



Unilateral Optic Neuritis after Dengue Viral Infection

KEYWORDS

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ABSTRACT

We report a case of optic neuritis after dengue viral infection, a phenomenon very rarely seen.

We report a 54 years old male patient, presented with headache, giddiness and decreased vision in left eye after having had a benign form of dengue fever 2 weeks before. Therapeutic intervention with corticosteroid therapy resulted in benign evolution. The optic neuritis is very rare in dengue virus infection.

INTRODUCTION

Dengue fever is a viral infection transmitted by the female mosquito *A. aegypti* and *A. albopictus* has diurnal habits. The dengue virus is the *Flaviviridae* family, arbovirus group B and identified four serotypes (1, 2, 3 and 4). Dengue can manifest itself in many ways from a simple cold to a hemorrhagic fever and shock, threatening life. The clinical features of viral dengue infection can be classified into five presentations: non - specific febrile illness, dengue fever, hemorrhagic fever dengue, hemorrhagic fever dengue with shock syndrome, and other unusual syndromes such as encephalopathy and hepatitis⁽¹⁾. There are few reports of the neurological manifestations of dengue in the form of severe encephalitis. The neurological involvement in dengue infection can be seen after the acute disease has given and is believed to be an immune - mediated expression⁽²⁾. There are some ocular manifestations in dengue, including the most common are: retro-orbital pain⁽³⁾, retinal hemorrhages, subconjunctival hemorrhage⁽⁴⁾; manifestations such as optic neuritis⁽⁵⁾, neovascular maculopathy⁽⁶⁾, choroidal effusion⁽⁷⁾. Roth spots⁽⁸⁾, vasculitis, exudative retinal detachment and anterior uveitis are rare⁽⁹⁾. We describe a case that showed low visual acuity, papillitis and visual field alterations after viral infection due to dengue.

Case history:

A 54-year-old man presented with history of giddiness, headache and decrease vision in left eye since two days. Two weeks before, the patient was admitted in the same hospital for dengue fever which was proved by presence of IgM antibodies. He was treated conservatively with intravenous fluids, electrolytes, and glucose. His recovery was uneventful. Two weeks after discharge, patient experienced gradual loss of vision in his left eye, giddiness and headache. On Physical examination, he was afebrile with vitals were normal. On systemic examination except for hepatomegaly there were no abnormal findings. Extra ocular motility was normal without pain. No other neurological deficits found. On ocular examination, he had visual acuity of counting fingers close to face with accurate projection of rays in left eye and 6/6 in right eye. Pupillary examination revealed relative afferent pupillary defect (RAPD) on the right side. Rest of the anterior segment examination was unremarkable in both eyes. Fundus examination of the left eye showed an elevated optic disc with hyperemia, obliterated cup, venous engorgement and peripapillary edema. The right eye fundus was WNL.

Laboratory results included hemoglobin 15.3 g/dL, white blood count 6,310/mm³ (30% polymorphnuclear cells, 52% lymphocytes, 14% monocytes, and 2% atypical lymphocytes), platelets 238,000/mm³, and LFT/ RFT/Coagulation studies were normal. Serologic analyses for syphilis (venereal disease research laboratory

and fluorescent treponemal antibody absorption test) were negative. Lumbar puncture revealed clear and colorless cerebrospinal fluid with normal glucose, protein, cell count, and differential. A brain and orbit study of MRI was normal.

The patient was treated with intravenous methyl-prednisolone 500 mg once a day for 3 days, followed by prednisolone 60 mg/d slowly tapered over 4 weeks. Visual acuity improved gradually, being 6/36 on day 1 in left eye; 6/18 after 4 days, returning to 6/9 OD (left eye) after 8 months with color vision testing.

Discussion:

In dengue infection the onset is sudden with a high fever, headache and a lot of pain in the body. A feeling of intense tiredness, lack of appetite, and sometimes nausea and vomiting are common. Erythema may occur with blemishes, similar to those of measles or rubella, and pruritus in the body. Some bleeding may occur (usually in the nose or gums).

The diagnosis of dengue is clinical. Serology should be done mainly to control epidemiological surveillance, since it is generally useless in the conduct of treatment. Antibodies of the IgG type against dengue virus are detectable from the 6th day and last up to 90 days, since the IgM can be detected in the first days of the disease until two or three days after the infection.

The main ocular changes reported in the literature related to dengue include retinal bleeding and macula, peridiscal hemorrhage, Roth spots, diffuse retinal edema, vitreous cells, optical disc margin blurring, serous retinal detachment, choroidal effusion and non-specific maculopathy⁽¹⁾. Optic neuritis is an inflammatory, infectious, or demyelinating process of the optic nerve that may manifest as retrobulbar neuritis, papillitis, or neuroretinitis. Papillitis is characterized by variable hyperemia and edema of the optic disc which may be associated with peripapillary candle flame hemorrhages. Papillitis may be secondary to viral infections (Para infectious optic neuritis) and probably occurs due to the immune response. Typically, it manifests itself one to three weeks after viral infection with acute and severe AV loss that may be bilateral, but the visual prognosis is surprisingly good even in the presence of significant edema of the optic disc. Spontaneous recovery of vision may occur, requiring no treatment in most patients. In refractory cases the use of oral corticosteroids becomes a treatment option, since optic neuritis probably occurs due to the immunological reaction, but its use is controversial.

Neurological manifestations of dengue are rare and not being typical of dengue, patients were evaluated in detail to determine the cause of neuritis. As this patient had positive serology for dengue without any other apparent cause of neuritis and also because the neuritis had

resolved after steroid treatment, as can occur in viral diseases, we concluded that optic neuritis resulted from dengue virus infection (Para infectious optic neuritis).

Optic neuritis associated with dengue fever is very rare despite the high prevalence of this disease in tropical and subtropical countries and in literature the cases reported have been minimal (10). The optic neuritis has been usually bilateral with dengue fever but in our case the patient presented with unilateral optic neuritis. Inflammatory changes in the vascular endothelium resulting in vascular leakage, hemorrhage and ischemia can be seen in the cells infected with the dengue virus. The cause for the optic neuropathy has been unknown. There is evidence of optic neuritis being immunogenic in origin [11] and therefore the treatment with steroids is justified. However, the clinical systemic condition has to be considered as it is to be used with caution in acute viremia. Visual recovery, in the form of improvement of signs and symptoms, usually corresponds to improving platelet levels but may take several weeks to reach a steady state. In reported cases in the literature, the visual recovery varies from complete improvement to permanent visual loss but in our case the patient improved with the steroid therapy with antibiotic cover to 6/9.

To conclude, optic neuritis can occur in association with Dengue Fever. As the likely pathogenesis is immunogenic, treatment with pulse steroids should be useful in reversing the clinical condition and restoring vision in these patients.

With increased epidemicity and the existence of multiple serotypes of dengue, an increase in dengue cases is expected in both classic and hemorrhagic forms with a probable increase in ocular and systemic morbidity.

Conclusion: patients presenting with optic neuritis should be inquired and investigated for dengue infection and should be regularly followed up for ophthalmic examination.

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