Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 7, Issue, 07, pp.17879-17882, July, 2015

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

CLINICAL EVALUATION OF LASER PHOTOCOAGULATION THERAPY AND MEDICAL TREATMENT MODALITIES IN THE MANAGEMENT OF CENTRAL SEROUS CHORIORETINOPATHY

Dr. Mohd. Mobin, M. S., *Dr. Pooja Kanodia, M. S., Dr. Rubii Malhotra M. S. and Dr. Sandeep Mithal

Department of Ophthalmology, Integral Institute of Medical Sciences and Research, Lucknow

ARTICLE INFO

Article History:
Received 30th April, 2015
Received in revised form
13th May, 2015
Accepted 01st June, 2015
Published online 28th July, 2015

Key words:
Central serous retinopathy,
Laser, Photocoagulation,
Flourescein angiography.

ABSTRACT

Introduction: CSCR is an idiopathic disorder of the outer blood retinal barrier. Investigations include FFA. It is self resolving in majority. Common treatment modalities include Laser photocoagulation and PDT. Present study conducted to compare medical management with laser management in CSCR.
Methods: 34 eyes of 34 patients with chronic CSCR included in the study. 12 patients underwent medical management and 22 patients underwent laser management, followed by visual assesment, macular function test, FFA at 1,3 & 6 month following treatment.
Results: 88.2% patients in study were males. 38.2% patients in study had visual acuity 6/9-6/12. Commonest site of leakage was upper nasal quadrant (29.4%). 77.3% undergoing laser phc showed improvement as compared to 25% in the medically trated group.
Conclusion: Laser photocoagulation is an effective treatment for persistant CSCR on focal points of leakage.

Citation: Dr. Mohd. Mobin, M. S., Dr. Pooja Kanodia, M. S., Dr. Rubii Malhotra M.S. and Dr. Sandeep Mithal, 2015. "Clinical evaluation of laser photocoagulation therapy and medical treatment modalities in the management of central serous chorioretinopathy", *International Journal of Current Research*, 7, (7), 17879-17882.

INTRODUCTION

Central serous chorioretinopathy (CSCR) is an idiopathic disorder of the outer blood-retinal barrier, defined by the presence of serous sensory retinal detachment (RD) with an active retinal pigment epithelium (RPE) leakage without any substantial evidence of other ocular or systemic disorders known to produce a similar presentation. The condition is seen predominantly in males with a ratio of 10:1. In most cases, CSCR is self-limited and resolves spontaneously in 4 to 6 months; however, when it does not resolve during this time frame the condition is then called chronic CSCR. (Khalid Al Rubaie *et al*., 2014) Management options for CSCR include observation, thermal laser photocoagulation, photodynamic therapy or intravitreal antivascular endothelial growth factors (anti-VEGF). (Erikitola *et al*., 2014; Chan *et al*., 2008; Hussain *et al*., 2006) While selected cases of acute CSCR benefit from retinal (thermal) laser photocoagulation, there is no standard treatment for chronic CSCR (Hussain *et al*., 2006). Complications related to laser treatment include accidental photocoagulation of the fovea, foveal distortion, scotomas, significant loss of contrast sensitivity, a 2% to 10% risk of developing choroidal neovascularization within several weeks to months after treatment, and subretinal hemorrhage. (Erikitola *et al*., 2014; Gass, 1997)

Investigations for CSCR include fluorescein angiography (FA) which may show 'ink blot' pattern of leakage or the less common 'smoke stack' appearance that mimics a mushroom cloud. (Bujarborua *et al*., 2010) Applying laser photocoagulation to the leaking RPE guided by FA has been shown to hasten resolution of the neurosensory detachment in CSCR. Xenon laser was used at first followed by krypton laser; currently argon laser and FD.Nd.YAG are more widely used. (Mitsui *et al*., 1969; Slusher, 1986; Novak *et al*., 1987) The present longitudinal study was designed to investigate the effect of medical and laser photocoagulation therapy in progress of disease process and visual prognosis among the patients of central serous chorioretinopathy.

MATERIALS AND METHODS

This was a prospective longitudinal study carried out on 34 eyes of 34 patients of "Central serous chorioretinopathy" attending to the outpatient clinic of Upgraded Department of

Corresponding author: Dr. Pooja Kanodia, M. S.
Department of Ophthalmology, Integral Institute of Medical Sciences and Research, Lucknow.

Ophthalmology, LLRM Medical College, Meerut during May 2003 to November 2004. The study was approved by the Ethical Committee of the Institute. The consent was taken from all the patients before enrolling in the study and objective of the study was explained to them. The 22 patients were treated with laser photocoagulation therapy and 12 patients were medically treated.

The detailed history of the patients was taken on pre-designed proforma which included demographic and clinical examination with special emphasis on time of onset of disease, mode of onset, history of black spot, metamorphopsia or micropsia, progression of disease, history of various risk factor for the disease like stress, history of sleep pattern followed by visual acuity (BCVA) by Snellen's chart and color vision. The detailed Slit Lamp Examination and Macular function test was done. The fundus examination was done by SLB, ILO and fundus FA. The patients were followed-up at 1st, 3rd and 6th month after the treatment.

Statistical analysis

The data was anlaysed by using SPSS 16. 0 version (Chicago, Inc., USA). The results are presented in percentages. The change in visual acuity and clinical signs was compared by using Chi-square test between treatment modality at 1st, 3rd and 6th month follow-ups. The p-value <0.05 was considered significant.

RESULTS

Half (50%) of the patients were in the age group of 31-40 years and 29.4% were between 41-50 years. Majority (88.2%) of the patients were males (Table 1).

Table 1. Age and gender distribution of the patients

Age group	No. (n=34)	%
20-30	5	14.7
31-40	17	50.0
41-50	10	29.4
>50	2	5.9
Gender		
Male	30	88.2
Female	4	11.8

More than one third (38.2%) of the patient of CSCR were having VA between 6/9-6/12. Stressful life was observed among 35.3% of the patients. Elevation of sensory retina (Type I) was found among majority (97.1%) of the patients. Majority (73.5%) of the patients presented with unilaterally and with leakage of dye being single point inkblot pattern. The multiple leakage was found in 17.6% of the patients. The commonest (29.4%) site of leakage point was upper nasal quadrant (Table 2).

At the end of 1 month, visual acuity of the of laser photocoagulation therapy patients was improved in 63.6%. However, the improvement in visual acuity was in 8.3% of the medical treatment and the difference was found to be statistically significant (p=0.001). The improvement in visual acuity was also significantly (p=0.001) higher among the patients treated by laser photocoagulation therapy (77.3%) than medical treatment (25%) at 3rd month. Similar observation was found at 6th month. The percentage of unchanged visual acuity was lower among the patients treated by laser photocoagulation therapy than medically treated patients at 1st, 3rd and 6th month.

Table 2. Distribution of patients according to clinical and precipitating factors

	No. (n=34)	%
Visual acuity		
6/9-6/12	13	38.2
6/18-6/24	8	23.5
6/36-6/60	7	20.6
FC-HM	6	17.7
Risk factor		
H/O Stress	12	35.3
Type A personality	4	11.8
H/O oral steroid intake	2	5.9
Optic disc pit	1	2.9
No cause	15	44.1
Ophthalmic findings		
Elevation of sensory retina (Type I)	33	97.1
RPE alone detachment Type II (Total bullous RD)	1	2.9
Both sensory and RPE detachment (Type III)	0	0.0
Laterality		
Unilateral	25	73.5
Bilateral	9	26.5
FA finding in CSCR		
Single point Ink blot leak	25	73.5
Single point Smoke stack leak	3	8.8
Multiple leakage	6	17.6
Location of leakage point by quadrant on fluoresce in angiography		
Upper nasal	10	29.4
Lower nasal	4	11.8
Upper temporal	7	20.6
Lower temporal	4	11.8
FAZ (foveal avascular zone)	6	17.6
Out side the measure area	3	8.8

The improvement in clinical signs was observed to be significantly (p=0.001) higher among the patients treated with laser photocoagulation therapy than medical treatment at 1st, 3rd and 6th month follow-ups (Table 3).

DISCUSSION

Central serous chorioretinopathy (CSCR) is a relatively common cause of visual impairment in the Western world, and is characterized by the accumulation of subretinal fluid in the macula. (Wang *et al*., 2008; Kitzmann *et al*., 2008) The disease classically affects men between the ages of 20 and 50 and has been associated with corticosteroid exposure, phosphodiesterase inhibitor use, obstructive sleep apnea and "type A" personality traits. Patients can present with a variety of visual symptoms including relative central scotoma, metamorphopsia, dyschromatopsia and micropsia. (Gass, 1967; Ross *et al*., 2011) On examination, the characteristic finding is a posterior neurosensory retinal detachment caused by leakage of fluid from the level of the retinal pigment epithelium.

There is no gold standard for treatment of persistent CSCR, and a number of therapies have been tried with varying success. Focal laser photocoagulation to pinpoint areas of leakage on FA was the first treatment shown to be of some benefit for CSCR. (Leaver and Williams, 1979)

Table 3. Follow up after giving laser photocoagulation therapy

Indicators	1st month				3rd Month				6th Month		
	Laser photocoagulation (n=22)		Medical treatment (n=12)		Laser photocoagulation (n=22)		Medical treatment (n=12)		Laser photocoagulation (n=22)		Medical treatment (n=12)
	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Visual acuity											
Improved	14	63.6	1	8.3	17	77.3	3	25.0	19	86.4	7
Unchanged	8	36.4	10	83.4	4	18.2	8	66.7	2	9.1	3
Worse	0	0.0	1	8.3	1	4.5	1	8.3	1	4.5	2
p-value[1]	0.001*				0.001*				0.001*		
Clinical signs											
Improved	19	86.4	1	8.3	19	86.4	4	33.3	20	90.9	7
Unchanged	3	13.6	10	83.3	2	9.1	7	58.3	1	4.6	3
Worse	0	0.0	1	8.4	1	4.5	1	8.4	1	4.5	2
p-value[1]	0.001*				0.001*				0.001*		

[1]Chi-square test, *Significant

However, photocoagulation is destructive, can lead to symptomatic scotomas, and occasionally formation of secondary choroidal neovascularization. Therefore, this treatment is reserved for focal extrafoveal areas of dye leakage. Photodynamic therapy (PDT) more directly targets the choroidal circulation and may be used in patients with sub-foveal and/or multifocal points of leakage. PDT has been used for persistent CSCR with some success. However, it is not approved by the Food and Drug Administration for the treatment of CSCR and has a number of side effects, including photosensitivity to intravenous dye and choroidal hypoperfusion following treatment. (Yannuzzi *et al*., 2003; Piccolino *et al*., 2003) The present study was designed to investigate the effect of medical and laser photocoagulation therapy in progress of disease process and visual prognosis among the patients of central serous chorioretinopathy. The laser photocoagulation therapy was given in 22 patients and medical treatment was given in 12 patients. Most of the cases (50%) are in age group of between 30-40 year in this study with male-female ratio of 7.9 : 1. In our study, the majority of patients have only moderate loss of vision, which was in concurrence with study by Turku *et al*. (2013)

In the present study, at the end of 1 month, visual acuity of the of laser photocoagulation therapy patients was improved in 63.6%. However, the improvement in visual acuity was in 8.3% of the medical treatment and the difference was found to be statistically significant (p=0.001). The improvement in visual acuity was also significantly higher among the patients treated by laser photocoagulation therapy than medical treatment at 3rd and 6th month. This findings of our study were similar to the study by Brancato *et al*. (1987)

In this study, the improvement in clinical signs was observed to be significantly (p=0.001) higher among the patients treated with laser photocoagulation therapy than medical treatment at 1st, 3rd and 6th month follow-ups. Evidence from previous studies have demonstrated faster resolution of subretinal fluid (SRF) in patients who underwent laser photocoagulation compared to control eyes. (Leaver and Williams, 1979; Robertson and Ilstrup, 1983) Nevertheless laser photocoagulation does not influence the final visual outcome or rate of recurrence. (Ficker *et al*., 1988; Fok *et al*., 2011) In our study there was significant improvement in visual acuity in laser treated group as compared to medical treatment but one of the limitation of the present study was small sample size. The studies with larger sample size is required for robust results.

Conclusion

The laser photocoagulation is an effective treatment for persistent CSCR with clearly defined focal leakage point as seen on FA given that the leakage is not subfoveal or juxtafoveal.

Funding

None

Conflict of interest

None

Contribution

All the authors contributed equally.

REFRENCES

Brancato R, ScialdoneA, Pece A *et al*. Eight year follow uo of central serous chorioretinopathy with and without laser treatment. Graefes Arch Clin Exp Ophthalmol 1987: 225(3):166-8

Bujarborua D, Nagpal PN, Deka M. Smokestack leak in central serous chorioretinopathy. *Graefes Arch Clin Exp Ophthalmol*, 2010; 248 (3): 339–51.

Chan W.-M., Lai T. Y. Y., Lai R. Y. K., Tang E. W. H., Liu D. T. L., and Lam D. S. C. Safety enhanced photodynamic therapy for chronic central serous chorioretinopathy: one-year results of a prospective study. *Retina*, 2008; 28: 85–93.

Erikitola O. C., Crosby-Nwaobi R., Lotery A. J., and Sivaprasad S. Photodynamic therapy for central serous chorioretinopathy. *Eye*, 2014; 28: 944–957.

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):829–34.

Fok ACT, Chan PPM, Lam DSC, Lai TYY. Risk factors for recurrence of serous macular detachment in untreated

patients with central serous chorioretinopathy. *Ophthalmic Res*., 2011;46(3):160–3.

Gass J. D. M.. Stereoscopic Atlas of Macular Diseases: Diagnosis and Treatment. pp. 52–70, Mosby, St. Louis, Mo, USA, 4th edition, 1997.

Gass JD. Pathogenesis of disciform detachment of the neuroepithelium. *Am J Ophthalmol*., 1967;63:1-139.

Hussain N., Khanna R., Hussain A., Das and T. Transpupillary thermotherapy for chronic central serous chorioretinopathy. *Graefe's Archive for Clinical and Experimental Ophthalmology,* 2006; 244 (8): 1045–1051.

Khalid Al Rubaie, Juan V. Espinoza, Andres F. Lasave, Dario Savino-Zari, Fernando A. Arevalo, and J. Fernando Arevalo. Pneumatic Displacement with Perfluoropropane Gas and Intravitreal Tissue Plasminogen Activator for Subretinal Subfoveal Hemorrhage after Focal Laser Photocoagulation in Central Serous *Chorioretinopathy. Case Reports in Ophthalmological Medicine*, 2014.

Kitzmann AS, Pulido JS, Diehl NN, *et al*. The incidence of central serous chorioretinopathy in Olmsted County, Minnesota, 1980–2002. Ophthalmology 2008;115:169-73.

Leaver P, Williams C. Argon laser photocoagulation in the treatment of central serous retinopathy. *Br J Ophthalmol*., 1979;63: 674-77.

Mitsui Y, Matsubara M, Kanagawa M. Xenon light-exposure as a treatment of central serous retinopathy (a preliminary report). *Nihon Ganka Kiyo*, 1969; 20(3):291–4.

Novak MA, Singerman LJ, Rice TA. Krypton and argon laser photocoagulation for central serous chorioretinopathy. Retina 1987;7(3):162–9.

Piccolino FC, Eandi CM, Ventre L, *et al*. Photodynamic therapy for chronic central serous chorioretinopathy. Retina, 2003; 23:752-763.

Robertson DM, Ilstrup D. Direct, indirect, and sham laser photocoagulation in the management of central serous chorioretinopathy. *Am J Ophthalmol*., 1983;95(4):457–66. 53.

Ross A, Ross AH, Mohamed Q. Review and Update of Central Serous Chorioretinopathy. *Curr Opin Ophthalmol*., 2011;22:166-73.

Slusher MM. Krypton red laser photocoagulation in selected cases of central serous chorioretinopathy. Retina 1986;6(2):81–4.

Turkcu FN, Satin A, Bezy *et al*. Vision related quality of life in patients with chronic central serous retinopathy. *Sem in Ophthalmol*., 2013, Oct 28.

Wang M, Munch IC, Hasler PW, *et al*. Central serous chorioretinopathy. *Acta Ophthalmologica*., 2008;86:126-45.

Yannuzzi LA, Slakter JS, Gross NE, *et al*. Indocyanine green angiography-guided photodynamic therapy for treatment of chronic central serous chorioretinopathy: A pilot study. Retina 2003; 23:288-298.

****