

Case Report

Intravitreal dexamethasone as an adjunct for the treatment of dengue virus related maculopathy: a case report

Jimmy Joseph¹, Sathiyar Karunanidhi², Lally Alexander³,
Imran Ahmad Khan⁴, Jishnu Narayanan Nair^{5*}

¹Department of Internal Medicine, ²Department of Ophthalmology, ³Department of Neurology, ⁴Department of Radiology, Universal Hospital, Abu Dhabi, UAE

⁵Department of Neurology, Amrita School of Medicine, Kochi, Kerala, India

Received: 20 September 2018

Revised: 12 October 2018

Accepted: 17 October 2018

*Correspondence:

Dr. Jishnu Narayanan Nair,
E-mail: drjnnair@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Dengue infection related ocular pathology whether as a direct manifestation of coagulopathy or as a sequela of immunological reaction is being increasingly recognized in endemic regions and has expanded out into a spectrum with pan ocular presentation. Authors present a case of a young female from an endemic region who developed visual field abnormality and loss of vision several days after onset of fever. She was diagnosed with dengue virus infection and subsequently went on to develop thrombocytopenia requiring transfusion. Detailed ophthalmological evaluation revealed maculae edema, and changes consistent with neuroretinitis and posterior segment vasculitis. She was treated with a combination of pulse steroid therapy and intravitreal dexamethasone injection. Patient went on to have excellent visual recovery on follow up with no persisting visual field deficit.

Keywords: AION, Centrocecal scotoma, Dengue, Intravitreal dexamethasone, Maculopathy, Neuroretinitis

INTRODUCTION

Dengue fever (DF) or Dengue hemorrhagic fever is a common arboviral (family-flaviviridae) infection transmitted by the *Aedes aegypti* mosquito.¹ A spectrum of clinical manifestations can be caused by infection or reinfection with any of the 4 closely related dengue viruses ranging from asymptomatic disease to hemorrhagic circulatory collapse.¹ Ophthalmic complications of dengue virus infections have been receiving increasing academic attention in the past decade and as a result dengue eye disease is still an expanding entity. Several manifestations also seem to suggest that mechanisms which are less understood in the context of dengue virus infection such as immune complex deposition may be at play in the pathogenesis of dengue

eye disease.^{2,3} Authors present a case of a young female who developed rapidly progressive painless loss of vision following dengue viral infection and subsequently improved after therapy with intravenous methylprednisolone.

CASE REPORT

A 35 years old female with no known comorbidities was seen in the internal medicine department with a 4 days history of fever, malaise and generalized petechial rash. She was also having heavy menstrual bleeding at the time of evaluation. Routine lab investigations showed leucopenia, thrombocytopenia and mild transaminitis. As she was residing in an endemic region, she was investigated for and diagnosed with dengue fever on the

basis of NS 1 antigen testing. She was transfused 3 pints of platelets over 2 days after admission and was given supportive care. On the 5th day of admission she reported a gradual asymmetric painless loss of vision in both eyes, predominantly the right eye. She had no other focal neurologic deficit at the time. Visual acuity in the right eye 6/24 and left eye was 6/9. Intra ocular pressures were normal. Pupils were reacting normally to light. Field testing revealed a centrocecal scotoma.

Ophthalmoscopic examination showed bilateral cystoid macular edema with resolving disc edema and peripapillary hemorrhages. OCT showed serous macular detachment with intraretinal edema and FFA picture was suggestive of neuroretinitis with papillitis. VEP showed normal p100 latency and amplitudes ruling out significant optic neuritis. MRI brain with gadolinium contrast did not reveal any abnormalities. ANCA, ANA, Malarial antigen tests, Widal test, blood cultures and ELISA for influenza A and B were found to be negative.

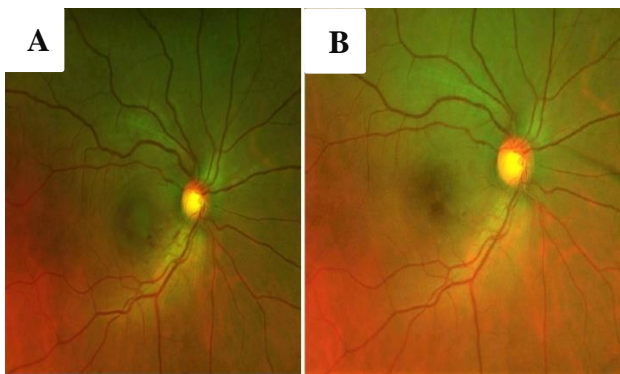


Figure 1: Fundus picture. (A): pre-treatment showing disc edema, multiple hemorrhages and macular edema, (B): post intravitreal dexamethasone showing resolution.

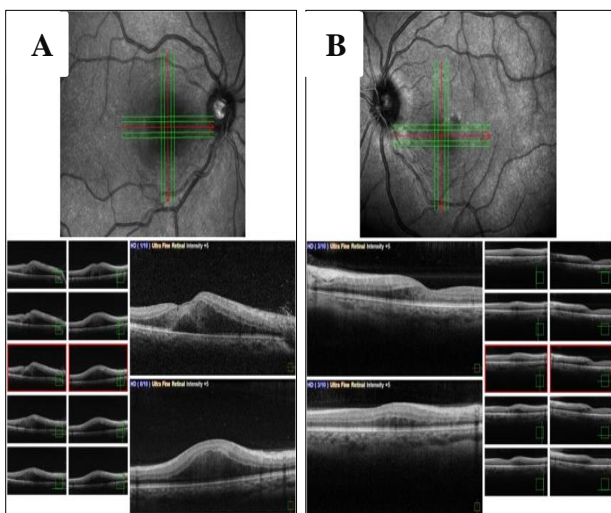


Figure 2: (A and B): OCT at time of diagnosis showing extensive maculopathy of right eye with consecutive involvement of left eye.

In view of her dengue maculopathy and retinal vasculitis she was pulsed with 1gm intravenous methylprednisolone for 3 days followed by tapering oral steroids. After evaluation by the ophthalmology team, it was decided that the patient would also receive 700mcg of intravitreal dexamethasone. She was given the intravitreal injection days after onset of symptoms. Following discharge patient was followed up regularly with serial ophthalmological examinations and in a period of 2 weeks her best corrected visual acuity returned to 6/7 in the right eye and 6/6 in the left. Studied patient on long term follow up did not show any signs of raised IOP or lenticular opacities.

DISCUSSION

Initial differential diagnosis considered in our patient included AION, optic neuritis, retinal vein occlusion, retinal vasculitis and dengue posterior uveitis.⁴ Considering the patients clinical presentation, it seemed unlikely that a second disease process was responsible for her visual symptoms. Ancillary testing had ruled out any significant neural involvement in addition to maculopathy in our patient.

Systemic vasculitis which may also present with similar ophthalmic picture were also ruled out in this case. The time between presentation and development of the ocular complications is one that has been noted in several case reports previously and suggests an immune mediated pathology as opposed to direct viral invasion.⁵ It has been suggested that severe ocular disease in dengue is associated with the thrombocytopenia.⁶ Whether a causal relationship exists is still not clear. OCT findings in our patient seem to be consistent with type 2 dengue maculopathy as described by Stephen et al in 2010.⁷ Visual prognosis seems to vary with types of maculopathy in previous studies.⁷

Studied patient had a dramatic response to intravitreal dexamethasone with no persisting visual field defect. Several treatment options have been explored in literature for the management of dengue maculopathy including oral and intravenous steroids, intravitreal triamcinolone and intravenous immunoglobulin.^{8,9} Intravitreal dexamethasone is increasingly being used for a myriad of posterior segment pathologies. There are no randomized controlled trials that have assessed treatment strategies in dengue maculopathy and most therapies are based on circumstantial evidence. In a comprehensive literature review conducted by the authors no previous case report highlighting the use of intravitreal dexamethasone on dengue maculopathy could be retrieved and our experience although small suggests a potential for its use as monotherapy in dengue maculopathy.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Monath TP, Heinz FZ. Flaviviruses. In: Fields BN, Knipe DM, Howley PM, et al., editors. *Fields virology*, 3rd ed. Philadelphia: Lippincott Raven Publishers; 1996:961-1034.
2. Ng AW, Teoh SC. Dengue eye disease. *Survey of Ophthalmology*. 2015. Elsevier USA. 2015, March 1. Available at: <https://doi.org/10.1016/j.survophthal.2014.07.003>
3. Lim WK, Mathur R, Koh A, Yeoh R, Chee SP. Ocular manifestations of dengue fever. *Ophthalmology*. 2004 Nov 1;111(11):2057-64.
4. Ramakrishnan R, Shrivastava S, Deshpande S, Patkar P. Anterior ischemic optic neuropathy following dengue fever. *Oman J Ophthalmol*. 2016 Sep;9(3):160.
5. Juanarita J, Azmi MN, Azhany Y, Liza-Sharmini AT. Dengue related maculopathy and foveolitis. *Asian Pacific J Tropical Biomed*. 2012 Sep;2(9):755-6.
6. Sumardi U, Nelwan EJ. Retinal hemorrhage in dengue hemorrhagic fever. *Acta Med Indones*. 2011 Jan;43(1):66-7.
7. Teoh SC, Chee CK, Laude A, Goh KY, Barkham T, Ang BS, Eye Institute Dengue-Related Ophthalmic Complications Workgroup. Optical coherence tomography patterns as predictors of visual outcome in dengue-related maculopathy. *Retina*. 2010 Mar 1;30(3):390-8.
8. Bacsal KE, Chee SP, Cheng CL, Flores JV. Dengue-associated maculopathy. *Arch Ophthalmol*. 2007 Apr;125(4):501-10.
9. Chang PE, Cheng CL, Asok K, Fong KY, Chee SP, Tan CK. Visual disturbances in dengue fever: an answer at last. *Singapore Med J*. 2007 Mar;48(3):71-3.

Cite this article as: Joseph J, Karunanidhi S, Alexander L, Khan IA, Nair JN. Intravitreal dexamethasone as an adjunct for the treatment of dengue virus related maculopathy: a case report. *Int J Adv Med* 2018;5:1525-7.