

MRI documentation of acute perioptic hemorrhage in dengue syndrome - A case report

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Key words: Dengue fever, globe perforation, perineural hemorrhage

20-year-old male patient came with complaints of fever since 4–5 days. His general examination revealed hemodynamically stable state. Complete blood counts showed Haemoglobin 11.4 gm%, TLC 3,000 with 58% lymphocytes, 40% polymorphs, and 2% eosinophil and platelet count of 8,000/cumm. PT/INR were normal and there were no signs of disseminated intravascular coagulation (DIC). He was diagnosed to have positive dengue NS1 Antigen test and was transfused platelets (6 units of random donor platelets and 1 unit of single donor platelets) in view of thrombocytopenia. The next day, he developed painful blurring of vision associated with periorbital swelling.

On ophthalmic examination, his visual acuity was no perception of light in both eyes. Anterior segment examination

showed subconjunctival hemorrhage and chemosis, shallow anterior chamber with hyphema in both eyes. No details of the posterior segment visible [Fig. 1a]. Perkins tonometry revealed raised intraocular pressure (IOP), 32 and 34 mm Hg in right and left eyes respectively. He was not fit for any surgical intervention at this stage due to his systemic status. He was started on topical anti-inflammatory, cycloplegics, IOP lowering medications (Tab Diamox and Injection Mannitol) and systemic medication of paracetamol and IVMP (Intra Venous Methyl Prednisolone).

Magnetic Resonance Imaging (MRI) was done, which showed bilateral diffuse irregular chorioretinal thickening with flair hyperintensities s/o hemorrhage [Fig. 1b]. The patient continued to have increasing proptosis with progressive tightening of orbits. Computed Tomography (CT) scan done a day later, showed extensive choroidal hemorrhage in both globes (left > right) with vitreous hemorrhage in left eye [Fig. 1c]. There was loss of contour of the left globe suggestive of globe disruption with prolapse of uveal tissue and lens.

Lateral canthotomy and cantholysis for both eyes under IV sedation was performed to relieve the orbital pressure. Post procedure, proptosis decreased and sub conjunctival hemorrhage started resolving, however, there was persistent loss of perception to light. VEP showed absent wave pattern in both eyes. The platelet counts had normalized by this time. Therefore, MRI was repeated to look for any optic nerve insult and to ascertain the orbital and brain status.

Repeat MRI with selective sequences such as susceptibility weighted imaging (SWI) was performed. Bilateral perineural hemorrhage was identified along the optic nerves in

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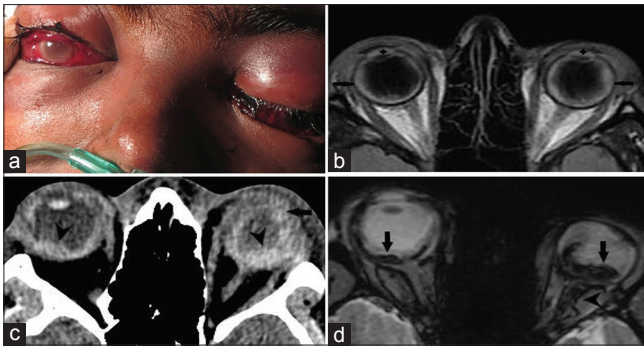


Figure 1: (a) Clinical picture showing bilateral tense orbits with right subconjunctival hemorrhage and blood staining of cornea due to hyphema. (b) Axial T2 Fluid attenuation inversion recovery (FLAIR) image (magnified view) showing bilateral chorioretinal hemorrhage (arrow) with hyphema (asterix). (c) Axial Non-contrast CT image showing bilateral choroidal hemorrhage (arrowhead) with left globe disruption (arrow). (d) Repeat MRI: Axial SWI image showing areas of blooming along posterior surface of the globes (arrow) and along optic nerve sleeve (arrow head) s/o perineural hemorrhage

the form of blooming on thin section images of SWI with possible compression and thinning of the optic nerve (left > right) [Fig. 1d].

In an attempt to salvage the right eye, vitrectomy was performed to remove the organized vitreous hemorrhage. On the operating table, scleral perforation was identified in right eye also with a very dense organized vitreous hemorrhage (chalky white in color) and when this was cleared, the disc appeared totally pale. The perforation was repaired and a corneal transplant was done. He was periodically followed up; however, continued to have no perception of light.

Discussion

Bleeding diathesis in dengue hemorrhagic fever (DHF) is caused by a combination of plasma leakage, vasculopathy, thrombocytopenia, platelet dysfunction, and coagulopathy.^[1,2] Spontaneous hematomas in dengue fever have been described in the thorax, abdominal cavity, retroperitoneum, muscle parenchyma, and joints.^[3] However, it's extremely rare to get spontaneous perineural hematoma in dengue which makes our case unique.

Mehtani AK *et al.* reported a case of acute compressive ulnar neuropathy due to perineural hematoma, following an attempt at intravenous cannulation in dengue patients having thrombocytopenia.^[4] In contrast, in our case the peri-optic hematoma occurred spontaneously without any prior intervention.

Intraocular and intra-orbital hemorrhage is seen in numerous settings, most commonly in trauma, iatrogenic, vascular anomalies, and bleeding disorders.^[5] Jagat Ram *et al.* reported a case of intraocular and orbital hemorrhage in a patient during cataract surgery who was later diagnosed as having dengue fever.^[6] However, hemorrhage along the optic nerve has not been reported so far.

MRI is the imaging modality of choice for evaluation of optic nerve pathway. Imaging at 3Tesla MRI is preferred over 1.5Tesla as it offers superior signal to noise ratio (SNR) and spatial resolution.^[7] As optic nerve is a small structure, imaging with thin sections 3 mm or less is preferred. Susceptibility weighted imaging (SWI) is a MRI sequence that exploits the susceptibility variations between tissues and combines magnitude and phase images to detect these differences.^[8] SWI is routinely used to detect bleed within the brain parenchyma which appears as blooming foci. The same principle is applied in orbital imaging to detect peri-optic hemorrhage as illustrated in the present case.

The prognosis of peri optic hemorrhage is poor; however, prompt and early diagnosis can reduce the chances of acute compressive neuropathy. Optic nerve sheath decompression can be tried in these cases. The role of starting immunoglobulins early should be further studied to prevent devastating outcomes.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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