Diplopia and Dengue; An Isolated Abducens Nerve Palsy in a Child with a Severe Dengue Fever: A case report and review of literature.

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Isolated Abducens Nerve Palsy in a Pediatric Patient with Severe Dengue Fever.

Dear Editor,

Dengue fever is currently one of the most important mosquito-borne viral infection in the world, and it affects more than 40% of the world’s population, with an estimated 2.5 billion people at risk of contracting the infection [1, 2]. Dengue can be classified by severity; dengue with or without warning signs and severe dengue [3]. Severe dengue is defined by at least one of the following: severe bleeding, severe organ impairment, or plasma leakage [3]. Ocular manifestations are uncommon and neuro-ophthalmic involvement is even less common [4, 5]. Cranial nerve palsy is also an uncommon neurological manifestation of dengue infection [6, 7, 8].

Here we report a rare case of isolated abducens nerve palsy in a pediatric patient with severe dengue fever.

A 4-year-old girl presented to our center in a state of decompensated shock suspected to be due to dengue fever. She was a previously healthy girl with no previous medical illness and was from Kuala Lumpur, Malaysia. There was no history of recent travel outside the country. She presented with high fever, headache and malaise that had persisted for the past 5 days and was admitted to a district hospital. As her clinical condition deteriorated, she was transferred to our center. Upon presentation, she had unrecordable blood pressure that required inotropic and ventilatory support. On admission, she was intubated and started on dopamine, human albumin 20% and transfused fresh frozen plasma. She initially experienced acute renal failure that required continuous veno-venous hemodiafiltration (CVVHDF). After excluding other possible differential diagnoses, dengue IgM antibodies were confirmed with an enzyme-linked immunosorbent assay (MAC-ELISA), with an index value of 1.80 and positivity for dengue viral protein non-structural protein 1 (NS1). Her full blood count revealed thrombocytopenia with a platelet count of 95,000/mm³. She was successfully weaned from ventilation and inotropic support on the 5th day of admission and regained full consciousness. After 3 days of post-extubation, she complained of double vision.
Figure 1. Nine eye positions of the eye. A few days after intensive care, limited abduction (-4) was seen on left gaze for the left eye.

Ocular examination revealed a visual acuity of 3/3 (equivalent to 6/6) using the Kay Picture Chart for both eyes. Relative afferent pupillary defect was absent. The anterior segment of both eyes was unremarkable. Extraocular movements were limited (-4) for the left eye in left gaze (Figure 1). Fundus examination revealed normal optic discs and retina. Other cranial nerves were normal. Urgent MRI brain and orbit assessment were normal. She was diagnosed with severe dengue fever with isolated left abducens nerve palsy. On follow-up, the left abducens nerve palsy resolved over a 3-week period.

Ophthalmic manifestation of dengue infection is common, with an increasing number of cases reported. However, the pathophysiological mechanism of dengue-associated neuro-ophthalmic complications is still poorly understood; a previous report hypothesized that the mechanism immune-mediated rather than due to direct viral infection [8, 9]. On presentation, onset of visual signs and symptoms is typically delayed, as demonstrated by our case, which supports the immune-mediated hypothesis. Less commonly reported ophthalmic manifestations include optic neuropathy and cranial neuropathy [7-9]. In adults, the most common cranial nerves involved are the oculomotor and facial nerves [8, 10, 11]. Only a few cases of abducens nerve palsy have been reported, and all cases have been adults [8, 10, 11]. Another hypothesis for the basis of abducens nerve palsy is hypovolemic shock; however, the patient’s hemodynamic values
had recovered, and she was not receiving inotropic support when the symptoms occurred. To the best of our knowledge, this is the first isolated cranial nerve palsy caused by dengue fever to be reported in this age group.

The prognosis for cranial nerve palsy, at least in the adult population, has been positive, with complete recovery expected, as in this case [10, 11]. The patient was conservatively managed and under close observation until she recovered.

Neuro-ophthalmological complications in dengue infection will become increasingly important as dengue epidemics continue and affect all age groups [4, 8, 10, 11]. Due to the diversity of clinical manifestations [3, 4], it is important that the treating physicians are aware of the rare associated complications, including isolated abducens nerve palsy, even in pediatric patients.

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