

BILATERAL NEURORETINITIS SECONDARY TO DUAL INFECTION OF BARTONELLA HENSELAE AND LEPTOSPIRA

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ABSTRACT

Background: Bartonella henselae is the most common organism responsible for infective neuroretinitis. Conversely, ocular leptospirosis rarely manifests as neuroretinitis. There is no reported case of neuroretinitis caused by co-infection of both organisms to date.

Case Report: A 33 year old lady presented with painless, progressive blurring of vision of both eyes for 2 weeks. Her ocular examination revealed reduced visual acuity to 6/36 with swollen optic disc and macular star exudates in both eyes. Optical coherence tomography showed subretinal fluid causing local neurosensory retinal detachment at posterior pole. Bartonella serology was positive for both IgM and IgG. In addition, Leptospira IgM was also positive. She was then started on oral Doxycycline 100mg BD for 14 days. After 8 weeks, her visual acuity improved to 6/9 and fundus examination showed resolution of optic disc swelling and macula oedema in both eyes.

Conclusion: Bartonella henselae is a well-known causative organism for infective neuroretinitis. However, the other rare organisms such as Leptospira should be considered especially in tropical countries. Co-infection of both Bartonella henselae and Leptospira can manifest as neuroretinitis.

Key words: Neuroretinitis, Bartonella henselae, Leptospira, dual infection

1.0 Introduction

Neuroretinitis is an inflammatory disorder characterised by optic disc oedema and macular exudation (Ray and Gragoudas, 2001). It can be idiopathic or caused by the infectious process involving the optic disc or by the autoimmune mechanism (Purvin et al., 2011). Affected patients may present with impaired visual acuity, dyschromatopsia, visual field abnormalities and relative afferent pupillary defect (Abdelhakim and Rasool, 2018). *Bartonella henselae* is a gram-negative intracellular bacterium which is the main cause of cat scratch disease. About 5 to 10% of bartonellosis patients have ocular manifestations predominantly neuroretinitis (Perez et al., 2010). Human leptospirosis is one of the most widespread zoonotic diseases in the endemic regions of tropical and subtropical countries (Chin et al., 2019). Ocular manifestations of leptospirosis include uveitis, vasculitis, optic disc edema and retinitis. However, leptospirosis rarely manifests as neuroretinitis (Basumatary et al., 2012; Ghosh et al., 2011). These remain under-diagnosed due to prolonged asymptomatic period between systemic manifestations and detection of ocular manifestations (Rathinam, 2005).

2.0 Case Report

A 33 year old Malay lady presented with painless, progressive blurring of vision in both eyes for 2 weeks. There was no redness, discharge or history of trauma. Prior to that, she had low grade fever for several days which was resolved spontaneously. Besides, she also had daily contact with cats at home.

Her ocular examination revealed reduced visual acuity in both eyes (6/36 with no improvement by pinhole). Anterior segment examination was unremarkable bilaterally. Posterior segment examination showed swollen optic disc with macular star exudates bilaterally (Figure 1). Light brightness and red desaturation were also reduced bilaterally. There was no lymphadenopathy, skin lesion or scratch marks noted. Other systemic examinations were unremarkable.

Optical coherence tomography (OCT) showed subretinal fluid causing local neurosensory retinal detachment at posterior pole (Figure 2). *Bartonella* serology was positive for both IgM and IgG. *Leptospira* IgM was also positive. Mantoux test, Erythrocyte Sedimentation Rate and chest x-ray were normal. Other infective screenings were negative.

She was started on oral Doxycycline 100mg BD for 14 days. After 8 weeks, her visual acuity improved to 6/9 and fundus examination showed resolution of optic disc swelling and macula edema in both eyes (Figure 3). OCT showed resolved subretinal fluid at posterior pole in both eyes (Figure 4).

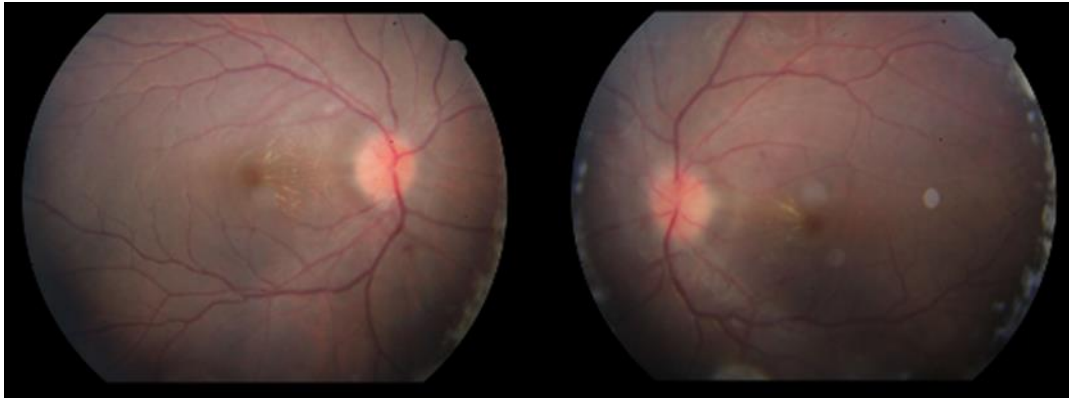


Figure 1: Fundus photo of both eyes displaying optic disc swelling and macular star exudates

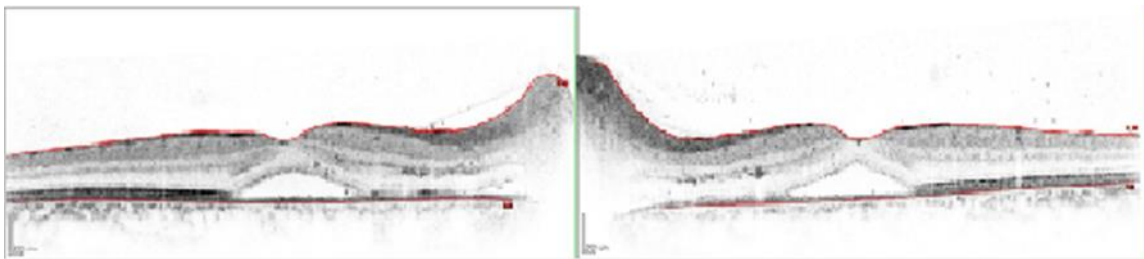


Figure 2: OCT of both eyes displaying the presence of submacular fluid

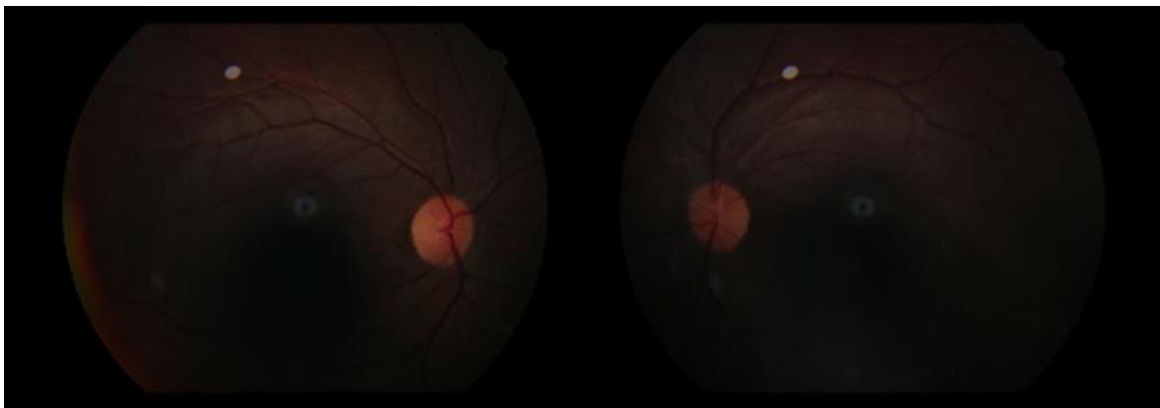


Figure 3: Fundus photo of both eyes displaying the resolution of optic disc swelling

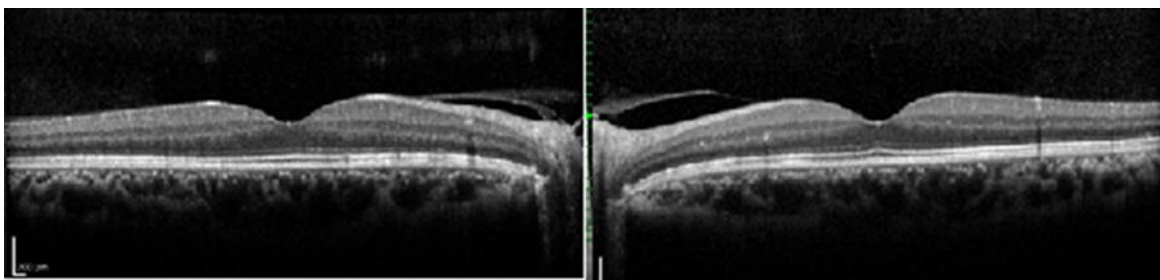


Figure 4: OCT of both eyes displaying the resolution of submacular fluid

3.0 Discussion

Neuroretinitis is a type of optic neuropathy characterised by the presence of optic disc oedema with serous retinal detachment involving the macular area followed by the formation of macular star. Infective neuroretinitis is a rare condition. However, the cat-scratch disease is the most common aetiologies for infective neuroretinitis (Perez et al., 2010). Other infections such as syphilis, tuberculosis, Lyme's disease, hepatitis B, mumps, measles, toxoplasmosis and cysticercosis may also cause neuroretinitis. In literature, there are only a few reported cases involving leptospirosis particularly on leptospira neuroretinitis (Rathinam, 2005; Ray and Gragoudas, 2001; Ghosh et al., 2011). Until now, neuroretinitis secondary to simultaneous infections of Bartonella henselae and Leptospirosis has not been reported in literature.

This case highlights bilateral neuroretinitis with elevated serological test for Bartonella henselae and Leptospira suggesting simultaneous infection of both organisms. However, there was no systemic involvement of cat-scratch disease or leptospirosis other than the ocular manifestations. The Risk factors include living in tropical country and exposure to cats.

The natural history of neuroretinitis includes the formation of optic disc oedema and macula star which develops 9 to 12 days after the onset of disease. This is followed by resolution process for a month. However, for a complete resolution it can take about 6 to 12 months (Gass, 1977). The management needs to be tailored according to the aetiology of the disease. Treatment with anti-microbial agents is indicated in patient affected by Bartonella henselae or Leptospira. In this case, the patient responded well to 14 days' course of oral Doxycycline. The optic disc swelling and macula oedema resolved completely and her visual acuity restored to normal after 8 weeks.

4.0 Summary

Bartonella henselae is a well-known causative organism for infective neuroretinitis. However, the other rare organisms such as Leptospira should be considered especially in tropical and subtropical countries. Simultaneous infection by both Bartonella henselae and Leptospira can lead to neuroretinitis as well. Identification of specific causative organisms is essential to provide the better choice of treatment. As the consequence, patient will have improved visual outcome.

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Declaration

The authors declare no conflict of interests. The authors are responsible for the content and writing of the paper.

Authors' contribution

Author 1: Wrote the manuscript with consultation from author 2 and 3.

Author 2: Provided critical feedback.

Author 3: Provided critical feedback and supervised the whole process.

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