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CASE REPORT

Bromfenac 0.09% as adjunct to anti-VEGF for the treatment of macular edema secondary to noninfectious uveitis

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ABSTRACT

Background: Uveitis is a major cause of visual impairment and blindness, and macular edema is the major risk factor. Uveitic macular edema (UME) mechanism is primarily through blood–retinal barrier breakdown driven by inflammatory mediators such as prostaglandins and vascular endothelial growth factor (VEGF). Corticosteroids are the main treatment but can cause significant side effects, leading to the use of alternatives, including topical non-steroidal anti-inflammatory drugs (NSAIDs) and intravitreal anti-VEGF agents. Bromfenac is an Food and Drug Administration-approved NSAID for postoperative inflammation, but its efficacy in UME is not clear. We report a case of UME secondary to non-infectious uveitis managed with topical bromfenac in combination with intravitreal aflibercept.

Case Presentation: A 13-year-old female with a history of chronic intermittent bilateral posterior uveitis presented for follow-up 6 months after stopping biologic treatment and 2 years of stable disease activity. Uncorrected visual acuity was 6/12 in Oculus Uterque (both eyes), and recurrent macular edema was found in the Oculus Dexter (right eye) (OD) with central foveal thickness (CFT) of 718 µm. The patient was started on bromfenac 0.09% twice daily and received a single intravitreal anti-VEGF injection. At 1-week follow-up, the CFT decreased to 419 µm. At 4-week follow-up, the CFT decreased to 318 µm OD, and there was significant improvement of the macular edema.

Conclusion: Bromfenac 0.09% as an adjunctive to anti-VEGF injection may be an effective treatment for macular edema secondary to non-infectious uveitis.

Keywords: Case report, bromfenac, macular edema, uveitis, anti-VEGF.

Introduction

Uveitis, an inflammation of the middle layer of the eye, is a prevalent cause of blindness, particularly among working-age individuals and in low- to middle-income countries [1]. Approximately 35% of patients with uveitis experience visual impairment, contributing to about 10% of visual impairment in the Western world. Macular edema is the primary risk factor, responsible for 29% of blindness and 41% of visual impairment, and while it is often associated with panuveitis, it can complicate other forms of uveitis [2].

Uveitic macular edema (UME) is characterized by the breakdown of the blood-retinal barrier and fluid leakage through the retinal pigment epithelium, with factors such as prostaglandins and vascular endothelial growth factor (VEGF) playing a role [3].

Corticosteroids are the main treatment for UME but can have significant side effects, leading to the exploration of alternative therapies [1]. These include nonsteroidal immunomodulators, non-steroidal anti-inflammatory drugs (NSAIDs), systemic acetazolamide, and anti-VEGF injections.

Topical NSAIDs, in particular, are noteworthy for their ability to inhibit prostaglandin production and are used to prevent postoperative cystoid macular edema (CME) after cataract surgery [4]. Bromfenac 0.09%, approved

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by the Food and Drug Administration (FDA) for postoperative inflammation, shows promise for treating pseudophakic CME and has a synergistic effect with intraocular triamcinolone, though its impact on UME alone is limited [5].

Intravitreal injection of bevacizumab (IVB) as well as intravitreal triamcinolone acetonide are well tolerated and are associated with short-term improvement in visual acuity (VA) and decreased optical coherence tomography (OCT) retinal thickness in a considerable proportion of patients with uveitic CME resistant to conventional therapy [6].

We report a case of UME secondary to non-infectious uveitis treated with bromfenac sodium ophthalmic solution in adjunct with an intravitreal injection of aflibercept.

Case Presentation

A 13-year-old female with a history of intermittent isolated bilateral posterior uveitis associated with bilateral macular edema 3 years ago presented for follow-up. She had been treated with a combination of oral prednisolone, azathioprine, and biweekly adalimumab injections. The macular edema in the right eye had resolved with no history of receiving intravitreal injections, while in the left eye persisted, and 2 mg aflibercept intravitreal injections had been administered. Consequently, a complete resolution of the macular edema had been achieved bilaterally. Prednisolone and azathioprine had been slowly tapered and discontinued, and adalimumab injections had been discontinued 6 months prior to the presentation, and the patient had been stable with no disease activity for 2 years.

Ophthalmological examination showed an uncorrected VA of 6/12 Oculus Uterque (both eyes), intraocular pressure was 10 mmHg Oculus Dexter (right eye) and 11 mmHg OS with a normal anterior segment. Fundoscopic examination showed a recurrence of the macular edema in the right eye. OCT confirmed the diagnosis of macular edema in the right eye with central foveal thickness (CFT) of 718 µm (Figure 1a).

Following OCT confirmation, the patient was started on topical bromfenac 0.09% twice daily and received a 2 mg aflibercept intravitreal injection. At 1-week follow-up, the CFT decreased to 424 µm (Figure 1b). At 4-week follow-up, there was a significant improvement in the macular edema with a CFT of 318 µm (Figure 1c). There were no reported side effects during the treatment.

Discussion

There is growing evidence supporting the use of NSAIDs for the prevention and management of pseudophakic CME. These medications inhibit the COX1 and COX2 enzymes, thereby lowering intraocular levels of prostaglandins, which are known to disrupt the blood-retinal barrier. However, research on its effectiveness for UME remains limited [2,3].

Among the FDA-approved ophthalmic NSAIDs for managing postoperative inflammation and pain, bromfenac ophthalmic solution 0.09% may have advantages due to its high lipophilicity, which allows for better penetration and sustained drug levels in ocular tissues, leading to faster inflammation reduction. While some studies suggest bromfenac efficacy is comparable to that of other NSAIDs, others indicate it may be superior in preventing and managing pseudophakic macular edema [7,8].

In a comparative study of bromfenac alone versus bromfenac combined with IVB or triamcinolone for UME treatment, bromfenac alone was ineffective. However, it demonstrated a synergistic effect when combined with intravitreal triamcinolone in reducing macular thickness [6]. In our case report, bromfenac 0.09% combined with a single anti-VEGF intravitreal injection showed significant improvement in the macular edema at 4 weeks of follow-up.

Conclusion

Bromfenac 0.09% as an adjunctive to anti-VEGF intravitreal injection may be an effective treatment for UME in refractory patients. Larger studies, such as randomized controlled trials, are needed to test the efficacy.

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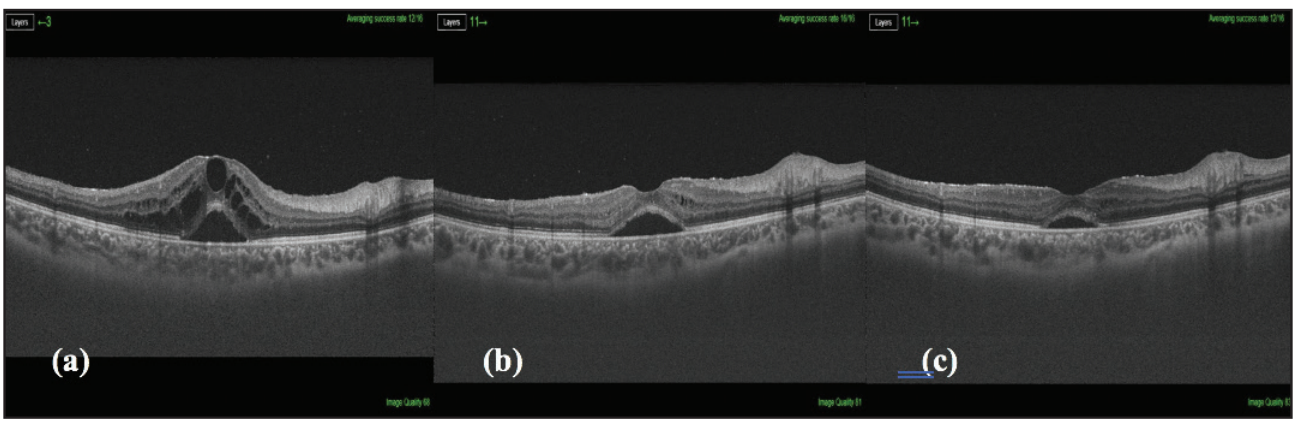


Figure 1. *OCT showing improvement in macular edema: (a) baseline, (b) 1-week follow-up, and (c) 4-week follow-up.*

List of Abbreviations

VEGF	Vascular Endothelial Growth Factor
FDA	Food and Drug Administration
OU	Oculus Uterque (both eyes)
OD	Oculus Dexter (right eye)
OS	Oculus Sinister (left eye)
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
CFT	Central Foveal Thickness
CME	Cystoid Macular Edema
OCT	Optical Coherence Tomography
IVB	Intravitreal Bevacizumab
VA	Visual Acuity

Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this article.

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Consent for publication

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Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

Key learning points

- UME remains a major cause of visual impairment in uveitis patients and may recur even after a prolonged period of disease stability, highlighting the need for long-term monitoring and management.
- Topical NSAIDs such as bromfenac may provide a synergistic effect when combined with intravitreal therapies in recurrent UME while minimizing systemic immunosuppressive burden.
- Bromfenac 0.09% as an adjunct to intravitreal anti-VEGF may be an effective treatment in refractory UME.
- Further randomized controlled studies are required to establish the efficacy of bromfenac 0.09% in the management of UME.

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Supplementary content (If any) is available online.

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