Brief Communication

Oral Rifampicin 300 mg in Central Serous Chorioretinopathy (CSCR)

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ABSTRACT

This study evaluated the effectiveness of half-dose (300 mg) oral rifampicin in improving visual outcomes and reducing central macular thickness (CMT) in patients with idiopathic central serous chorioretinopathy (CSCR). Ten eyes from 10 patients who met the inclusion criteria were recruited by convenient sampling. Baseline visual acuity (VA) on the LogMAR chart and CMT measured via OCT were recorded. Patients received 300 mg of rifampicin daily for six weeks, after which changes in VA and CMT were analyzed. Results showed significant improvements, with mean VA improving from 0.6±0.2 to 0.29±0.1 and mean CMT reducing from 556.5±15 µm to 262±60 µm. The mean reduction in CMT was 293±130 µm, and the improvement in VA was 0.32±0.2, both statistically significant ($p \leq 0.05$). This study suggests that half-dose rifampicin is effective for CSCR treatment, offering a safer alternative with reduced side effects compared to full-dose therapy.

Keywords: Central serous chorioretinopathy, Central macular thickness, Optical coherence tomography.

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INTRODUCTION

Central Serous Chorioretinopathy (CSCR)occurs due to breakdown of outer blood retinal barrier, resulting in accumulation of serous fluid in sub-retinal space mostly under macular area. It is most common in middle-aged males. It may result in single, multifocal, or diffuse areas of leakage with or without RPE detachment.[1] Metamorphopsia, central scotoma and decreased vision are the most common presenting complaints of patients suffering from CSCR due to elevated neuro-sensory retina. The exact etiology and evolution of CSCR is still unclear but certain factors such as smoking, pregnancy, stress, and untreated hypertension are considered as risk factors in its development.[2] CSCR spontaneously resolves with good visual outcome. However, almost 15% of patients proceed toward its chronic form with poor visual outcome and 50% are exposed to recurrence of the disease.[3] Earlier, micro-pulse diode laser photocoagulation, standard laser photocoagulation and photodynamic therapy were considered as treatment options for chronic CSCR.[4] However, various anti-corticosteroids agents are proposed as first-line treatment of CSCR. It is speculated that glucocorticoids activate mineralocorticoid receptors in choroidal tissues consequently causing/exasperating CSCR.[5] Since glucocorticoids are implicated in the development of CSCR, limiting their activity has been regarded as one of the most effective treatment approaches. Rifampicin ($C_{43}H_{58}N_4O_{12}$), a glucocorticoid inhibitor, is considered as a treatment option for chronic CSCR.[6] It is an anti-bacterial drug used in leprosy and tuberculosis, showing potential to alter the steroid metabolism. By inducing catabolism of endogenous steroids, rifampicin 600mg can easily resolve the serous fluid in sub-retinal space. However, a dose of 600mg is found to be associated with complications like hepatotoxicity, so half i.e.,300mg is being used to treat CSCR.[7]

The rationale of this study was to evaluate visual outcome and absorption of sub-retinal serous fluid after administering half daily dose of oral rifampicin i.e., 300 mg instead of 600 mg (full dose) for a

Table 1: *Paired sample t-test showing CMT and VA pre and post treatment with p value < 0.05.*

Paired Samples Test		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
CMT	Pre-post treatment	293.90	130.16	41.161	200.7866	387.0134	7.140	9	.000
VA	Pre-post treatment	.32000	.220	.06960	.16255	.47745	4.598	9	.001

duration of 6 weeks in patients with idiopathic chronic CSCR.

METHODS

This case series was conducted in the Department of Ophthalmology at Al-Ehsan Eye Hospital, Lahore, between July 2021 and June 2022. A total of 10 patients diagnosed with idiopathic CSCR were included. Patients with ocular conditions such as glaucoma, diabetic retinopathy, or a history of laser treatment were excluded. The study was approved by the local ethical committee of Al-Ehsan Eye Trust Hospital, Lahore. Demographic data and detailed ocular and systemic history were documented. Unaided visual acuity (VA) and best-corrected visual acuity (BCVA) on the LogMAR scale were recorded. A senior ophthalmologist conducted slit-lamp examinations after pupillary dilation. OCT was performed to confirm CSCR and measure the extent of sub-retinal fluid in micrometers. The enrolled patients received 300 mg of oral rifampicin daily. They were reviewed after six weeks, and changes in visual outcomes and central macular thickness were analyzed using SPSS version 22. Qualitative variables like gender were expressed in frequency and percentages while quantitative variables like age were presented in Mean and Standard deviation. Pre and post treatment central macular thickness and VA were evaluated using paired sample t-test. P value $\leq$ 0.05 was considered significant.

RESULTS

A total of 10 patients were included. Three were males and mean age of the patients was 36±8 years (range of 19-44 years).Mean BCVA was 0.6±0.2 prior to start the treatment while after treatment it was 0.29± 0.1 (06 weeks after). Mean CMT before starting the treatment was 556.5±15 um, while after treatment it was 262±60 um. Mean induced reduction in CMT was found to be 293±130 um while change (improvement) in BCVA was 0.32± 0.2. showing significant p value 0.000 and 0.001, respectively.

DISCUSSION

This case series showed a significant improvement in VA and decreased CMT after treatment with Rifampicin. This study is consistent with the results of previous studies.[8] Recently, it was discovered that the drug rifampicin, which is used to treat tuberculosis (TB), has anti-oxidative, anti-apoptotic, and anti-angiogenic properties. It works primarily by inhibiting DNA-dependent RNA polymerase, which prevents the transcription of RNA. It is a cytochrome P450, 3A4 inducer that catalyzes a number of chemical processes necessary for drug metabolism as well as the production of cholesterol, steroids, and other lipids. Thus, it was hypothesized that cytochrome P450 3A4 upregulation would ameliorate CSCR symptoms by increasing the metabolism of endogenous steroids.[9] Numerous common and more significant adverse effects of rifampicin exist, including allergy, renal failure, hepatitis, and hematological abnormalities. As a result, baseline testing for liver enzymes, serum creatinine, complete blood count, bilirubin, serum creatinine, and platelet count is advised before beginning treatment.[10] A link between CSCR improvement and recurrence in TB patients who had been receiving rifampicin treatment has been reported.[10] There are also numerous reports of hepatotoxicity brought on by the use of rifampicin off-label to treat persistent CSCR.[20] In some cases, the high liver enzyme increases were also accompanied by fatigue, nauseousness, and malaise. However, after stopping the rifampicin, the symptoms went away, and the liver enzymes returned to normal.

This is a small case series from a single center. Further long-term follow-up results are needed to prove its safety and efficacy.

CONCLUSION

The study concludes that half-dose (300 mg) oral rifampicin is effective in improving VA and reducing CMT in patients with idiopathic CSCR. It offers a promising treatment option with reduced side effects compared to full-dose therapy, as evidenced by significant improvements in visual outcomes and macular thickness.

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Patient's Consent: Researchers followed the guide lines set forth in the Declaration of Helsinki.

Conflict of Interest: Authors declared no conflict of interest.

Ethical Approval: The study was approved by the Institutional review board/Ethical review board **(EC Ref No. 04/21)**.

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