

# Retinal Detachment in Dengue Fever – A Case Report

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## ABSTRACT

A 20 years old female came to our hospital with sudden painless loss of vision in her right eye for two days. She was diagnosed with dengue fever two and a half weeks back and was managed conservatively. Ocular examination showed mid-dilated pupils with sub-conjunctival hemorrhage, lens opacity, vitreous hemorrhage and haze, sub-retinal hemorrhage and retinal detachment. Visual acuity in right eye was perception of light only. Ultrasound revealed moderate number of low to moderately reflective vitreous echoes and a highly reflective membrane attached to the disc suggesting retinal detachment. An urgent ophthalmologist opinion was sought followed by pars plana vitrectomy with silicon oil. She was lost to follow up after surgery.

**Key Words:** Dengue fever, Dengue hemorrhagic fever, retinal detachment.

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## INTRODUCTION

Dengue flavi virus is a common cause of fever and acute systemic illness in the tropics. It is endemic in South-East Asia including Pakistan. The principal vector is the Aedes Aegypti mosquito. Globally cases have exceeded to 100 million per year.<sup>1</sup> Despite a risk of infection existing in 129 countries, 70% of the actual burden is in Asia.<sup>2</sup> One estimate indicates 390 million dengue virus infections per year, of which 96 million manifest clinically (with any severity of disease).<sup>2</sup> However, among these 0.5 million cases of dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) require hospitalization each year with an average death rate of 5% according to WHO statistics.<sup>3</sup> The largest number of dengue cases ever reported globally was in 2019, in which United States of America alone reported 3.1 million cases, with more than 25,000 classified as severe, whereas

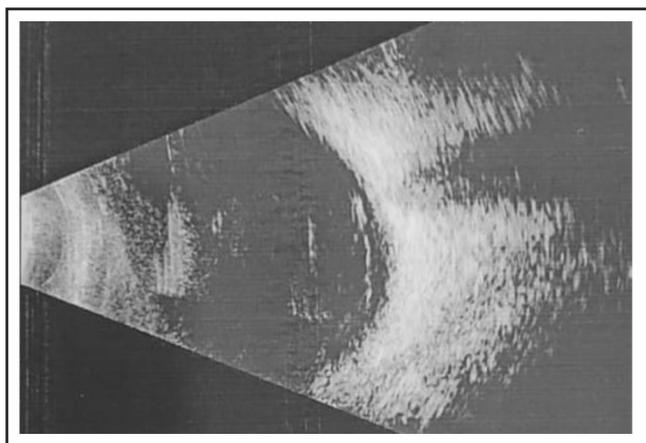
Argentina had more than 92,229 dengue suspected cases.<sup>4</sup>

Dengue infection has a wide range of clinical presentation, Patient can either be completely asymptomatic or present with typical or atypical features. Characteristic features include fever with myalgias and fatigue, retro-orbital pain, bony pain and papules. In addition to these, keratitis, uveitis, sub-conjunctival hemorrhage, corneal erosion, maculopathy, retinal hemorrhages, retinal vascular occlusion and serous retinal detachment are also reported. Panophthalmitis, periorbital ecchymosis and hemorrhagic complications may occur in severe cases<sup>5</sup>. We present a case of Dengue fever who had retinal detachment as a major complication of it.

## Case Presentation

A 20 years old female came to our hospital with sudden painless loss of vision in her right eye for two days. She was initially presented to regional hospital with high grade fever and diagnosed with hemorrhagic dengue fever 2.5 weeks back. She had multiple platelet transfusions with conservative management by antibiotics and steroids for her dengue hemorrhagic fever. On examination her right pupil was mid-dilated and sluggishly reacting to light with subconjunctival

hemorrhage. Her visual acuity in right eye was only perception of light and was not improving with any lens. On further investigation her intra ocular pressure was 25 mm of Hg by Goldmann Applanation Tonometer. On examination of the affected eye, lens opacity, vitreous hemorrhage, sub-retinal hemorrhage and retinal detachment were also seen. Ultrasound of the right eye was performed and illustrated 1 moderate number of reflective vitreous echoes 2, a high reflective membrane echo attached to the disc with poor after movements gain further both suggesting retinal detachment (Figure 1). An urgent ophthalmologist opinion was made and we explained her intent of treatment and poor prognosis of disease in detail. She then underwent vitrectomy and oil injection. Post operatively she did well but was lost of follow-up after discharge.



**Figure 1:** B-scan showing hemorraghic retinal detachment.

## DISCUSSION

Dengue fever is often self-limiting infection and treatment is symptomatic. DHF is a severe and potentially fatal form of dengue fever. DHF is defined by WHO as DF associated with thrombocytopenia ( $< 100 \times 10^9$  cells/L) and hemo-concentration (hematocrit  $> 20\%$  above baseline). The early phase of DHF is indistinguishable from DF. Visual impairment by dengue fever can be detected by various ophthalmological techniques including slit lamp examination, optical coherence tomography (OCT) imaging, fluorescein fundus angiographic (FFA), visual field analysis (VFA), and electroretinography. Steroids can be given in case of active infection either topically, orally, intravitreally or intravenously.<sup>6</sup>

There are four serotypes of dengue virus, all producing

a similar clinical syndrome; homotypic immunity after infection with one of the serotypes is life-long, but heterotypic immunity against the other serotypes lasts only a few months after infection. The pathogenesis is still uncertain for ocular manifestations of dengue but an immune-mediated inflammatory process is proposed.<sup>7</sup> This inflammatory process typically affects immunocompetent adults, who often present at the nadir of thrombocytopenia with visual impairment. The onset and severity of ocular complication depends on the grades of thrombocytopenia. Seet et al reported leucopenia and hypoalbuminemia as the risk factors for development of ocular manifestations.<sup>8</sup> The diagnosis is confirmed by either fourfold rise in IgG antibody titres or isolation of dengue virus from blood or detection of virus RNA by polymerase chain reaction (PCR).

Retinal detachment (RD) has multiple etiologies and is one of the ubiquitous complications of dengue. Prompt treatment requirement is indicated as it can lead to permanent vision loss and blindness. Symptoms of retinal detachment including the appearance of floaters flashes of light and vision deterioration can occur between 0 – 30 days after the onset of fever.<sup>9</sup>

Similar cases have been reported globally. In Germany, a patient complained of blurring of vision, 4 days after returning from a 20-day vacation in Vietnam and Cambodia. On investigation he was diagnosed with retinal detachment.<sup>10</sup> Moreover a case report on dengue fever leading to retinal detachment was published in India in 2019.<sup>9</sup> A study including 197 participants in Singapore showed the prevalence of Dengue Maculopathy to be as high as 10% among seropositive patients.<sup>6</sup> Close observation with regular monitoring of vitals, blood counts and ocular exams is usually recommended. As thrombocytopenia resolves, ocular signs show improvement. Steroids have been used in various delivery modes depending upon ocular pathology with reliable results and duration of treatment. In severe cases pneumatic retinopexy, scleral buckling or vitrectomy with air, gas or silicone oil injection are considered.

Limitation of this case report is that the patient was lost to follow up.

## CONCLUSION

The dengue fever can be completely asymptomatic or can present with classical clinical signs. Dengue

hemorrhagic fever is a serious complication of dengue fever. Retinal detachment is one of the ocular complications of dengue hemorrhagic fever. Blurring of vision typically coincides with the nadir of thrombocytopenia. Detailed ocular examination is recommended in patients who present with decreased vision with a history of Dengue fever. In severe case, pneumatic retinopathy, Scleral buckling or vitrectomy with air, gas or silicone oil injection are considered.

**Conflict of Interest:** Authors declared no conflict of interest.

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## Authors' Designation and Contribution

Saliha Zaman; Optometrist: *Concepts, Design, Literature search, Data acquisition, Manuscript preparation, Manuscript editing, Manuscript review.*

Eileen Samuel; Resident: *Literature search, Manuscript preparation, Manuscript editing.*

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