

Dengue Fever Complicated by Optic Neuropathy: A Case Report

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Authors' contributions

This work was carried out in collaboration between all authors. Author AGM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors DEGB and JTPF managed the analyses of the study. Author MMAVR managed the literature searches. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Aim: Dengue is a mosquito borne viral disease endemic in many geographical locations of the world. It can manifest from a classic form, with fever, headache and myalgia, to more serious cases, such as dengue hemorrhagic fever, with high mortality rates. Ocular manifestations are relatively uncommon, but when present they have a wide variety of findings. Optic neuropathy is a rare manifestation and has a variable prognosis.

Presentation of Case: In this article, we report a case of optic neuropathy secondary to dengue, adopting conservative management with a significant improvement in visual acuity.

Conclusion: The treatment in neuropathy is quite controversial and not yet defined, some authors advocate the use of systemic and endovenous corticosteroids in an attempt to improve the visual prognosis, but studies reveal a spontaneous resolution in most cases, even in that cited in the article.

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Keywords: Dengue fever; optic neuropathy; visual outcome.

1. INTRODUCTION

Dengue fever is a viral infection very prevalent in the tropics [1,2,3]. This virus belongs to the family Flaviviridae and has 4 serotypes identified as DENV 1 - 4 [1]. The infection usually generates symptoms such as fever, myalgia, headache, [1] However, more severe forms may occur with thrombocytopenia and other blood alterations that cause hemorrhagic conditions [2].

Ocular manifestations are usually uncommon, but their reports in the literature have been growing over the years [3]. Other reported findings are: cotton wool spots, spots exudates and retinal vasculitis, anterior uveitis, retinal vein occlusion, vitreous haemorrhage and optic neuropathy [3].

Optic neuropathy associated with dengue is a rare finding [4]. It commonly manifests as optic disc oedema, hyperemia, and optic disc haemorrhage [1]. The prognosis is variable in the literature, with reports of complete visual acuity recovery, to cases of blindness [1]. In general, most patients have some sequelae [3].

The mechanisms of ocular manifestations, including optic neuropathy, are still unknown, but the clinical behaviour of the disease suggests an immunogenic cause to the detrimental of the infective itself since it is during the period of increase of the immunological response that the ocular manifestations usually arise [5].

The aim of this work is to report a case of dengue fever complicated by optic neuropathy and discuss the pathophysiological process responsible for the optic neuropathy.

2. CONSENT

The patient signed informed consent for publication of this case report and any accompanying image. The ethical approval of this study was waived by the ethics committee of, São Carlos Hospital.

3. CASE REPORT

A 32-year-old woman with a history of classic dengue fever of one-week duration confirmed by serology was seen at our clinic with a history of sudden low vision in the left eye. At ophthalmologic examination visual left eye; ex-motility, pupillary reflexes, biomicroscopy and pressure were normal in both eyes.

In the indirect binocular ophthalmoscopy of the left eye, there was an increase in vascular tortuosity associated with disc oedema. Note that papilledema is usually associated with elevated intracranial pressure which was not the case here. haemorrhages and cotton wool spots in the perimacular region. characterizing unilateral optic neuropathy with probable peripapillary and retinal vasculitis that evolved with occlusion of the cilioretinal artery. The last part should come in under discussion. Does this patient have a visible We opted for conservative management? After 30 days, the patient evolved with significant clinical improvement (Fig. 1) and ended on the day of discharge with visual acuity of 20/40 in the affected eye, but with paracentral residual visual field loss (Fig. 2), besides the decrease of the layer of nerve fibers in the papillomacular bundle and temporal atrophy of optic nerve demonstrated in optical coherence tomography (OCT) (Fig. 3).



Fig. 1. Retinography with 15-day intervals between them

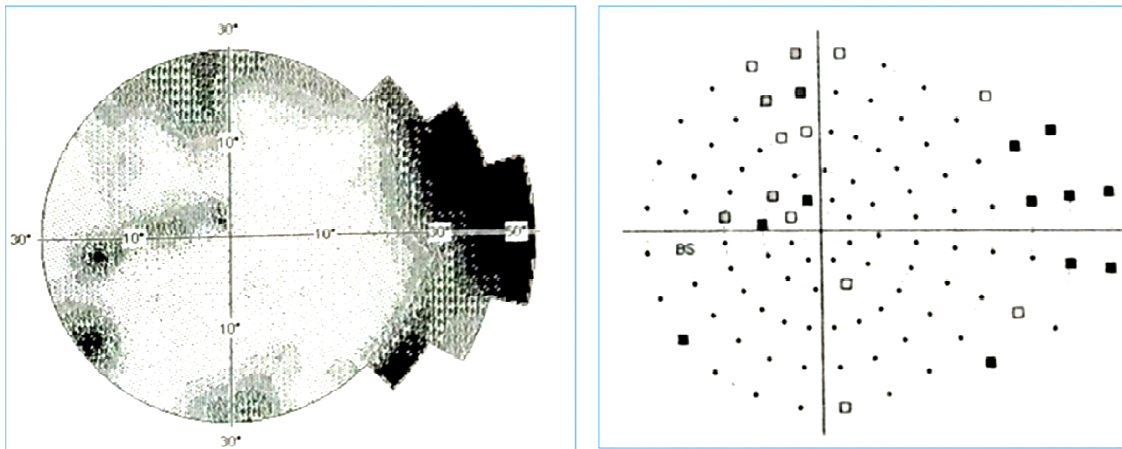


Fig. 2. Visual field, program 30-2, showing paracentral and nasal lesion in left eye after 30 days

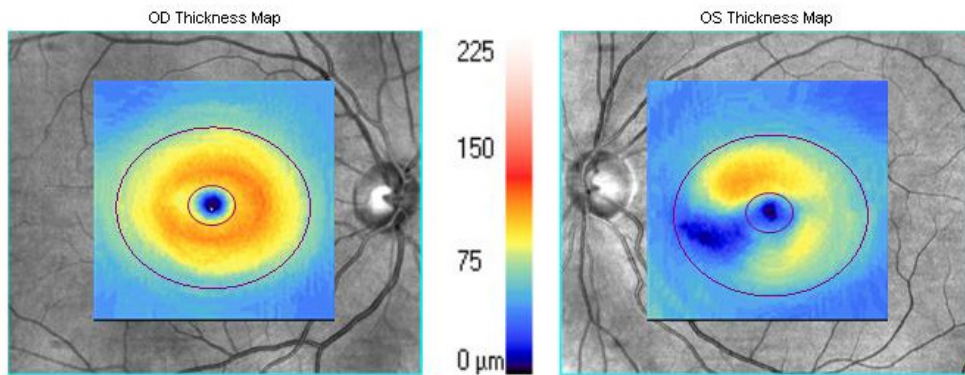


Fig. 3. Tomography of macular coherence showing comparatively the distribution of ganglion cells between right and left eye

4. DISCUSSION

Dengue fever in recent years has become an important public health problem, as it has spread to several continents and has evolved with new clinical manifestations. The clinical picture associated with the visual alteration described in this study is a rare and yet little-discussed event in the medical literature.

Visual changes usually occur at the end of the acute phase of the disease, typically present on the seventh day (between days 5-8) after the onset of fever [4]. Visual impairment may be unilateral or bilateral, [6] however, patients generally complain of blurring of vision visual blurring, and, less commonly, of non-specific visual disturbances [5].

Most ocular complications are found in the posterior pole, such as retinal haemorrhage and

macula, periodical bleeding, Roth spots, diffuse retinal oedema, vitreous cells, optic disc margin blurring, serous retinal detachment, choroidal effusion and maculopathy does not specify [7].

Optic neuropathy is uncommon and results from an inflammatory, infectious or demyelinating process of the optic nerve presenting as retrobulbar neuritis, papillitis or neuroretinitis [1,8]. The mechanism of these manifestations is not well known but is indicative of an immune-mediated or of aetiology for the affective [1,3].

The broad spectrum of ophthalmologic manifestations allows us to conclude that several pathophysiological processes are involved. The thrombocytopenic state, with its tendency to bleed, leads to an increase in the incidence of haemorrhage. The release of cytokines with vasoactive and inflammatory properties, causing

capillary leakage, may explain neuritis with papillary oedema and perimacular cotton wool spot, presented in this case.

Another possibility is a viral mutation, which has already been proven to have occurred in several serotypes, however, without studies of the biological consequences that it can cause [4].

After recovery from optic neuritis, some patients persist with residual visual alteration, presenting central or paracentral [2] scotoma, due to the lesion in the layer of nerve fibres proved, in our case, by macular OCT. According to Teoh et al., this lesion becomes more evident after one month of the initial picture [5].

The prognosis for ophthalmologic complications is generally good, with improvement in visual acuity and ocular signs and symptoms in most patients without any treatment [1,8]. Prognosis for central visual acuity is usually good with up to 85-90% regaining 20/30 or better [5], in our report, the visual acuity was 20/40 in the affected eye.

Steroid use may be an option for patients with more severe or refractory eye involvement, for the possibility of being an immune-mediated process. The steroid has been used in extensive vasculitis or exudative retinal detachment [1,7,8]. In our case report, we decided not to use corticoid, conservative management, for neuritis as in other cases [9]. However, it is still controversial and should be avoided in the acute viremia stage [4,7]. The prognosis is generally good and solving spontaneously, although some patients may refer to central scotoma which may persist for months as happened in our case report [9].

Thus, further studies are needed to elucidate the mechanism of dengue fever ophthalmic complications. Randomized and controlled trials will help standardize the investigations and better determine the form of clinical treatment for these patients [1].

5. CONCLUSION

Dengue fever is the mosquito-borne viral disease that spreads most rapidly in the world, being the most important arbovirose that affects the human being, being a serious problem of public health in the world. In Brazil, since 1986 an epidemic has occurred annually causing a great socio-economic impact.

Prophylactic measures are needed to combat the transmission of dengue. The elimination of breeding foci, the use of protective screens and repellents are fundamental measures to prevent the access of the *Aedes* sp.

The non-control of the epidemic increases the cases of dengue and consequently, there is a greater ocular and systemic affection thus raising the sequelae that the disease can leave.

Ophthalmologic evaluation with fundus examination in the most severe cases, especially in endemic areas, seeking early detection of involvement of the central nervous system could promote better monitoring and treatment.

The treatment in neuropathy is quite controversial and not yet defined, some authors advocate the use of systemic and endovenous corticosteroids in an attempt to improve the visual prognosis, but studies reveal a spontaneous resolution in most cases, even in that cited in the article.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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