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## A comparative study on efficacy of topical dorzolamide and topical nevanac in central serous retinopathy

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### Abstract

**Introduction:** Central serous chorioretinopathy (CSR) is mostly an idiopathic ocular disorder characterized by a serous detachment of the neurosensory retina at the macula, caused by active retinal pigment epithelial leakage. Nepafenac is a topical non-steroidal anti-inflammatory prodrug that acts by blocking prostaglandins' synthesis, thereby decreasing inflammation. Whereas carbonic anhydrase inhibitors like dorzolamide effectively manage subretinal and intraretinal fluid absorption through Retinal Pigment Epithelium (RPE), resulting in decreasing in CSR.

**Materials and Methods:** A pilot study on four patients diagnosed with acute CSR was done in a medical college in Andhra Pradesh for a period of 2 months. Patient A, B, C and D are diagnosed as having a acute CSR relying upon Visual acuity, dilated fundus examination and OCT findings. Patient A and B were treated with Nepafenac eye drops thrice daily, and patient C and D with Dorzolamide eye drops twice daily. All patients were followed up on the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> week. On each visit, vision, dilated funduscopy, and OCT were performed.

**Results:** All Patients were followed up from the day of presentation to the 30th day. Central Macular thickness and visual acuity recorded from 1st week till 4th week shows early resolution of submacular fluid in all the patients. It was noted that there was a rapid resolution of CSR in patient C and D treated with Dorzolamide compared to patient A and B treated with Nepafenac.

**Keywords:** CSR, nepafenac, dorzolamide

### Introduction

Central serous chorioretinopathy (CSR) is characterized by a serous detachment of the neurosensory retina at the posterior pole, which is caused by active retinal pigment epithelial (RPE) leakage. In most cases, the disease has a favourable natural course with the spontaneous resolution of the neurosensory detachment associated with improvement of visual function. However, it is very difficult to predict the prognosis of CSR, and in some cases, progressive visual loss may be seen <sup>[1]</sup>.

The exact pathophysiology of CSR not yet known. The primary abnormality is thought to be increased choroidal permeability <sup>[2]</sup>.

Several treatments have been proposed for CSR. Carbonic anhydrase inhibitors such as dorzolamide are effective at managing subretinal fluid absorption through RPE <sup>[3]</sup>.

Nepafenac belonging to NSAIDS class, act by inhibiting the enzyme Cyclooxygenase. This blocks the synthesis of prostaglandins resulting in decreasing inflammation making the blood-retinal barrier more permeable <sup>[4]</sup>.

### Materials and Methods

A pilot study on four patients diagnosed with acute CSR was done in a medical college in Andhra Pradesh for a period of 2 months. Patient A, B, C, and D are 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 patient, A and B had visual acuity of 6/60, Counting fingers at 4 meters in the Right eye respectively, and central macular thickness (CMT) on OCT 422 microns and 430 microns respectively.

Patient C had a visual acuity of 6/60 in right eye and patient D had a visual acuity of 6/60 in left eye, and central macular thickness on OCT was 435 microns and 460 microns respectively. Patient A and B were started on Nepafenac eye drops thrice daily, and Patient C and D on Dorzolamide eye drops twice daily. All the patients were followed up on the

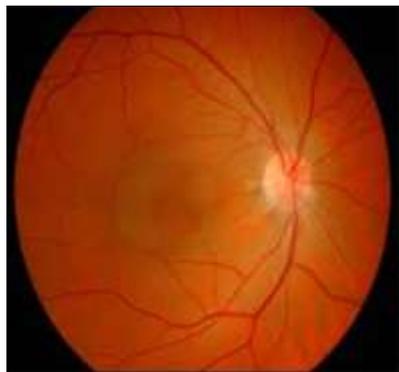
1st, 2<sup>nd</sup>, 3<sup>rd</sup> and 4th week. On each visit, vision, dilated fundoscopy, and OCT were performed. On follow up at 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4th week it was observed that macular thickness in patient C, D reduced on a faster rate than in patient A and B.

**Table 1:** OCT central macular thickness (In microns)

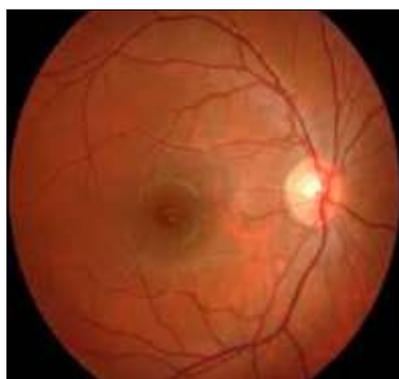
	1 <sup>st</sup> week	2 <sup>nd</sup> week	3 <sup>rd</sup> week	4 <sup>th</sup> week
Patient A (Nepafenac)	420	401	370	230
Patient B (Nepafenac)	425	397	382	232
Patient C (Dorzolamide)	430	352	297	210
Patient D (Dorzolamide)	440	332	301	218

**Discussion**

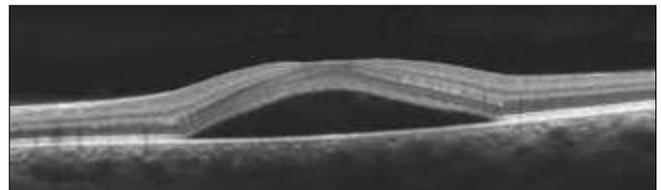
Central serous chorioretinopathy, an idiopathic retinal disorder, can lead to visual loss because of fluid accumulation in retinal layers for a longer time, leading to foveal attenuation, cystoid macular degeneration, and damage of the foveal photoreceptor layer [5]. A variety of treatment modalities like focal argon photocoagulation, PDT, anti-VEGF, topical non-steroidal anti-inflammatory drug (NSAID) are being used [6]. In this study, we used Nepafenac and dorzolamide as a topical therapy. We did not use any intravitreal injection, laser or PDT. We found that macular thickness reduced very early, and vision returned to normal in both the patients, but it was more rapid in patients treated with topical dorzolamide.



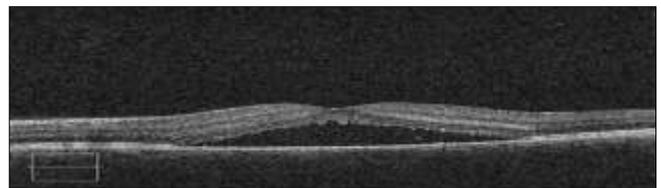
**Fig 1:** Fundus examination in the right eye (Patient A) revealed clear media with normal disc. Foveal reflex appeared dull. Macular edema along with concentric neurosensory detachment in the macula noted



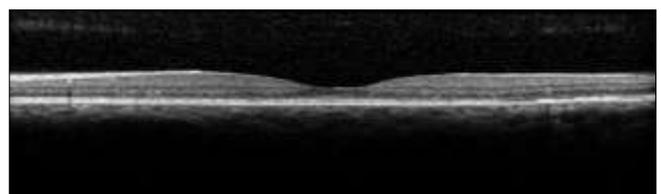
**Fig 2:** Fundus examination in right eye (Patient C) revealed clear media with normal disc. Foveal reflex appeared dull. Macular edema along with concentric neurosensory detachment in macular noted



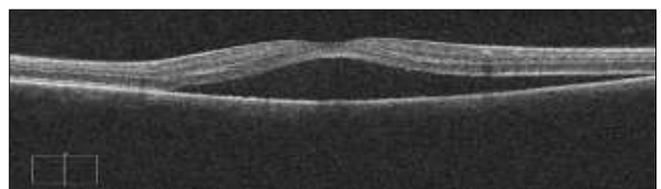
**Fig 3:** OCT image of patient A at the day of presentation shows optically empty neurosensory elevation with sub-retinal fluid collection



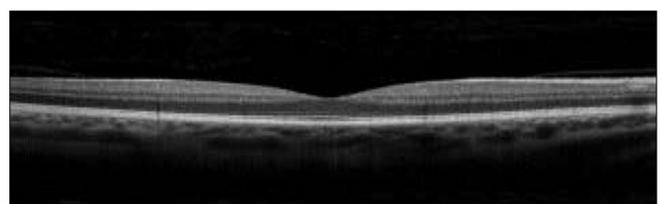
**Fig 4:** OCT image of patient A at the end of 1<sup>st</sup> week shows decrease in the macular thickness and decrease in sub-retinal fluid level



**Fig 5:** OCT image of patient A at the end of 4<sup>th</sup> week shows complete resolution of sub-retinal fluid level



**Fig 6:** OCT image of patient C at the day of presentation shows optically empty neurosensory elevation with sub-retinal fluid collection



**Fig 7:** OCT image of patient C at the end of 3<sup>rd</sup> week shows complete resolution of sub-retinal fluid collection

## Conclusion

Many studies have treated central serous chorioretinopathy using different modalities like argon photocoagulation for leaking spot, PDT, anti-VEGF injections, and topical NSAIDs [7, 8]. In our study, we have used two topical medications, i.e., Nepafenac and dorzolamide, to which both the patients responded well. But it was more rapid in the case of patient treated with dorzolamide. As it is a pilot study, we have just taken four patients. But for exactly knowing the efficacy of medications, we need more sample size and longer duration of time.

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