

Resolution of Cystoid Macular Edema Secondary to Radiotherapy following Topical Nepafenac Treatment

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ABSTRACT

Objective: To report on the use of topical nepafenac in the treatment of cystoid macular edema (CME) secondary to radiation therapy for choroidal metastasis.

Method: Case report with presentation of spectral domain optical coherence tomography (SD-OCT) findings before and after topical nepafenac therapy.

Results: A 42-year-old lady with a history of breast carcinoma presented with left eye blurring of vision due to left eye choroidal metastasis. Radiation therapy was performed on the left eye for choroidal metastasis and the choroidal metastasis completely regressed. Two months after radiation therapy, the patient developed reduced vision due to macular edema and SD-OCT demonstrated CME with macular thickening. Topical nepafenac therapy for 1 month resulted in complete resolution of the CME and her vision improved from 20/70 to 20/25. There was no evidence of recurrence of CME in 8 months after cessation of nepafenac therapy.

Conclusion: Topical nepafenac appeared to be a useful treatment option for CME secondary to radiation therapy.

Keywords: Cystoid macular edema, Radiation therapy, Nepafenac, NSAID.

INTRODUCTION

Over the past 10 to 15 years, topical nonsteroidal anti-inflammatory drugs (NSAIDs) are being increasingly used in ophthalmology. Being cyclooxygenase (COX) inhibitors, their primary mechanism of action is to reduce endogenous prostaglandin productions.¹ NSAIDs have well-established clinical efficacy in the treatment of ocular inflammation and have also been shown to be effective in the management of cystoid macular edema (CME) following cataract surgery.² Topical NSAIDs have significant advantages over topical corticosteroid as they are less likely to cause side effects, such as ocular hypertension and increase in cataract. However, most topical NSAIDs do not have good ocular penetration to achieve a high concentration in the posterior segment.

Nepafenac (Nevanac, Alcon, Fort Worth, Texas) is a non-steroidal anti-inflammatory prodrug which was approved by the United States Food and Drugs Administration (FDA) in 2005 for the treatment of postsurgery ocular inflammation. Topical administration of the 0.1% ophthalmic suspension rapidly penetrates the eye, where it is converted to amfenac, a potent inhibitor of both COX-1 and COX-2.³ This COX inhibition reduces the formation of prostaglandins associated with inflammation, which is believed to play a major role in the pathogenesis of CME. Several studies have previously reported the beneficial effects of nepafenac in treating CME.^{3,4}

We hereby report the use of topical nepafenac in a patient with CME secondary to radiation therapy for choroidal metastasis. Treatment resulted in prompt reduction in CME with visual improvement.

CASE REPORT

A 42-year-old Chinese female with a history of breast carcinoma presented with left eye blurring of vision for 1 week. The breast cancer was previously treated with lumpectomy, followed by radiation therapy and chemotherapy with tamoxifen started 4 years ago. On presentation, her best-corrected visual acuity (BCVA) was 20/20 in the right eye and 20/50 in the left eye. Fundus examination of the left eye revealed a 3.5 disk-diameter subretinal mass superior to the macula with overlying subretinal fluid. Ultrasound of the eye demonstrated a choroidal mass of medium to high internal reflectivity. She was diagnosed with choroidal metastasis and underwent radiation therapy to the left eye (3 gray/fraction \times 10 fractions). Following radiation therapy, the choroidal mass regressed completely with overlying retinal pigmented epithelium (RPE) changes and completes resolution of subretinal fluid. There was no evidence of radiation retinopathy or other significant pathology. Spectral domain optical coherence tomography (SD-OCT) showed a well-preserved foveal depression and her left eye vision improved to 20/40 after treatment.

Two months after completion of radiation therapy, she returned complaining of left eye blurring of vision. The left eye BCVA reduced to 20/70 and fundus examination showed macular thickening over the macula. A subretinal scar was noted over the previous choroidal metastasis site, no subretinal fluid was seen over the scar (Fig. 1A). Fluorescein angiography (FA) showed mild petalloid pattern of leakage at the macula (Fig. 1B) due to CME. SD-OCT of the left eye showed macular thickening with intraretinal cystic changes and a central macular thickness (CMT) of 408 μm (Fig. 2A). After discussing various treatment options with the patient, she was treated with topical 0.1% nepafenac three times daily.

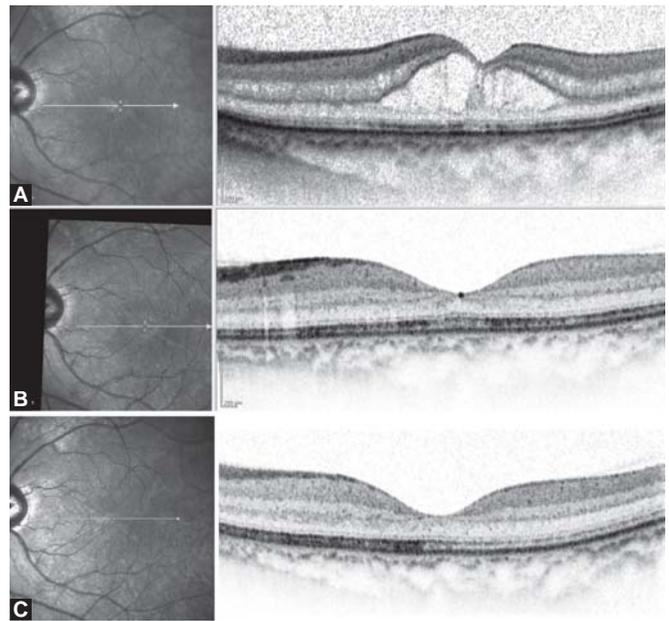
One month after treatment with topical nepafenac, her left eye BCVA improved from 20/70 to 20/40. Fundus examination showed complete resolution of macular edema and repeat SD-OCT examination showed restoration of the foveal depression with CMT of 205 μm . At 2 months after treatment, the left eye BCVA further improved to 20/30. SD-OCT showed foveal depression with CMT of 202 μm (Figs 2B and C). In view of complete resolution of CME, nepafenac was stopped. The patient was followed for 8 months after cessation of nepafenac and there was no recurrence of the CME and her final left eye BCVA at 20/25.

DISCUSSION

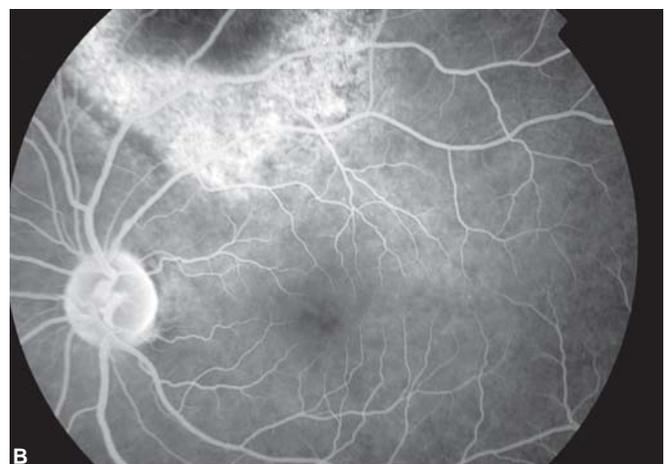
Compared with topical corticosteroids, nepafenac has a higher safety profile as it is not associated with side effects, such as raised IOP, increased susceptibility to infections and formation of posterior subcapsular cataract. Therefore, it appears to be a safer and more desirable alternative. Among the different NSAIDs, nepafenac is unique in that it is a prodrug and is converted to the potent active amfenac by intraocular hydrolases, which are at their highest concentrations in the retina and choroid.^{5,6} This characteristic site-specific bioactivation allows targeting of the metabolite amfenac to the posterior segment, making nepafenac a superior choice to other conventional NSAIDs in the treatment of CME. Nepafenac has been reported to be effective against macular edema of various

etiologies, including acute and chronic pseudophakic CME, uveitic CME, diabetic macular edema and postoperative CME.^{4,7-9}

Our case demonstrated that topical nepafenac is effective in the treatment of CME secondary to radiation therapy. Following treatment, there was rapid and complete resolution of macular edema and improvement in vision. Moreover, the effect appeared to be sustainable without subsequent CME recurrence after stopping the treatment for more than 8 months. Based on the findings, topical nepafenac appeared to be an effective treatment option in CME associated with radiation therapy.



Figs 2A to C: (A) Left eye optical coherence tomography (OCT) showed macular thickening with intraretinal cystic changes and a central macular thickness (CMT) of 408 μm at 2 months after radiation therapy for choroidal metastasis, (B) follow-up OCT examinations at the same location 2 months after application of nepafenac showing complete resolution of the macular edema with restoration of the foveal depression with CMT of 202 μm , (C) OCT examination at 8 months showing lack of recurrence of CME



Figs 1A and B: (A) Left eye color fundus photograph at 2 months after radiotherapy showing macular edema with subretinal scar superior to the macula overlying previous choroidal metastasis area, (B) late phase fluorescein angiogram of the left eye showing mild petalloid pattern of leakage at the macula without any leakage from previous choroidal metastasis area

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