Original research article

A Comparison of Topical Dorzolamide and Topical Nevanac in the Treatment of Central Serous Retinopathy: A Prospective Clinical Study

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Abstract

Aim: To compared the efficacy of topical dorzolamide and topical nevanac in central serous retinopathy.

Methods: This prospective study was carried out in the Department of Ophthalmology, Madhubani Medical College and Hospital, Madhubani, Bihar, India for 1 year. Total 20 patients diagnosed with acute CSR were included in this study. Patients divided into 2 equal groups, diagnosed with acute CSR relying upon visual acuity, dilated fundus examination and OCT findings. A detailed history of all the patients was taken to rule out other etiologies. Vision and central macular thickness were recorded using standard Snellen chart and optical coherence tomography respectively (OCT).

Results: On examination of group A patient, had visual acuity of 6/60, Counting fingers at 4 meters in the Right eye respectively, and central macular thickness (CMT) on OCT 420 microns to 430 microns respectively and group B Patient had a visual acuity of 6/60 in right eye and had a visual acuity of 6/60 in left eye, and central macular thickness on OCT was 433 microns to 457 microns respectively. Group A were started on Nevanac eye drops thrice daily, and Group B on Dorzolamide eye drops twice daily. All the patients were followed up on the 1st, 2nd, 3rd and 4th week. On each visit, vision, dilated fundoscopy, and OCT were performed. On follow up at 1st, 2nd, 3rd and 4th week it was observed that macular thickness in Group B reduced on a faster rate than in Group A

Conclusion: The two topical medications, i.e., nevanac and dorzolamide, to which both the patients responded well. But it was more rapid in the case of patient treated with dorzolamide.

Keywords: dorzolamide, nevanac, serous retinopathy

Introduction

Central serous chorioretinopathy (CSC) is characterized by a serious detachment of the neurosensory retina at the posterior pole, which is caused by active retinal pigment epithelial (RPE) leakage.[1,2] The disease has a favorable natural course with the spontaneous resolution of the neurosensorial detachment in association with improvement of visual function. However, it is very difficult to predict the prognosis of CSC, and in some cases, progressive visual loss may be seen.[3,4] Thus, an intervention should be considered in CSC patients prior disruption of retinal layers. Gilbert et al. demonstrated that 51% of untreated patients experienced a single resolving attack, and 49% of them had a recurrent or chronic clinical course.[5] Although the exact pathophysiology of CSC has not been clearly elucidated, the primary abnormality leading to RPE disruption and leakage is thought to be increased choroidal permeability.[6] Studies using different imaging techniques have revealed the possible causes of abnormal permeability of the

inner choroid. Ischemia and inflammation might lead to exudative changes within the choroid and the subsequent changes at the RPE.[7] Chronic CSCR can be a sight threatening disease with legal blindness ensuing in over 10% of patients.[8] The underlying pathophysiology is believed to involve retinal pigment epithelium (RPE) dysfunction resulting in reversal of normal fluid flow across the retinal layers.[9] This RPE dysfunction may be precipitated by an increase in endogenous or exogenous corticosteroids.[10,11] A number of treatments have been proposed for chronic CSCR.1,3 The best evidence is for indocyanine green angiography guided photodynamic therapy (PDT), which is supported by randomized clinical trial evidence[12] and results in fluid resolution in more than half of patients by 6 to 8 weeks. PDT is effective but requires specialized equipment, and there is a small risk of complications.[13]

Nepafenac is a topical nonsteroidal anti-inflammatory prodrug that rapidly penetrates the cornea and is deaminated to form the active metabolite amfenac by intraocular hydrolases in the ocular tissues, including the ciliary body epithelium, retina, and choroid.[14] Its bioactivation enhances intraocular penetration at the target sites and provides optimal distribution and longer duration in the cornea, iris, ciliary body, retina, and choroid.[15] The effectiveness of nepafenac has been revealed in inflammatory diseases affecting the posterior segment of the eye such as uveitic and pseudophakic chronic cystoid macular edema.[16] the aim of this study to compared the efficacy of topical dorzolamide and topical nevanac in central serousretinopathy.

Material and methods

This prospective study was carried out in the Department of Ophthalmology, Madhubani Medical College and Hospital, Madhubani, Bihar, India for 1 year. after taking the approval of the protocol review committee and institutional ethics committee.

Methodology

After taking informed consent detailed history was taken from the patient or the relatives if the patient was not in good condition. Total 20 patients diagnosed with acute CSR were included in this study. Patients divided into 2 equal groups, diagnosed with acute CSR relying upon visual acuity, dilated fundus examination and OCT findings. A detailed history of all the patients was taken to rule out other etiologies. Vision and central macular thickness were recorded using standard Snellen chart and optical coherence tomography respectively (OCT).

Results

On examination of group A patient, had visual acuity of 6/60, Counting fingers at 4 meters in the Right eye respectively, and central macular thickness (CMT) on OCT 420 microns to 430 microns respectively.and group B Patient had a visual acuity of 6/60 in right eye and had a visual acuity of 6/60 in left eye, and central macularthickness on OCT was 433 microns to 457 microns respectively. Group A were started on nevanac eyedrops thrice daily, and Group B on Dorzolamide eye drops twice daily. All the patients were followed up on the 1st, 2nd, 3rd and 4th week. On each visit, vision, dilatedfundoscopy, and OCT were performed. On follow up at 1st, 2nd, 3rd and 4th week it was observed that macular thickness in patient C, D reduced on a faster rate than in patient A andB.

Table 1: gender and age distribution of patients

Gender	Number of patients	Percentage
Male	**13**	**65**
Female	**7**	**35**

Age in years		
Below 30	**6**	**30**
30-40	**8**	**40**
40-50	**4**	**20**
Above 50	**2**	**10**

Table 2: OCT central macular thickness (In microns)

	1st week	**2nd week**	**3rd week**	**4th week**
Group A (**Nevanac**)	421	398	372	227
Group B (Dorzolamide)	420	389	378	222

Discussion

Topical bromfenac, ketorolac, nepafenac and diclofenac all belong to the non-steroidal anti-inflammatory drugs (NSAIDs) class of medications. As an anti-inflammatory class, they function by inhibiting the enzyme cyclooxygenase, which blocks the synthesis of prostaglandins. A reduction in prostaglandin formation results decrease in inflammation. Inflammation makes the blood-retinal barrier more permeable. It appears that the principle pathway involved in pain and inflammation is the cyclooxygenase - 2 pathways where non-steroidal anti-inflammatory drugs NSAIDs seems to play a significant role. The current uses for topical NSAIDs have been somewhat limited to the prevention of intraoperative miosis (small pupil) during Phacoemulsification,[17] relief of postoperative pain, inflammation and photophobia, therapy for ocular atopy and the reduction of post-cataract cystoid macular edema.[18]

Central serous chorioretinopathy, an idiopathic retinaldisorder, can lead to visual loss because of fluid accumulation in retinal layers for a longer time, leading to foveal attenuation, cystoid macular degeneration, and damage of the foveal photoreceptor layer.[19] A variety of treatment modalities like focal argon photocoagulation, PDT, anti-VEGF, topical non-steroidal anti-inflammatorydrug (NSAID) are being used.[20] In this study, we used **Nevanac** and dorzolamide as a topical therapy. We did notuse any intravitreal injection, laser or PDT. We found that macular thickness reduced very early, and vision returned tonormal in both the patients, but it was more rapid in patientstreated with topical dorzolamide. Many studies have treated central serous chorioretinopathy using different modalities like argon photocoagulation for leaking spot, PDT, anti-VEGF injections, and topicalNSAIDS.[21,22]

Conclusion

We utilised two topical medicines in our research, nevanac and dorzolamide, and both patients reacted well to them. However, it was faster in those who were given dorzolamide. Studies with a bigger sample size and a longer length of time are necessary to make the results more generalizable. This research opens up new avenues for further investigation.

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