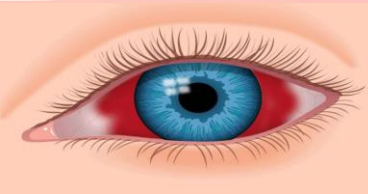




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Ocular Manifestations of Dengue Fever

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Preface

- Introduction
- Ocular symptoms
- Pathophysiology
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- Prognosis

Introduction

- Dengue fever is the most common mosquito-borne viral disease in humans
- A member of the Flaviviridae family and transmitted predominantly by **Aedes aegypti** and **Aedes albopictus** mosquito, dengue is **endemic within more than 100 countries** in the tropical and subtropical regions of the globe.
- The clinical presentation of dengue fever ranges from a febrile illness to life-threatening dengue shock syndrome (DSS).

Dengue fever & the eye

- Prevalence of ocular involvement was reported between 7 and 40%, presenting at any age but typically in young adults with the mean age of 30s with no sex predilection.
- The time of onset of ocular symptoms ranged from 2 days to 5 months from the start of fever.
- Most ocular symptoms were noted to have occurred within 1 day of the nadir of thrombocytopenia (~7 days after the onset of fever).

Ocular symptoms

- The main ocular complaints were eye strain (30%), retroocular pain (20%), blurring of vision (10%), diplopia (3%), foreign body sensation (3%), photopsia (2%), and floaters (1%).
- Dengue eye disease can be either unilateral or bilateral.
- Bilateral involvement was observed in 30% of patients, and visual acuity ranged from 20/20 to counting fingers (CF), with a **median of 20/40**.

Pathogenesis of dengue eye disease

- Factors that have been postulated in the pathogenesis of dengue eye disease include viral virulence, serotypes, mutations, host susceptibility, and geographic factors; the wide range of clinical manifestations, however, suggests multiple pathophysiologic mechanisms.
- These include hemorrhage as the result of **thrombocytopenia** and **immune-mediated** mechanisms.

- Dengue fever in an East Indian epidemic showed that 90% of patients with ocular hemorrhages had platelet counts of <50,000/mL in their study.
- An immune pathogenesis was also supported by the natural history of dengue eye disease.
- Majority of ocular symptoms occur at the nadir of thrombocytopenia, approximately 7 days after the onset of fever, when there is an increased systemic immunologic response.
- There may be an association with low complement C3 and C4 levels and maculopathy.

Ocular features of dengue fever

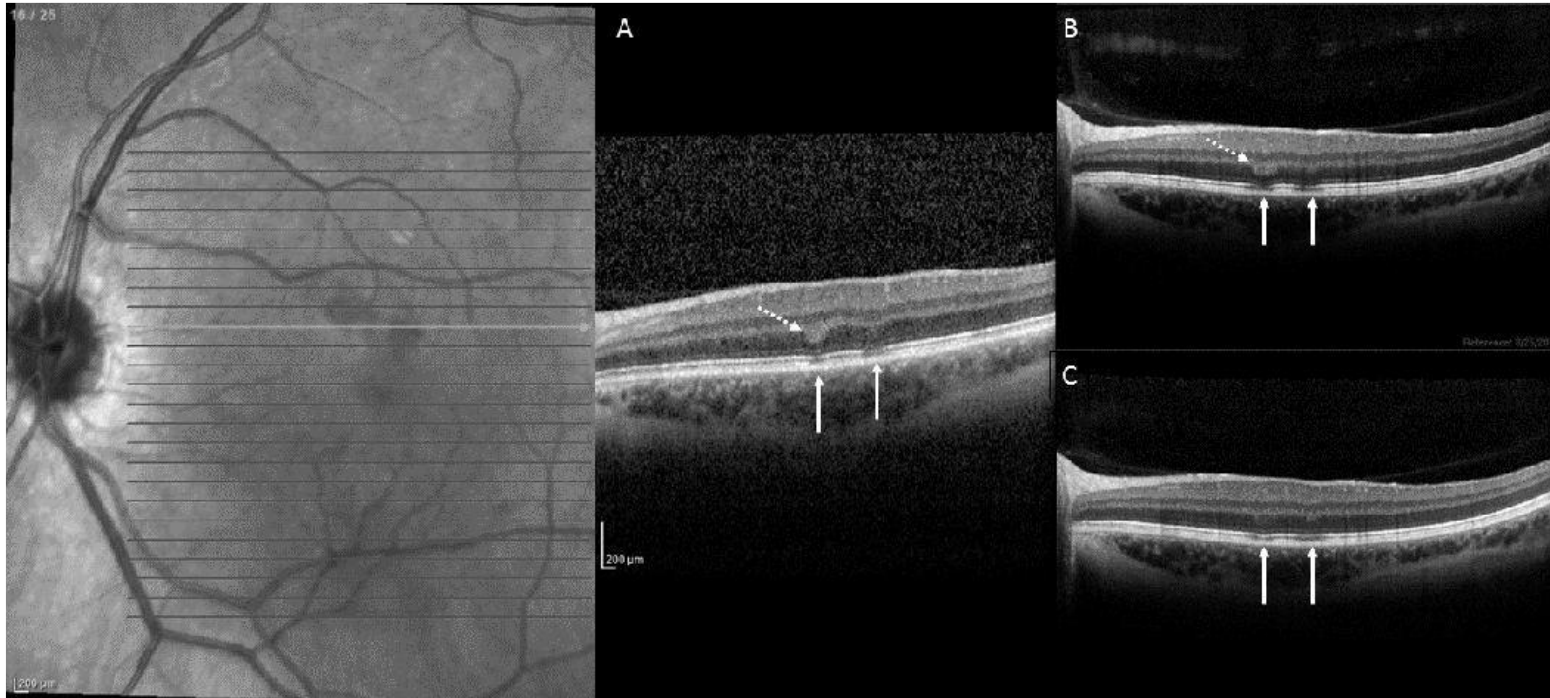
Subconjunctival hemorrhage

- Subconjunctival hemorrhage is a common finding in dengue fever and may occur either unilaterally or bilaterally.
- The reported incidence ranged from 8-60%, independent of the platelet count.

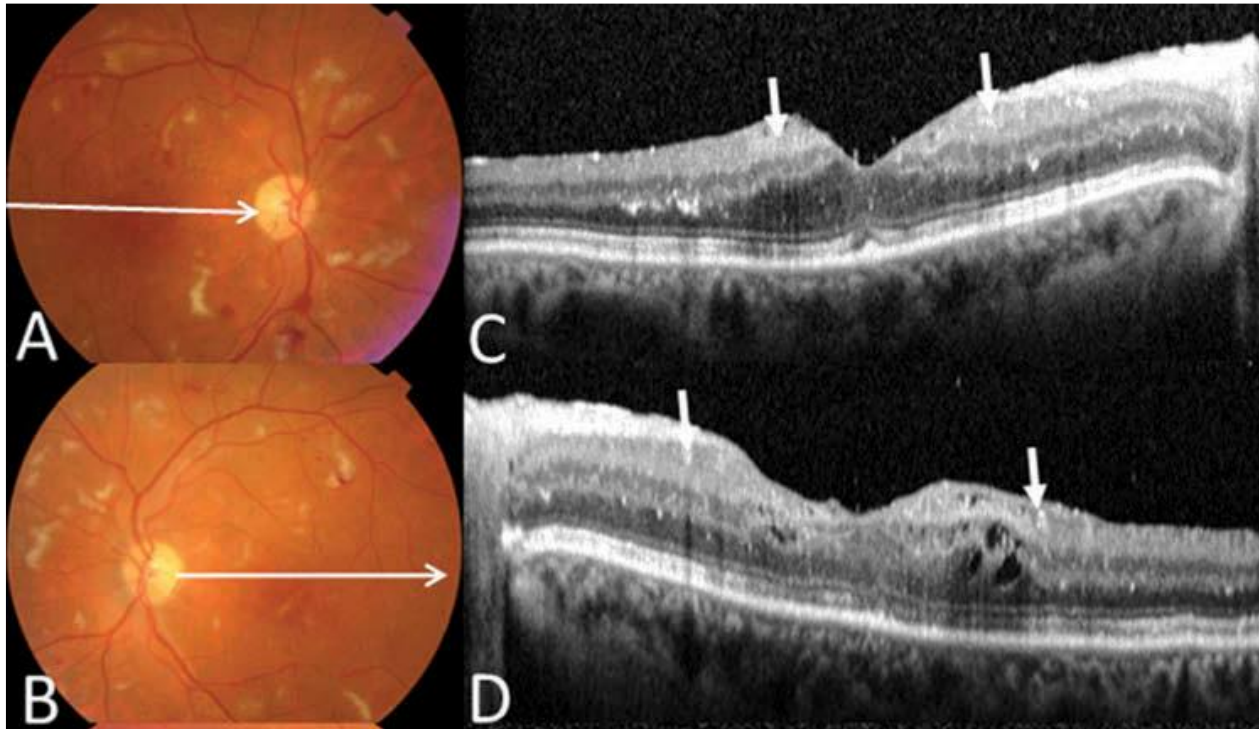
Maculopathy



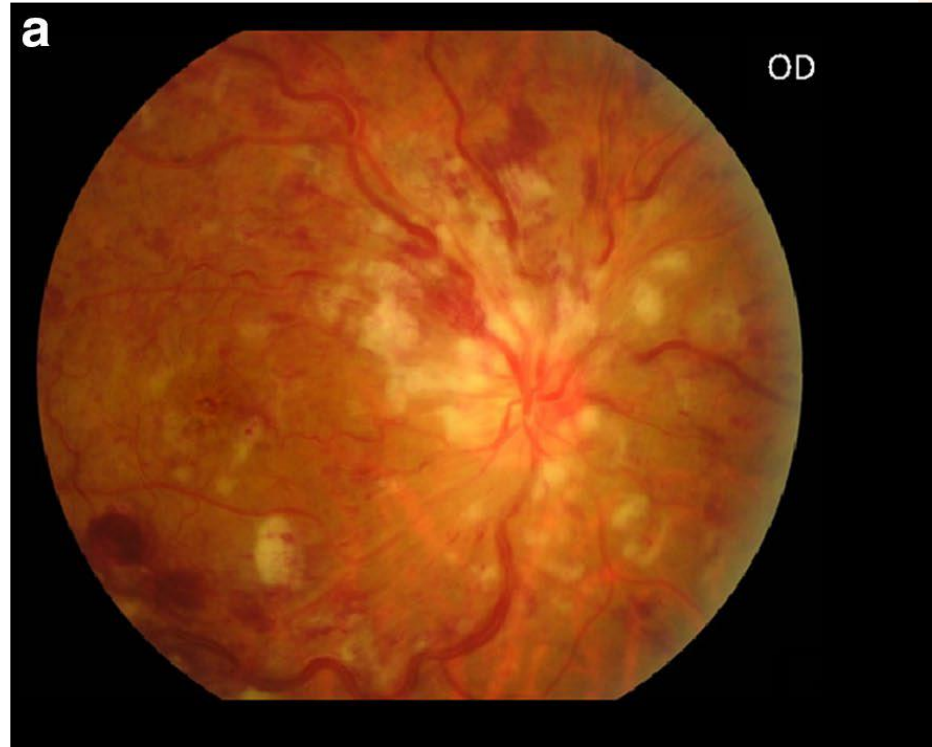
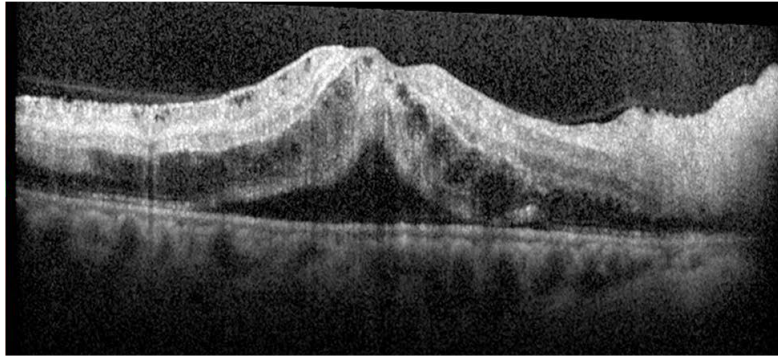
Maculopathy



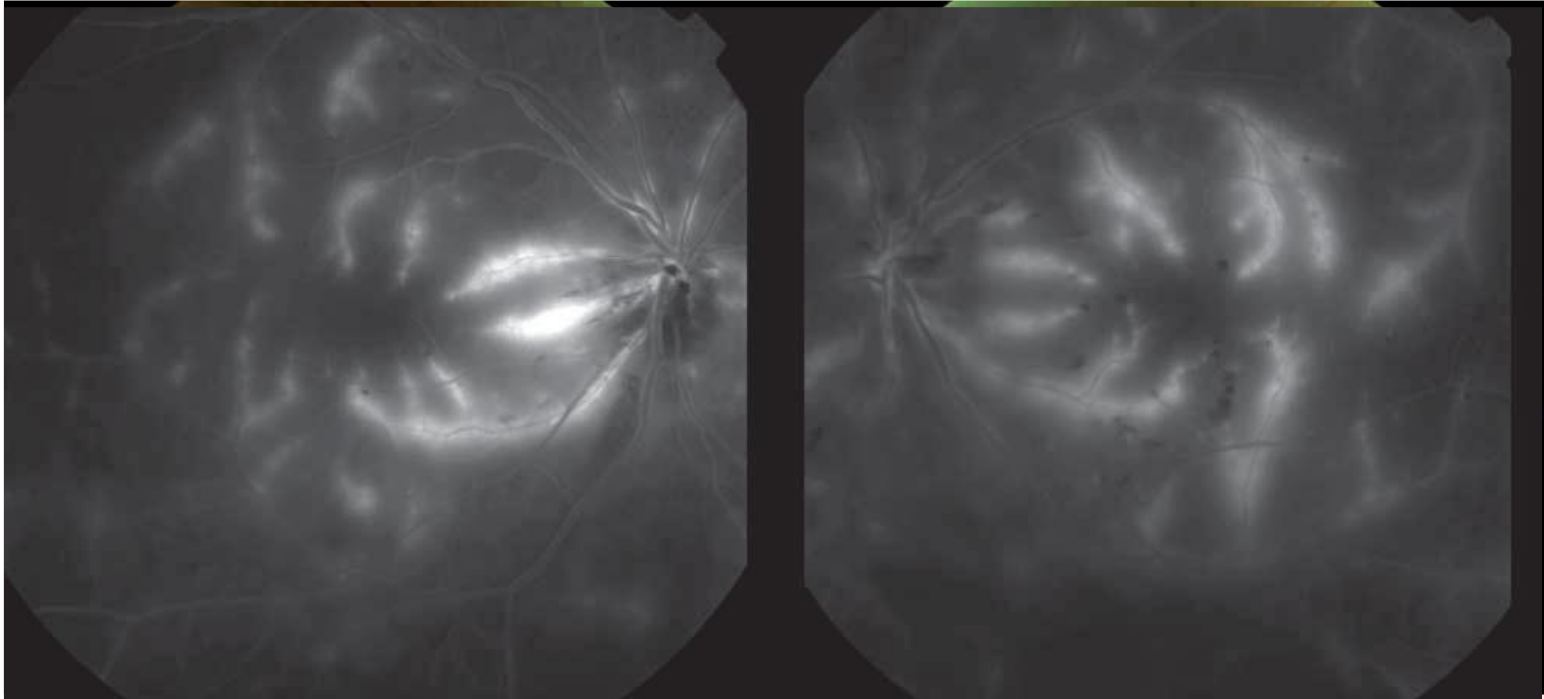
Purtscher-like Retinopathy



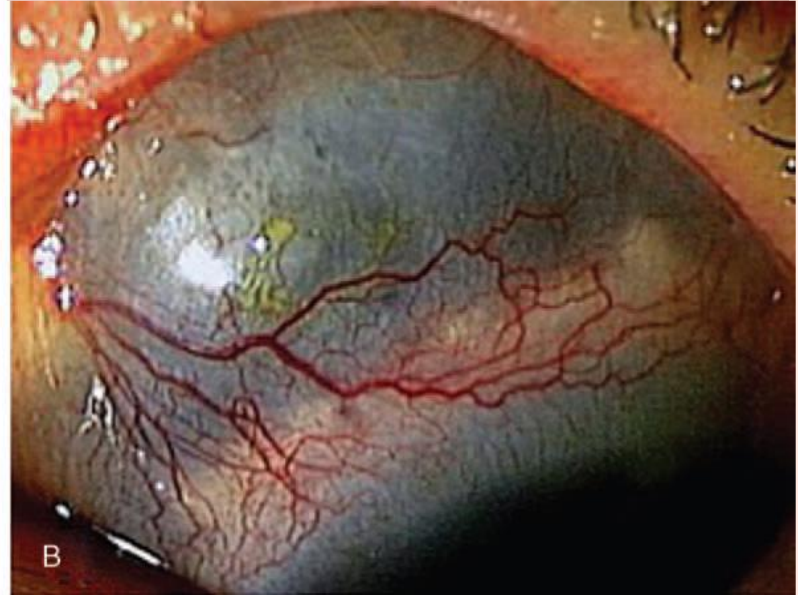
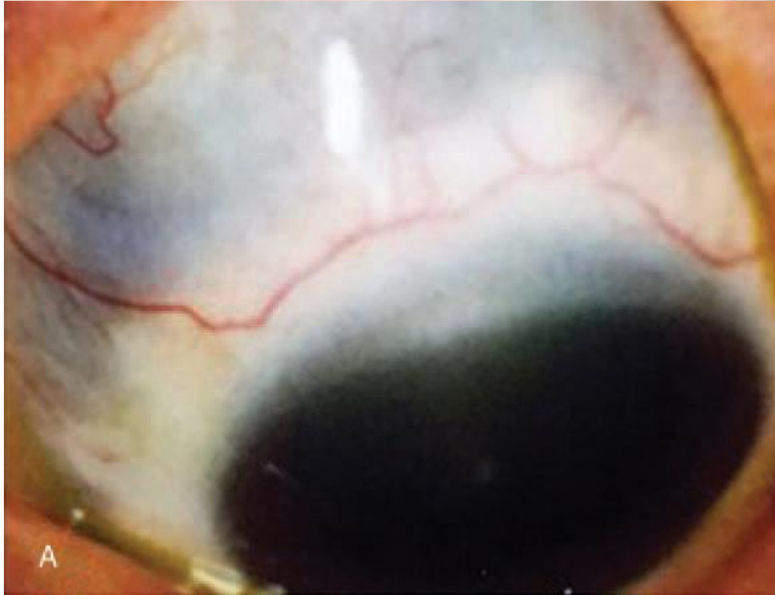
Central retinal vein occlusion (CRVO)



Retinal vasculitis

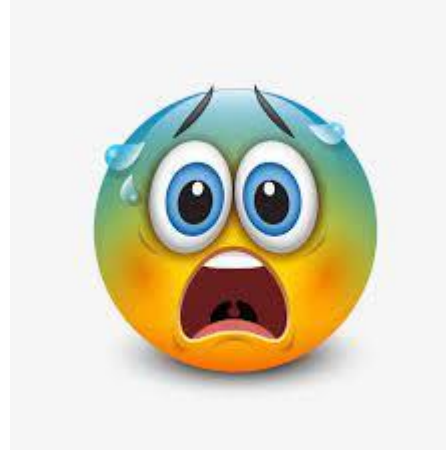
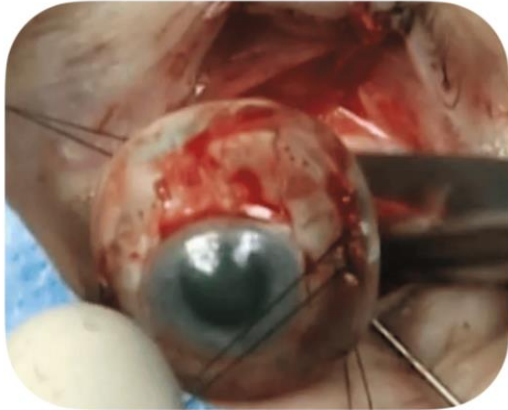
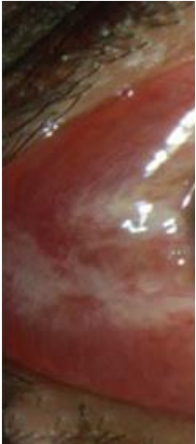


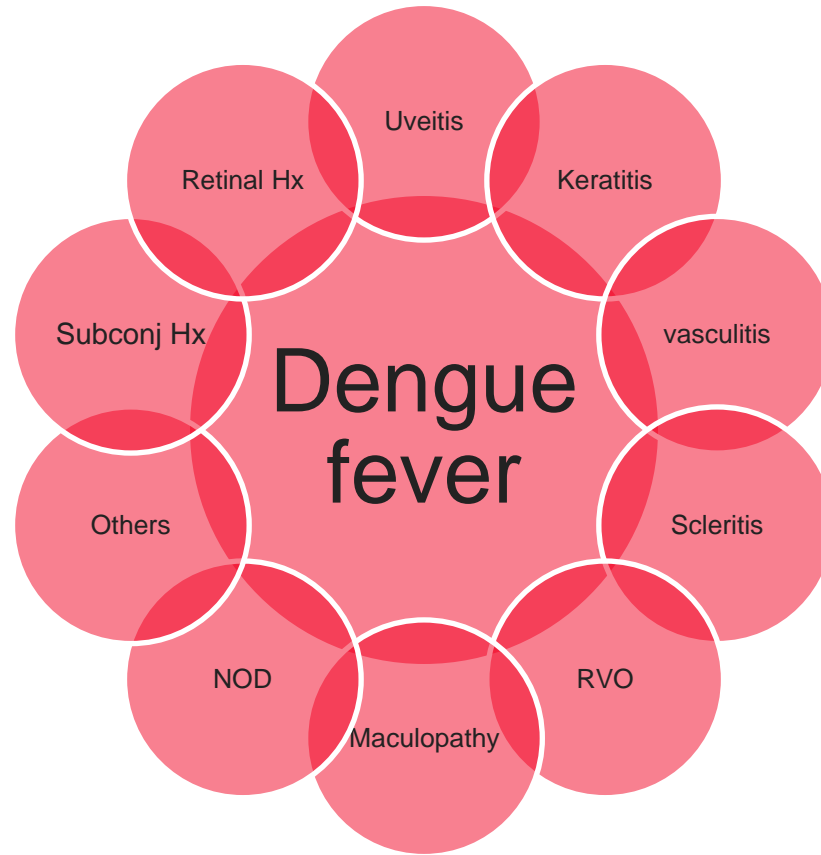
Necrotizing scleritis



Panophthalmitis

Enucleation of Eye



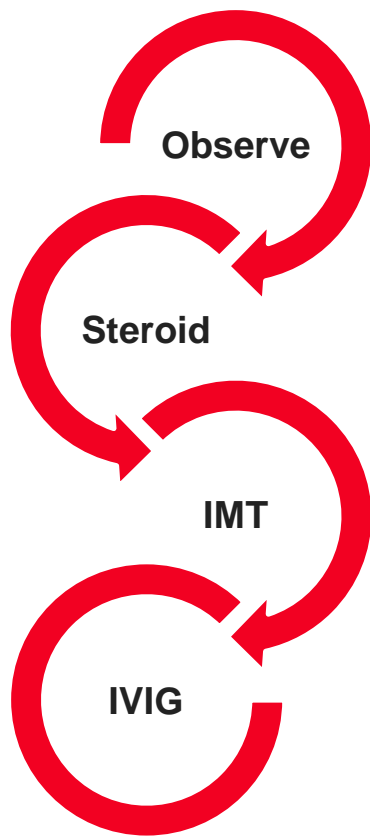


RVO: retinal vein occlusion
NOD: neuro-ophthalmic disorders

Ophthalmic manifestations as the first presenting feature in dengue fever: a 10-year study

- A prospective study in India from 2012 to 2022.
- Cases reporting initially with ocular features along with fever/past history of fever over the last two weeks or with clinical features of dengue were selected.
- Out of 564 cases, 15 patients (3%) were verified to be afflicted with dengue.
- In endemic dengue zones, ophthalmologists must include dengue fever among the differential diagnoses in various ocular presentations like *subconjunctival hemorrhage, viral keratitis, anterior uveitis, sixth nerve palsy, and vitreous hemorrhage.*

Treatment



Visual prognosis

- Prognosis of ocular involvement in dengue fever ranges from **full recovery to persistent visual loss and residual scotomata**.
- Patients may detect persistent paracentral scotoma and color vision impairment months after clinical resolution.
- Patients with documented foveal inflammation clinically and on OCT and/or ischemia on FFA reported poorer outcomes.

- At 3 months, 90% of patients complained of a persistent scotoma, but this decreased to 6% after 1 year.
- The prognosis for central visual acuity was good with 83% achieving a final BCVA of 20/40 or better.

Take home message

- Dengue fever is increasingly seen in Iran, thus ophthalmologists should have the requisite knowledge to diagnose and manage such patients.
- The main ocular complications are maculopathy and hemorrhage, commonly present at the start of convalescence.
- There have been no randomized control trials for treatment of dengue maculopathy, but most patients have been managed with either active surveillance or anti-inflammatory therapy.



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Thanks for your attention