

Lumbar puncture was done and CSF opening pressure was normal. CSF adenosine deaminase (ADA) and ELISA for Japanese and herpes encephalitis were negative.CSF cultures and AFB test was also negative. A further analysis showed a TLC of 35 cell with differential counts showing lymphocytic pleocytosis. Sugar was 55 protein was 150 suggestive of viral meningitis. Magnetic resonance imaging (MRI) was done which showed features suggestive of encephalitis, mostly post viral.chest x ray and ultrasonography was abdomen was normal.

This patient was treated with intravenous fluids, iv mannitol, iv antibiotics given prophylactically to prevent bacterial infections,paracetamol, anti epileptics and iv methylprednisolone 1 gm iv for 3 days tapered gradually by prednisolone. The patient was showing gradual improvement in the movements of the right eye but did not recover completely and was discharged on request. Later on follow up after 15 days patient showed recovering of right lateral rectus muscle n and patient currently is able to move the eye ball completely towards right. She is on regular follow up.

Fig. 1 – ptosis of the right eye s/o involvement of 3rd cranial nerve

Fig. 2 – normal gaze of the patient

Fig. 3 – patient cannot perform medial rotation of right eyeball s/o medial rectus palsy again s/o involvement of 3rd cranial nerve

Fig. 4 – patient cannot perform uproling of right eyeball s/o superior rectus and inferior oblique palsy s/o again involvement of 3rd cranial nerve.

Fig 5. – patient cannot perform downward rotation of right eyeball s/o inferior rectus palsy and superior oblique palsy s/o of 3rd and 4th cranial nerve involvement.

Fig 6 . patient cannot perform lateral rotation of right eye (compare medial rotation of left eye and lateral rotation of right eye) s/o involvement of 6th cranial nerve

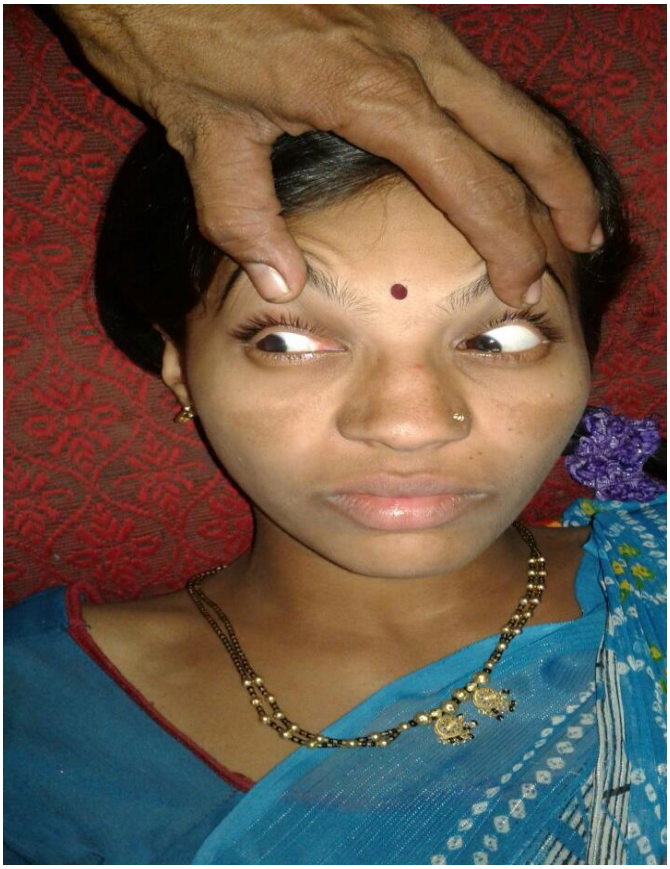

Fig. 7 – follow up picture after 15 days. Patient is now able to perform lateral rotation of right eye completely.

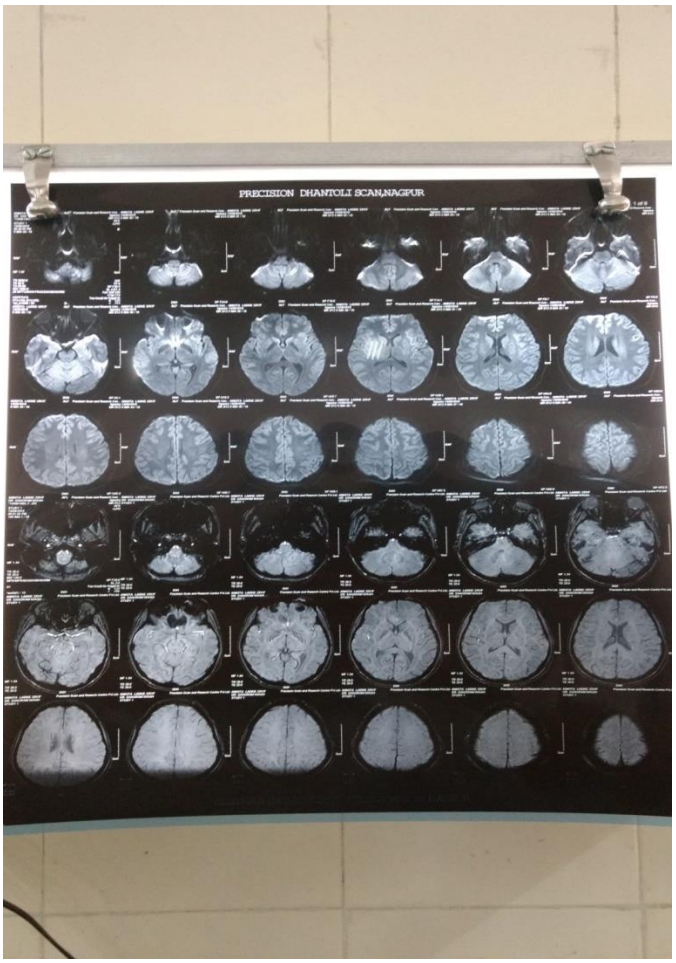

Fig 8 – MRI brain s/o features of encephalitis.

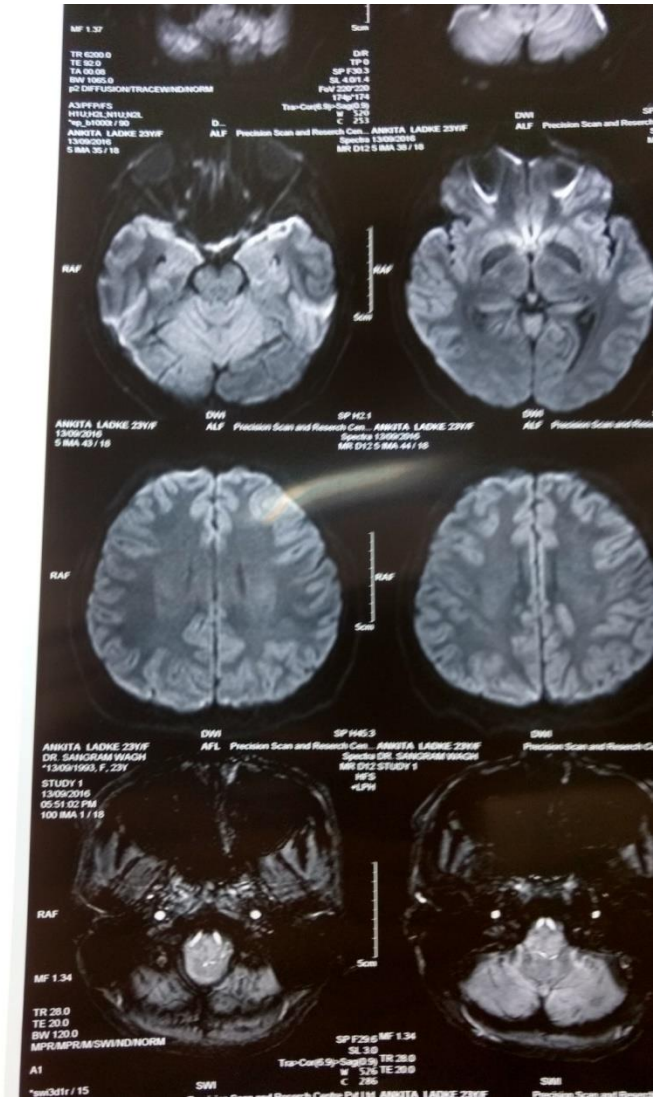

Fig 9 – MRI brain s/o features of encephalitis.

Discussion :

Most dengue cases, though sporadic cases have been reported, are usually reported during epidemics in India and other parts of the world. Though, there are some reports of nervous system involvement in various parts of the world, the neuroinvasive properties of dengue virus are not well known 2,3

Dengue fever encephalitis is a rare entity.4,5. The symptoms and signs of nervous system involvement in dengue infection predominantly involve altered level of consciousness, seizures, pyramidal tract signs, meningeal signs, headache and encephalitis. Myelitis and Gullain Barre syndrome are the conditions associated with peripheral nervous sytem.6,7 The pathophysiology of the neurovirulent property of this virus is not clear. The infiltration of virus infected macrophages into the brain is one pathway of entry into the brain in dengue encephalitis ,since in dengue fever the virus mainly replicates in cells of the acrophage line.5 Dengue virus type 2 has been demonstrated in the CSF of patients of dengue encephalitis. 8 Sserotype 4 of the dengue virus has been detected by immunohistochemistry and by RT-PCR in inferior olivary nucleus of medulla and granular layers of cerebellum,

furthermore, immunoreactivity has been observed in endothelial cells, astrocytes, neurons and microglia.1 Extended immunohistochemical studies in various patients have shown the virus positive cells located mostly with Virchow Robin space of medium size and small veins, infiltrating the white and gray matter are often close to neurons displaying cytopathic features. However, it is not clear whether virus infected macrophages or virus free particles cause the lesions in nervous system by immune, metabolic and/or direct cytopathic effect.

MRI shows various focal and diffuse lesions in different studies involving mid brain, thalamus, hippocampi, temporal lobes, pons, and spinal cord. In our case demyelination was also seen in bilateral gangliocapsular regions which has not been reported so far as a site of involvement. Clearly, much of the data is disparate and a conclusive characterization of the MRI features of dengue encephalitis is not yet possible, although the focal nature of imaging abnormalities adds weight to the theory of viral neurotropism. 9-12 General management of viral encephalitis includes monitoring and maintenance of the airway and of adequate oxygenation, hydration, and nutrition. Seizures may be controlled by standard anti-epileptic drugs, and raised intracranial pressure by head-up nursing, mannitol, and steroids. 13 If bacterial infection remains a possibility then empirical antibiotics appropriate to local organisms should be given. In endemic areas other CNS infections, including cerebral malaria, toxoplasmosis, neurocysticercosis, human immunodeficiency virus (HIV), and tuberculosis should also be excluded, along with local viruses, for example, Japanese encephalitis in Asia and West Nile virus in Africa. A high index of suspicion is important to arrive at the correct diagnosis.

Conclusion –

Presentation of Dengue fever, a common infection especially in tropical countries, ranges from being asymptomatic to life threatening hemorrhagic fever and dengue shock syndrome. Common manifestations are fever, rash , arthralgia, petechial spots etc. However neurological compications, cranial nerve involvement in particular, are unusual. With this case we conclude atypical manifestation of dengue fever presenting with encephalitis and cranial nerve involvement. Hence, in patients presenting with neurological manifestation without any traceable etiology, suspicion of dengue fever with involvement of neurological system should be made.

CONFLICT OF INTEREST

The authors declare no conflict of interest whatsoever arising out of the publication of this manuscript.

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