



AN ANALYTICAL STUDY ON ROLE OF FOCAL LASERS IN THE TREATMENT OF CHRONIC CENTRAL SEROUS CHORIORETINOPATHY IN TERTIARY CARE CENTRE

Ophthalmology

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ABSTRACT

PURPOSE: To evaluate the efficacy of focal lasers in patients diagnosed as CSCR with extrafoveal leakage in terms of visual acuity and central macular thickness.

MATERIALS AND METHOD: 64 patients with central serous chorioretinopathy attending retina clinic in Tertiary eye care centre during January 2018 to December 2018.

RESULTS: Out of 64 patients, 52(81.24%) were in age group of 31-50 years, 47(73.43%) were males and 17(26.56%) were females. Common risk factors were mental stress 25(39.06%), Type A personality 18(28.12%), smoking 19(29.68%). Frequent symptom was central scotoma 49(76.56%). Most common FFA pattern was Ink-blot 40(62.5%). Mean Central Macular Thickness at presentation was $422.3 \pm 92.4 \mu\text{m}$, after focal laser at 4 weeks- $257.9 \pm 63.6 \mu\text{m}$, after 12 weeks- $215.1 \pm 22 \mu\text{m}$. Mean best corrected visual acuity at presentation was 0.6 ± 0.15 (logMAR), 4 weeks- 0.2 ± 0.1 and at 12 weeks- 0.1 ± 0.2 .

CONCLUSION: Focal lasers are effective in cases of central serous chorioretinopathy which persists for a period of more than three months. Focal lasers can be used effectively to shorten the duration of disease and results in the resolution of the subretinal fluid and improvement in visual acuity significantly by 4 weeks.

KEYWORDS

focal laser, central serous chorioretinopathy

INTRODUCTION:

Central serous chorioretinopathy is an idiopathic chorioretinal disorder characterized by circumscribed serous detachment of neurosensory retina that occurs due to leak in RPE resulting from choroidal hyperpermeability. First described by Von Graefe in 1866 as recurrent central syphilitic retinitis [1]. Other names include capillarospastic central retinitis, central angiospastic retinopathy, central serous retinopathy, and central serous pigment epitheliopathy. CSCR usually affects middle-aged men between the ages of twenty and fifty years. It has also been associated with type A personality, psychological stress, corticosteroid, smoking, alcoholism and systemic diseases like Hypertension and Diabetes.

MATERIALS AND METHODS:

64 patients with central serous chorioretinopathy attending retina clinic in Tertiary eye care centre during January 2018 to December 2018. Patients with CSCR in whom presence of subretinal fluid involving the fovea for more than 3 months in OCT images, patients with CSCR induced leakage 500 μm away from fovea as demonstrated in FFA, CSCR with visual acuity 6/12(logMAR-0.3) or worse were included. Patients with serous retinal detachment unrelated to CSCR and with previous history of Photodynamic Therapy or Laser Photocoagulation were excluded. All patients underwent thorough history taking to assess the presence of risk factors, automated refractometry and subjective to assess best corrected visual acuity, Amsler's grid, Slit lamp examination, slit lamp biomicroscopy with 90D, Indirect Ophthalmoscopy, Fundus Fluorescein Angiography and Optical Coherence Tomography. The patient underwent focal lasers [3] wherein pinpoint leaks were treated with burns of spot size 100 μm , power of 100mW of 100 ms duration. The leaks were treated with three confluent burns.

Follow up

Patients were reviewed at 4 weeks and 12 weeks [2] post Laser and visual acuity was reassessed. Slit lamp examination and dilated Fundus examination was done with 90D and Indirect Ophthalmoscopy. Optical Coherence Tomography was again repeated during the 2 visits to reassess the central macular thickness.

RESULTS

Best corrected visual acuity and resolution of subretinal fluid with assessment of central macular thickness was done with Optical Coherence Tomography.

Age distribution

Of the total 64 patients, mean age was 38.6. 53.12% belonged to age

group of 31- 40 years. 28.12% belonged to 41-50 years. 9.37% belonged to >50 years. [Table 1]

Gender distribution

Out of 64 patients, 47(73.43%) were males and 17(26.56%) were females. [Table 2]

Laterality

Our study included 87.5% of unilateral cases and 12.5% of bilateral cases. [Table 3]

Risk factors

Common risk factors associated were Mental stress (39.06%), Type A personality (28.12%), Smoking (29.68%) [11], Sleep disturbance (20.31%), Alcoholism (23.43%), Steroid usage (7.81%) [10], Hypertension (7.81%), Diabetes (10.93%). [Table 4]

BCVA at presentation

At presentation 71.85% of patients had BCVA of 6/18- 6/24 (0.5-0.6) and 21.87% had BCVA of 6/36-6/60 (0.8-1). [Table 5]

FFA Patterns:

The common patterns noted were Ink blot (62.5%), Smoke stack (34.37%), RPE changes (28.12%), associated with PED were 25%. [Table 7]

Table 1: Age distribution

Age	Number of patients	Percentage
21-30	6	9.37%
31-40	34	53.12%
41-50	18	28.12%
>50	6	9.37%
Total	64	100%

Table 2: Gender distribution

Sex	Number of patients	Percentage
Male	47	73.43%
Female	17	26.56%

Table 3: Laterality

Laterality	Number of patients	Percentage
Unilateral	56	87.50%
Bilateral	8	12.50%

Table4: Risk Factors

Risk factor	No of patients	Percentage
Mental stress	25	39.06
Type A personality	18	28.12
Smoking	19	29.68
Sleep disturbance	13	20.31
Alcoholism	15	23.43
Steroid usage	5	7.81
Hypertension	5	7.81
Diabetes	7	10.93

Table5: Best Corrected Visual Acuity

BCVA(logMAR)	No of patients	Percentage
6/6- 6/12(0-0.3)	4	6.25
6/18- 6/24(0.5-0.6)	46	71.85
6/36-6/60(0.8-1)	14	21.87

Table6: Compliants

Compliants	No of patients	Percentage
Central scotoma	49	76.56
Metamorphosia	15	23.43
Total	64	100

Table7: FFA Patterns

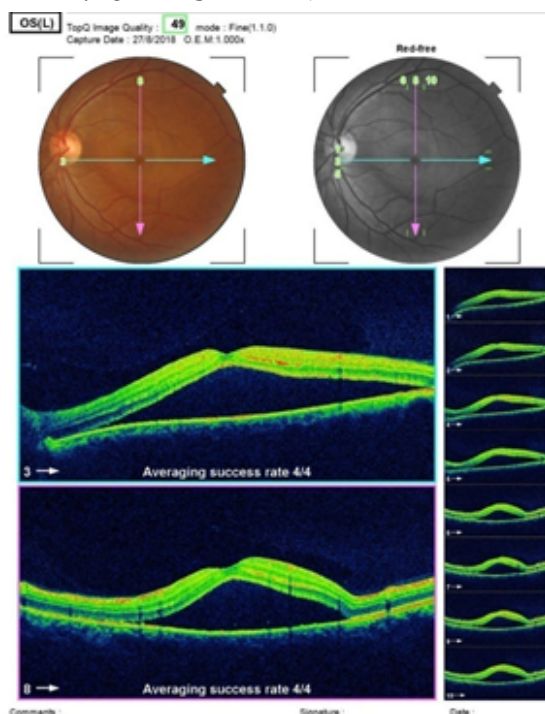
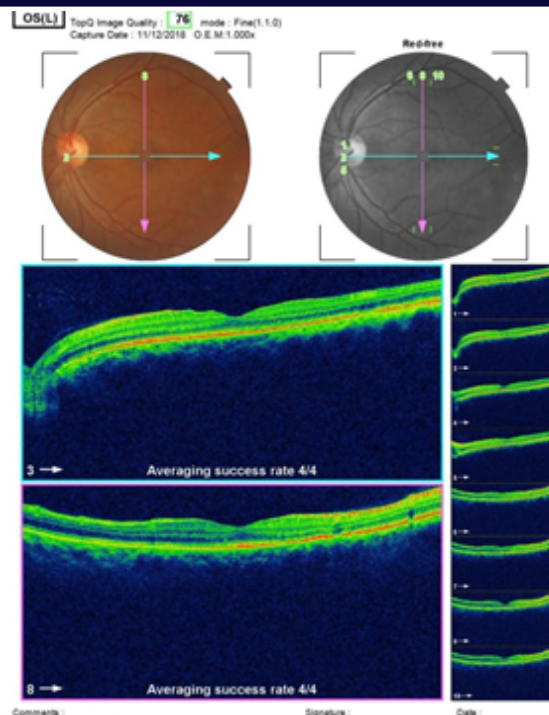
FFA pattern	No of patients	Percentage
Ink blot	40	62.5
Smoke stack	22	34.37
RPE changes	18	28.12
PED	16	25

Table8: Analysis of Efficacy of Focal Lasers

	BCVA(logMAR)	CMT(μ m)
At presentation	0.6 $\pm$ 0.15	422.3 $\pm$ 92.4
4 weeks	0.2 $\pm$ 0.1	257.9 $\pm$ 63.6
12 weeks	0.1 $\pm$ 0.2	215.1 $\pm$ 22

Analysis of Efficacy of Focal Lasers:

Mean Central Macular Thickness at presentation was 422.3 $\pm$ 92.4 μ m, after focal laser at 4 weeks- 257.9 $\pm$ 63.6 μ m, after 12 weeks- 215.1 $\pm$ 22 μ m. Mean best corrected visual acuity at presentation was 0.6 $\pm$ 0.15 (logMAR), 4 weeks-0.2 $\pm$ 0.1 and at 12 weeks- 0.1 $\pm$ 0.2. [Table 8]. The difference between central macular thickness and best corrected visual acuity before and after focal laser were found to be statistically significant (p value <0.05)

**Fig1: left eye of a 49 year old person with chronic CSCR at presentation showing Subretinal fluid with serous detachment of sensory retina****Fig2:complete resolution of subretinal fluid following focal laser at 12 weeks****DISCUSSION**

Most patients with CSCR resolve spontaneously with recovery of good visual acuity. The average duration of resolution of subretinal fluid is three months. Some patients may complain of distortion in the central field of vision in spite of good visual acuity. This is due to photoreceptor damage, atrophy, irregular RPE pigmentation or sub-retinal fibrosis. Recurrences can occur within few months or many years later. Most common leakage point is usually within 1mm of initial leakage point. Secondary CNVM is the most common complication of long standing CSCR.

The most common treatment practiced is observation with risk factor modification due to its inherent property to resolve spontaneously. Medical therapy includes beta blockers [12], mineralocorticoid receptor antagonist and finasteride[4]. But the efficacy of these drugs is not known.

Laser photocoagulation is the most commonly studied modality in the treatment of CSCR. The principle goal is to reduce the leakage through RPE and cause resolution of subretinal fluid with improvement in visual acuity. Focal Laser photocoagulation to the site of leakage shortens the duration of macular detachment in patients with typical CSCR.

In our study there was a significant decrease in central macular thickness and improvement in best corrected visual acuity at 4 weeks and 12 weeks post Laser which was statically significant. No side effects of laser were documented during the study period. Therefore this shows that focal laser reduces the duration of CSCR and also improves the visual acuity.

CONCLUSION

Focal lasers are effective in cases of central serous chorioretinopathy which persists for a period of more than three months. Focal lasers can be used effectively to shorten the duration of disease and results in the resolution of the subretinal fluid and improvement in visual acuity significantly by 4 weeks. Long term follow up is needed to assess laser related side effects and frequency of recurrence in patients who underwent laser therapy.

Financial support and sponsorship: Nil.

Conflicts of interest: There are no conflicts of interest.

REFERENCES

- [1] Von Graefe A. Ueber central recidivierende retinitis. Graefes Arch Clin Exp

- Ophthalmol 1866;12:211-5.
- [2] Ficker L, Vafidis G, While A, Leaver P. Long-term follow-up of a prospective trial of argon laser photocoagulation in the treatment of central serous retinopathy. *Br J Ophthalmol*. 1988;72(11):829-834.
 - [3] Leaver P, Williams C. Argon laser photocoagulation in the treatment of central serous retinopathy. *Br J Ophthalmol*. 1979;63(10):674-677.
 - [4] Forooghian F, Meleth AD, Cukras C, et al. Finasteride for chronic central serous chorioretinopathy. *Retina*. 2011;31(4):766-771.
 - [5] Burumcek E, Mudun A, Karacorlu S, Arslan MO. Laser photocoagulation for persistent central serous retinopathy: results of long-term follow-up. *Ophthalmology*. 1997;104(4):616-622.
 - [6] Gupta B, Elagouz M, McHugh D, Chong V, Sivaprasad S. Micropulse diode laser photocoagulation for central serous chorio-retinopathy. *Clin Experiment Ophthalmol*. 2009;37(8):801-805.
 - [7] Roeder J, Brinkmann R, Wirbelauer C, Laqua H, Birngruber R. Sub-threshold (retinal pigment epithelium) photocoagulation in macular diseases: a pilot study. *Br J Ophthalmol*. 2000;84(1):40-47.
 - [8] Gass JD. Photocoagulation treatment of idiopathic central serous choroidopathy. *Trans Sect Ophthalmol Am Acad Ophthalmol Otolaryngol* 1977;83(3 Pt 1):456-67.
 - [9] Yannuzzi LA. Type A behavior and central serous chorioretinopathy. *Trans Am Ophthalmol Soc* 1986;84:799-845.
 - [10] Wakakura M, Ishikawa S. Central serous chorioretinopathy complicating systemic corticosteroid treatment. *Br J Ophthalmol* 1984;68(5):329-31.
 - [11] Türkçü FM, Yüksel H, Sahin A, et al. Effects of smoking on visual acuity of central serous chorioretinopathy patients. *Cutan Ocul Toxicol* 2014;33(2):115-9.
 - [12] Avci R, Deutman AF. Treatment of central serous choroidopathy with the beta receptor blocker metoprolol (preliminary results). *Klin Monbl Augenheilkd* 1993;202(3):199-205.
 - [13] Gruszka A. Potential involvement of mineralocorticoid receptor activation in the pathogenesis of central serous chorioretinopathy: case report. *Eur Rev Med Pharmacol Sci* 2013;17(10):1369-73.
 - [14] Maruko I, Iida T, Sugano Y, Ojima A, Ogasawara M, Spaide RF. Subfoveal choroidal thickness after treatment of central serous chorioretinopathy. *Ophthalmology* 2010;117(9):1792-9.
 - [15] Sahin A, Bez Y, Kaya MC, Türkçü FM, Sahin M, Yüksel H. Psychological distress and poor quality of life in patients with central serous chorioretinopathy. *Semin Ophthalmol* 2014;29(2):73-6.