

## A Returned Traveler with Dengue Fever and Visual Impairment

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Dengue fever is the most prevalent Flavivirus infection in humans. Classically, DF is an acute self-limited febrile disease of 2–7 days duration, characterized by a sudden onset of fever, severe headache, retro-orbital pain, arthralgia, myalgia and rash. Occasionally, minor hemorrhagic manifestations occur, such as skin hemorrhage, gum bleeding and epistaxis [1]. We report a case of classical DF with unusual ocular manifestations in a returned traveler.

### Patient Description

A previously healthy 23 year old man presented to our ophthalmology clinic in August 2002 with complaints of right eye visual impairment of 10 days duration. The patient had returned to Israel after a 3 month sojourn in Southeast Asia. Two weeks before admission, while in Thailand, he developed high grade fever together with abdominal pain, nausea and vomiting, severe back pain and transient erythema over the dorsal aspects of both hands. Two days later the fever subsided; however, eyelid edema and conjunctival irritation developed, followed by scotomata in the central visual fields of both eyes. Visual impairment of the left eye resolved but the complaint persisted in the right eye. The patient had no other illnesses, had not been exposed to rodents during his travels, and denied unprotected sexual activity or substance use.

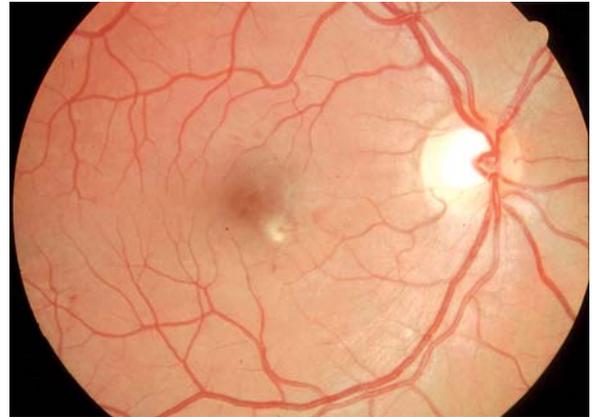
Physical examination was unremarkable. On ophthalmologic examination, the best-corrected visual acuity was 20/20, and the anterior segment and intraocular pressure were normal in both eyes. Right eye funduscopy revealed the presence of vitreous cells, a white retinal infiltrate with a

central blood dot infero-nasal to the fovea, and a few microhemorrhages and retinal edema involving the macula [Figure]. Left eye funduscopy revealed a tiny blood spot supero-nasal to the fovea. Optic disks were normal in both eyes. No retinal or choroidal leakage or staining was demonstrated on fluorescein angiography. Blood tests including a complete blood count, sedimentation rate and biochemistry were all normal, except for elevated aspartate aminotransferase and alanine aminotransferase levels (49 IU/L and 161 IU/L, respectively). DF was suspected because specific antibodies for DF demonstrated positive immunoglobulin M and G titers (21 and 24 respectively; positive  $\geq 11$ ). A workup for other infectious diseases (leptospirosis, syphilis, human immunodeficiency virus, cat-scratch disease) and specific serology tests for autoimmune diseases (antinuclear factor, rheumatoid factor, antineutrophil cytoplasmic antibody) were negative.

A week after presentation to our clinic, the retinal lesion in the right eye decreased in diameter and the retinal dot in the left eye disappeared. A month later, funduscopic examination was normal and the visual impairment resolved completely.

### Comment

Dengue fever ("break bone" disease) is endemic in Southeast Asia, the Americas and the Western Pacific. In 2002, the World Health Organization estimated that there were 50 million infections with dengue



Right eye: a white retinal infiltrate with a central blood dot infero-nasal to the fovea and several microhemorrhages above the lower arcade.

virus, including 500,000 cases of dengue hemorrhagic fever, and 15,000 deaths secondary to infection per year [2]. Infection is transmitted to humans principally by a bite of the domestic mosquito *Aedes aegypti*. Four serotypes of dengue virus (DEN 1-4), a member of the Flaviviridae family, are capable of causing two distinct syndromes: classical DF, an acute self-limited febrile illness, and DHF, a severe disease that may evolve into fatal dengue shock syndrome. Manifestations of classical DF include high fever, severe headache, myalgia, arthralgia and diffuse rash. Retro-orbital pain and conjunctivitis are common, occurring in 20–30%. Common laboratory abnormalities include leukopenia, thrombocytopenia and elevated liver enzymes. Minor hemorrhagic phenomena, such as skin hemorrhage, gum bleeding and epistaxis can occur [1]. The hallmark of DHF is capillary leakage phenomena and bleeding. Re-exposure and incomplete immunity to one of four serotypes has a major role in the development of this

DF = Dengue fever

DHF = dengue hemorrhagic fever

syndrome [1]. Visual impairment and ocular fundus changes, hemorrhage or retinal infiltrates are unknown manifestations of either DF or DHF.

Recently, the first description of visual loss in a young traveller returning to Germany from Thailand with classical DF was published in the English-language medical literature [3]. It is possible that ophthalmologists in endemic areas are more familiar with visual impairment during the course of dengue infection. A case-series in China described ocular findings in 24 patients with visual complaints during clinically diagnosed DF [4]. Visual symptoms included blurred vision, central scotomata, floaters, and halo vision. Ocular fundus changes included mainly macular and retinal hemorrhages and cotton-wool spots. Indeed, most patients recover completely, but in some the visual outcome may be poor.

To the best of our knowledge, this is the first case of classical DF with ocular impairment in a returned traveller to Israel. Over the last decade DF has become common among westerners, including Israelis, travelling to the tropics – particularly Southeast Asia [5]. In 2002, 108 cases of DF were diagnosed in the Central Laboratory of Virology at Sheba Medical Center. As far as we know, none has developed ocular complaints.

With expanding tourism to the tropics, we can expect to encounter more cases of rare manifestations of classical DF, such as visual impairment. Although the pathogenesis of ocular changes is unknown, the prognosis seems to be excellent.

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