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Oral eplerenone for the management of chronic central serous chorioretinopathy

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Abstract

Background: Chronic central serous chorioretinopathy (CSCR) is a vision-threatening disease characterized by serous subretinal fluid (SRF) accumulation causing a localized area of retinal detachment. The outer retinal barrier disruption leads to the accumulation of SRF. CSCR affects about 1 in 10,000 people, with men affected more commonly than women.

Objective: To evaluate the mineralocorticoid receptor antagonist in reducing subretinal fluid measurements as well as reduced central Subfoveal thickness along with improved visual acuity. As a treatment option for patients with CSCR, mineral corticosteroid receptor antagonist drugs such as oral eplerenone have been considered.

Methods: This prospective interventional study was conducted in Ispahani Islamia Eye Institute & Hospital, Dhaka, Bangladesh from September 2015 to February 2016. A total of 30 OPD patients was recruited as the study population. All 30 patients with central serous chorioretinopathy were reviewed and treated with mineralocorticoid antagonists.

Results: Out of a total of 30 patients, the average age of patients was 35.5 years. The average duration of mineralocorticoid antagonist treatment was 3.9±2.1 months. Sixteen patients (53.33%) showed decreased CMT & MV, eight patients (26.67%) had an increase in both, and six patients (20%) had negligible changes. The mean decrease in CMT of all patients was 42.4 µm, ref range, 136 to 255 µm. The mean decrease in MV of all patients was 0.20 mm3 (range, 2.33 to 2.90 mm3). Median visual acuity at the start of therapy was 20/30 (range, 20/20 to 20/250). And at final follow-up, it was 20/40 (range, 20/20 to 20/125).

Conclusion: In half of our patient's mineralocorticoid antagonist treatment had a positive treatment effect. In eplerenone oral therapy, there was a significant reduction in the subretinal fluid in eyes with chronic CSCR. Additionally, a reduction in central macular thickness & central macular volume is noted with improved visual acuity. Further research including larger prospective randomized trials is needed to validate these findings.

Keywords: patients, central, CSCR, mineralocorticoid, antagonist, treatment, range, serous, sub retinal

Introduction

CSCR (Chronic central serous chorioretinopathy) is a vision-threatening disease which is characterized by serous subretinal fluid (SRF) accumulation causing a localized area of retinal detachment [1-3]. Disruption of the outer retinal barrier it leads to the accumulation of SRF.4 CSCR affects about 1 in 10,000 people, with men affected more commonly than women [1-3]. Current treatment options include focal laser photocoagulation, photodynamic therapy (PDT) with verteporfin, anti-vascular endothelial growth factor (anti-VEGF) agents, corticosteroid inhibition, and adrenergic receptor inhibition [1-3]. None of these treatments have been studied in a large prospective clinical trial and these treatment modalities have variable outcomes. CSCR exhibits pathogenesis that is complex and not fully understood. Gass [6] indicates that the disease may start in the choroidal blood vessels. The subretinal space indicates the presence of focal areas of increased capillary permeability of the choriocapillaries in patients with CSCR in the observation of fibrin. This has been supported by findings with indocyanine-green angiography which shows subretinal leakage of dye representing choroidal vascular hyperpermeability [7-9]. In addition, it has been proposed that choroid vessels may be involved in the pathogenesis of CSCR in excessive glucocorticoid-dependent choroidal MR (mineralocorticoid receptor) activation [1, 2, 4]. CSCR has been proven to become more aggravated by endogenous or exogenous glucocorticoids, supported by the fact [1-5]. Rat choroid was thickened after the introduction of a high dose of glucocorticoids, specifically resulting from binding to MR, observed this trend by Zhao [4]. MR is expressed in the neuroretina and excessive activation of MR may promote retinal neovascularization [1]. Animal models and case reports have demonstrated that aldosterone-induced thickening was inhibited by the presence of an MR antagonist [1-4]. Therefore, the use of MR drugs such as oral eplerenone has been considered as a treatment option for patients with CSCR. Eplerenone acts as a competitive antagonist with excellent selectivity of the MR.10 An encouraging result of significant decreases in central

macular thickness and subretinal fluid along with significant improvement in visual acuity demonstrated in a pilot study of 13 patients conducted by Bousquet [2]. There is a great need to observe and assess the efficacy of this treatment option and unfortunately, the current literature lacks a larger case series of patients on oral eplerenone with chronic CSCR.

Methods and Materials

This was a prospective observational study. Patients on 25 or 50 mg/d of eplerenone for chronic CSCR had been recruited as the study population. Patients who had a history of retinal vascular diseases including diabetic retinopathy, previous retinal vein occlusion affecting the retina, diabetic macular edema, exudative age-related macular degeneration, or a history of uveitis within the study had been excluded. Female patients may exhibit vaginal bleeding. Ethical approval had been taken from Ispahani Islamia Eye Institute & Hospital Institutional Review Board (IRB) Gamma-glutamyl transpeptidase (GGT) and hepatic side effects include an increase in serum alanine aminotransferase (ALT). Eye examination findings including best correct Snellen visual acuity (converted to log MAR visual acuity for analysis) and imaging results by optical coherence tomography (OCT) were collected for analysis. The primary outcome measure was the reduction in subretinal fluid diameter and height at 90 d following initiation of therapy. Central subfield thickness, cube volume, and cube average retinal thickness, secondary outcome measures included log Mar visual acuity. A spectral-domain OCT (SD-OCT) macular cube and horizontal and vertical 5 raster scan protocols were performed with a Zeiss Cirrus HD-OCT (Cirrus version 6.1 software) at baseline and each follow-up visit. The central subfield thickness (ILM-RPE) SD-OCT measurements were included. Measurement of the height and diameter size of subretinal fluid, cube average thickness, and cube volume measurement using reading software.

Results

A total of 30 patients with central serous chorioretinopathy were reviewed & were treated with mineralocorticoid antagonists. The average age of patients was 35.5 years. The average duration of mineralocorticoid antagonist treatment was 3.9±2.1 months. Sixteen patients (53.33%) showed decreased CMT & MV, eight patients (26.67%) had an increase in both, and six patients (20%) had negligible changes. The mean decrease in CMT of all patients was 42.4 µm, the reference range is 136 to 255 µm. The mean decrease in MV of all patients was 0.20 mm3 (range, 2.33 to 2.90 mm3): Median visual acuity at the start of therapy was 20/30 (range, 20/20–20/250), and at final follow-up, it was 20/40 (range, 20/20–20/125). Plotted using a mixed model analysis and follow-up time was cut into several frames. Since time on eplerenone ranged from 30 to 180d, breaking time into baseline visit, 1-30d, 31-60d, and 60+d.

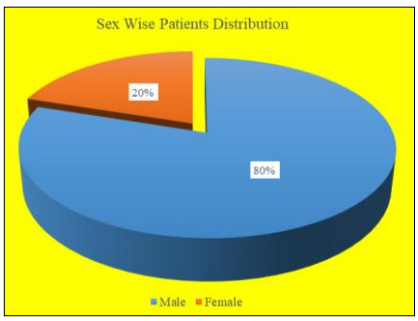

Fig 1: Patients Sex Wise Distribution

Table 1: Age group distribution of the study patients

Age in years	n	%
18 - 35	17	56.67
36 - 45	9	30.0
>45	4	13.33

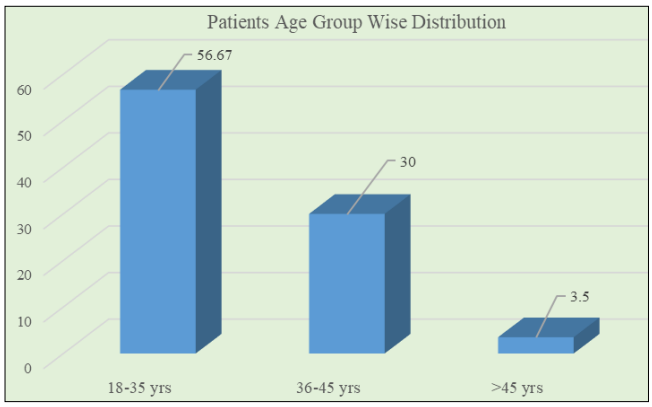

Fig 2: Patients Age Group Wise Distribution

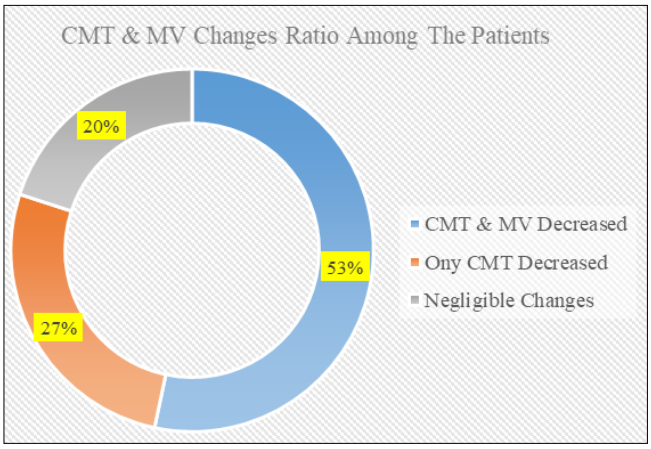

Fig 3: Central macular thickness (CMT) and Macular Volume (MV) assessment of patients

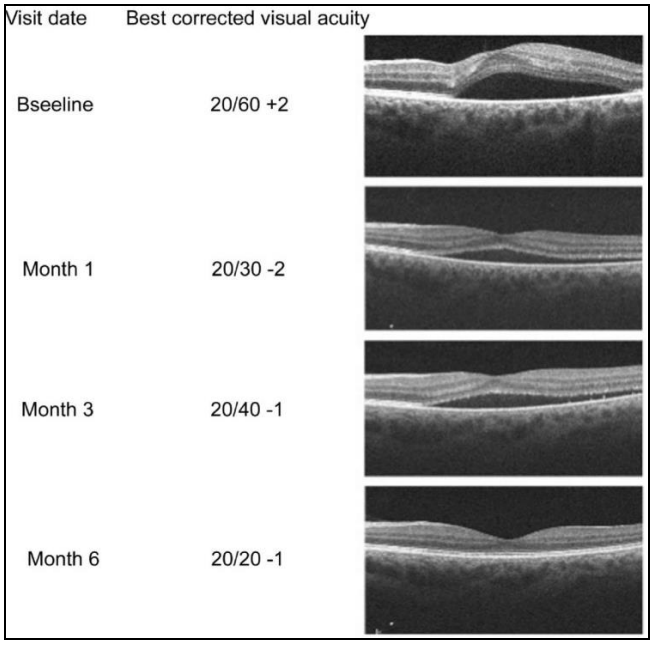

Fig 4: Best Corrected Visual Acuity among the Patients

Discussion

This series of patients treated with oral eplerenone twenty-

five mg or fifty mg per day for chronic CSCR incontestable statistically vital reductions in each horizontal and vertical subretinal fluid measurements moreover as reduced central subfield thickness alongside improved sharp-sightedness. Central subfield thickness at the primary follow-up amount considerably attenuated 100 percent from baseline (P=0.048). Log MAR, CST, horizontal SRF diameter, and vertical SRF height had statistically vital decreases at the third follow-up compared with baseline. Following eplerenone oral medical care, there was a major reduction in subretinal fluid in eyes with chronic CSCR with improved sharp-sightedness. The utilization of MR antagonist medicine like oral eplerenone has been thought-about as a treatment possibility for patients with CSCR. Eplerenone acts as a competitive antagonist with wonderful property of the MR the results of this study counsel that oral eplerenone is also effective within the treatment of CSCR, and will be investigated as a possible treatment selection in chronic cases. Given the high incidence of bilateral CSCR, oral eplerenone is also additional helpful than previous CSCR treatment modalities like focal optical maser surgical process or PDT, because it may be a treatment that targets the complete membrane versus specific areas.[2,5,12] in addition, optical maser surgical process treatment wasn't shown to scale back the incidence of continual or chronic CSCR and is simpler in acute CSCR.[13] Oral eplerenone is additionally less invasive than optical maser treatment and anti-VEGF injections. Given the tiny sample size of this study moreover because the lack of a placebo-controlled cluster, additional clinical studies are bonded to validate these findings. One amongst the difficulties in crucial the treatment effectuality of associate degree agent in CSCR is that the course is one amongst relapses and remissions. Any cases of acute CSCR, which usually have a higher prognosis, weren't treated with eplerenone. Ideally, a controlled chronic CSCR cohort would be useful once scrutiny the effectuality, however this could need a prospective randomized trial or a really massive sample size to recognize a distinction. It's vital to notice that this study lacked a precise record of the initial identification date, as physicians at this study website unremarkably receive patient consults from outside physicians so presumably making referral bias during this cohort. However, these patients were placed on eplerenone treatment with confirmation from the referring medico notes that the patient presents chronic CSCR. Dyestuff outpouring wasn't assessed during this study before and therefore the purpose of this study was to look at eplerenone, a corticosteroid receptor antagonist, as a treatment possibility for chronic CSCR. The goal of eplerenone treatment for chronic CSCR was to scale back and resolve foveal SRF whereas up visual outcomes. Following medical care, there was a major reduction in subretinal fluid, reduction in local time, and improved sharp-sightedness in eyes with chronic CSCR when treatment, despite dyestuff angiographs having been performed to verify the unwellness before enrollment.

Conclusion

In half of the patient's, mineralocorticoid antagonist had a positive treatment effect. There was a significant reduction in subretinal fluid in eyes with chronic CSCR in eplerenone oral therapy. Additionally, a reduction in central macular thickness (CMT) & central macular volume (CMV) is noted with improved visual acuity. Additional research including larger prospective randomized trials is needed to validate these findings.

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