

Topical NSAID an Option for Early Resolution of Macula Edema in Neuroretinitis? : A Case Report

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Abstract

Objective: To report a case of neuro retinitis in ocular bartonellosis which showed good response to topical nepafenac 0.1%, a non-steroidal anti-inflammatory drug, in addition to the standard treatment of systemic antibiotics.

Result: A 14 year-old boy with history of cat scratch and fever prior to painless reduced vision of the left eye was clinically diagnosed as neuro retinitis characterized by optic disc swelling with subsequent development of macular star. He was started on topical nepafenac 0.1% which showed an improvement in visual acuity over 3 days. Oral azithromycin was subsequently started to treat the underlying cause neuro retinitis. Serologic examination for *Bartonella henselae* was positive for both immunoglobulin M and G. Patient responded well to treatment with final visual outcome of 6/6 and serial optical coherent tomography (OCT) of the macula showing resolution of macular edema at one month.

Conclusion: Usage of topical nepafenac in combination with systemic antibiotics appears to be beneficial and hastens the visual recovery of patient. Further studies are needed to investigate the role of topical nepafenac as an alternative to systemic corticosteroids in cases of neuro retinitis in ocular bartonellosis.

Keywords: Cat Scratch Disease; Neuro retinitis; Nepafenac; NSAID

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Introduction

Cat Scratch Disease (CSD) is recognised to be caused by *Bartonella henselae*, which is a type of Gram negative bacillus. *B. henselae* is commonly found in cats and an infected cat can transmit it to humans by scratch, bite, spread through cat saliva, close contact and cat flea. CSD is commonly self-limiting in an immunocompetent individual. It presents with a wide variety of symptoms, from mild to severe flu-like symptoms, fever, skin lesions presenting with nonspecific maculopapular rashes, lymphadenopathy, ocular manifestation and neurological manifestation. Reported ocular manifestation includes optic neuropathy, neuro retinitis, vitritis and Parinaud's oculoglandular syndrome [1, 2]. CSD can also present with combined neurological and ocular manifestation as reported recently by Ameilia et al., (2015), where they encountered a case of aseptic meningitis and neuro retinitis with raised intracranial pressure [3]. Diagnosis of CSD is mainly by clinical, usually supported by history of cat scratch or close contact with cats in conjunction to the clinical examination findings. A serologic positive Immunoglobulin (Ig) M which indicates an acute disease that occurred within 3 months complements the diagnosis of CSD [4]. Although CSD is usually self-limiting, studies have recommended treatment with antimicrobial in view of the association of *Bartonella henselae* with CSD [5-7]. Antimicrobial options such as trimethoprim-sulfamethoxazole, doxycycline, rifampin, gentamicin, ciprofloxacin and azithromycin have been shown to reduce the duration of illness and hasten visual recovery [6, 8]. Corticosteroids either alone or in combination with antimicrobial were reported in studies to have good response [5, 9, 10].

We report a case of CSD associated neuro retinitis that was treated initially with just topical Nepafenac 0.1%, a Non-Steroidal Anti-Inflammatory Drug (NSAID) which showed early improvement of visual acuity.

Case Report

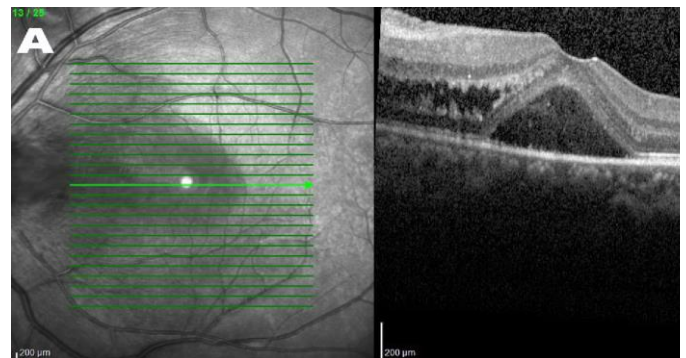
A 14-year-old boy presented with painless reduced central vision associated with metamorphopsia in the left eye of 5 days duration. It was not associated with eye redness or discharge. A month prior to presentation of eye symptoms, he had a febrile episode which had resolved without needing medical attention. This had been preceded by a recent history of being scratched and bitten by cats in their household.

Figure 1: Fundus photo of the left eye at presentation (A), showing optic disc swelling and focal retinitis temporal to disc.



Visual acuity on presentation was 6/6 in his right eye and 6/24 in his left eye. Relative Afferent Pupillary Defect (RAPD) was present in the left eye. Anterior segment was unremarkable with no signs of anterior uveitis. Fundus of right eye was normal. Posterior segment of the left eye showed a hyperemic disc with blurred margin, focal retinitis seen temporal to the disc and macular edema with no obvious macular star seen (Figure 1A). Optical Coherent Tomography (OCT) showed presence of intraretinal fluid and subretinal fluid with loss of fovea depression (Figure 2A).

Figure 2 A: OCT findings on presentation



A clinical diagnosis of neuro retinitis secondary to cat scratch disease was made. He was started on topical nepafenac 0.1% tds while waiting for blood investigations. On review 3 days later, he showed an improvement in his left visual acuity from 6/24 to 6/9. Examination showed reduction in macular edema with formation of an incomplete macular star (Figure 1B). On day 6, he was able to achieve left eye vision of 6/6 with residual metamorphopsia. OCT macula showed further improvement in macula edema (Figure 2C). At this time, patient was started on oral azithromycin 500mg daily. At 1 month, his visual acuity remained 6/6 with minimal metamorphopsia and OCT showed complete resolution of subretinal fluid (Figure 2D). He completed 6 weeks of topical nepafenac and systemic azithromycin, and he remained well on follow-up.

Figure 1B: Examined on day 3 after presentation showing development of incomplete macular star.



Figure 2B: On day 3 after presentation

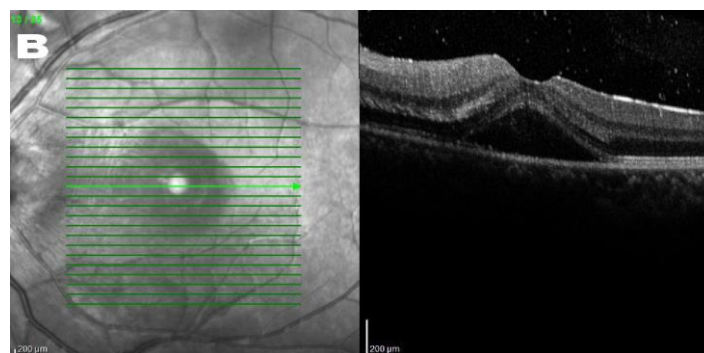
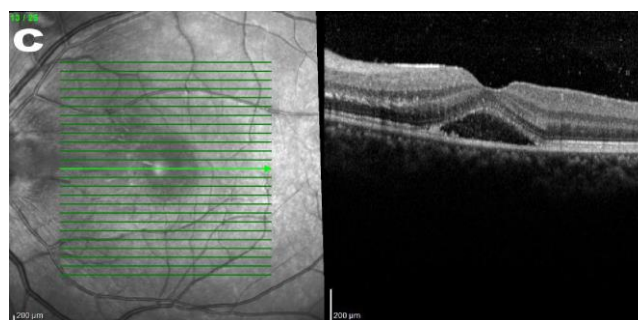


Figure 2C: On day 6



Full blood count, renal profile and erythrocyte sedimentation rate was within normal limit. Mantoux test was negative. Serology test for Toxoplasmosis IgM was negative but positive for IgG which suggests previous infection. Serology test for *Bartonella henselae* was positive for both IgM titre (1:24) and IgG (1:128).

Discussion

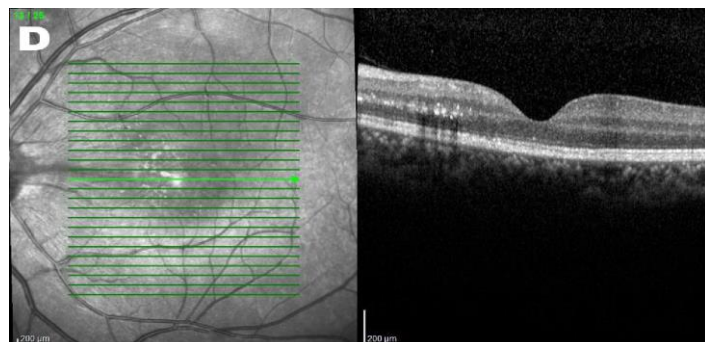
The current understanding of neuro retinitis is that there is presence of inflammation which leads to an increased permeability of optic disc vasculature with secondary leakage into surrounding retina [5, 11]. The resorption of the accumulated fluid in the outer plexiform layers leaves behind lipid precipitates in a stellate pattern around the macula [12]. In study published by Purvin et al., (2011), their observation of cat scratch neuro retinitis suggests that visual loss was associated to serous detachment of macula rather than optic nerve dysfunction [5]. Prolonged accumulation of intracellular fluid in macular edema can cause permanent and lasting damage to the retina [13].

Nepafenac is an NSAID pro-drug, where it has good cornea permeability and allows good intraocular penetration. In the eye, nepafenac is converted by intraocular tissue hydrolases into amfenac, an active derivative that is more potent [13, 14]. Inflammatory process involves many mediators such as prostaglandin, leukotrienes, vascular endothelial growth factor and interleukins. Anti-inflammatory effects of NSAIDs are mainly by inhibition of

Cyclooxygenase (COX) activity which reduces prostaglandin production [14, 15]. By blocking prostaglandin synthesis which is one of the inflammatory mediators, NSAIDS are shown to be effective in inhibiting the blood-retinal barrier breakdown thus reducing vascular hyperpermeability [11, 13, 16].

In our case, topical nepafenac 0.1% was started with the aim of treating the component of inflammatory macular edema while waiting for the blood investigations. Patient demonstrated good early visual recovery from 6/24 to 6/9 in 3 days, which justified the continued usage of nepafenac even when he was subsequently started on oral azithromycin. The early improvement was evidenced by OCT as shown in Figure 2B, where there is reduction of intraretinal fluid and subretinal fluid as compared to Figure 2A. His visual improvement with the treatment of topical NSAID and systemic Azithromycin was comparable to other reported case of treatment of systemic antimicrobial and oral prednisolone [10, 17]. Our case demonstrates an earlier resolution of subretinal fluid at 26 days as evidenced by OCT, which was comparable to the case series by Raihan et al., (2014), which range from 1 month to 2 months [10]. This suggests that topical Nepafenac used in conjunction with oral antimicrobial is safe and beneficial.

Figure 2D: On day 27



Conclusion

Further studies are needed to further investigate the role of topical Nepafenac, an NSAID that has good posterior segment penetration which may be an alternative to systemic corticosteroid in ocular bartonellosis presenting with neuro retinitis.

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