World Applied Sciences Journal 33 (9): 1514-1517, 2015
ISSN 1818-4952

DOI: 10.5829/idosi.wasj.2015.33.09.364

Effect of Laser Therapy in Central Serous Chorioretinopathy

Seyed Ahmad Rasoulinejad

BabolUniversity of Medical Sciences, Iran

Abstract: *Background:* Central serous chorioretinopathy is a benign disease that eventually can result in visionimpairment. So, we decided to examine the effect laser in central serous chorioretinopathy. *Methods:* This cross-sectional study was performed on all patients admitted to Ayatollah Rouhani Hospital of Babol, Mazandaran, in 2014 with CSCR diagnosis. Patient information such as age, sex, education, affected eye, visual acuity and central macular thickness were recorded before and after laser into the checklist. Data was entered into SPSS V22 software and analyzed using the Wilcoxon test and P value less than 0.05 was considered significant. *Results:* In this study, 42 eyes of 42 patients were studied. The mean logMAR VA before treatment was 0.92±0.28 and after treatment 0.27±0.22($p<0.0001$). Mean central macular thickness using OCT before and after treatment was 334.86±33.03 and 278.04±23.94µm, respectively ($p<0.0001$).The mean logMAR VA before and after laser in men was respectively 0.99±0.27 and 0.27±0.21 µm and in women 0.76±0.23 and 0.28±.25 µm, which a statistically significantrelationship was observed (respectively $p<0.0001$ and 0.0003). The mean OCT before and after laser in men was 341.77±36.21 and 281.33±23.97 µm and in women 317.58±12.45 and 271.08±23.23µm, which is statistically significant relationship (respectively $p<0.0001$ and 0.0002). *Conclusion:* Based on the results of this study, the laser can be effective in the treatment of central serous chorioretinopathy and enhancing visual acuity withreducing central macular thickness.

Key words: Central serous chorioretinopathy · CMT · Laser therapy

INTRODUCTION

Central serous chorioretinopathyis idiopathic macular detachment due to the accumulation of serous fluid in the posterior pole [1]. Almost in 95% of patients, the accumulation of fluidoccurs under the sensitive retina (CSC type I), in about 3% of cases, only RPE detachment occurs (CSC type II) and in about 2% of cases, both together [2,3]. It is more common in young and middle-aged males (20-45 years). The incidence of the disease in men is 9.9 and in women 1.7 per 100 thousand people [3]. There are little information in pathogenesis of CSCR but some causes such as occlusion, ischemia, or inflaµmation of the internal choroid can lead to increased permeability of Choroidal vessels, secondary changes in the RPE and neurosensory retinal detachment [4-7]. Correct and timely treatment of macular edema is very important in preventing severe vision loss [8]. Photo-dynamic therapy, focal laser photocoagulation, corticosteroidantagonists, pharmacological medications such as acetazolamide, intravitralanti-VEGF injections and laser therapy are CSCR treatments [9, 10]. Now one of the accepted treatments is laser therapy. It seems that early treatment with laser can accelerate healing [11]. The aim of laser in macular edema is tolimit vascular leakage through burning the micro aneurysms with leakage and to stimulate retinal pigmented epithelium for fluid absorption [11]. Rapid absorption of fluid within 3-4 weeks after doing laser in leakage location was observed in the majority of patients. Since CSCR is a benign disease and eventually can result in vision impairment [11]. We decided to examine the laser therapy in Central serous chorioretinopathy.

Methodology: This is a cross-sectional study in which all patients admitted to eye clinics of Ayatollah Rouhani Hospital of Babol during 2014 were studied. This research was confirmed by Ethics Coµmittee of the BabolUniversity of Medical Sciences. Initially, a written consent was obtained from all patients. Diagnosis of CSCR was done by retina fellowship after dilatation of pupil with tropicamide %1, using non-contact lens diameter 78 Dand confirmedwith fluorescein angiography. All patients were in the acute phase, less than 3 months

Corresponding Author: Seyed Ahmad Rasoulinejad, BabolUniversity of Medical Sciences, Iran.

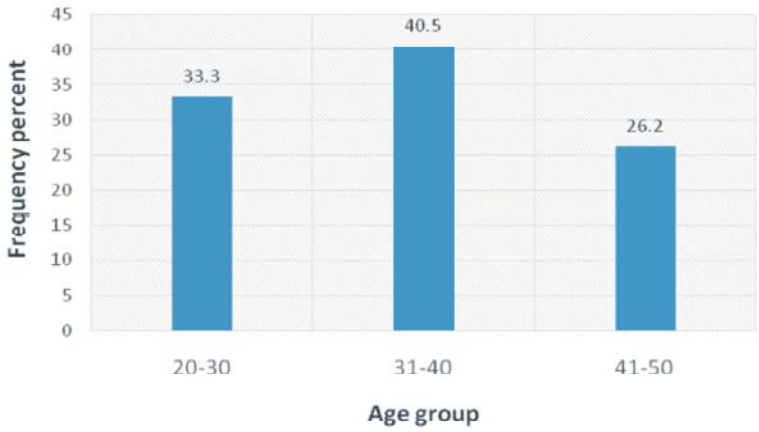

Fig. 1: The frequency distribution of different age groups

from their illness, the location of fluid leakage was out of themacular center, in form of inkblot. Patients whose diagnosis were not definite or had other ophthalmic or systemic were excluded.

All patients underwent complete ocular examination, including measurement of visual acuity with the Snellen chart and central macular thickness measurements using optic coherence tomography (OCT). In patients treated with the laser, the identified spots of leakage were shown in fluorescein angiography. Laser characteristics was: spot size 50µm, power 50 to 100mW, duration 50 milliseconds, so that the laser-induced site was very mild and barely visible. Visual acuity and central macular thickness were evaluated one month after treatment. Patient information such as age, sex, education, affected eye, visual acuity and central macular thickness were recorded before and after laser into the checklist. Data was entered into SPSS V22 software and analyzed using the Wilcoxon test and P value less than 0.05 was considered significant.

Findings: In this study, 42 eyes suffered from CSCR of 42 patients were treated under laser therapy. The mean age of patients was 34.62±7.71 years with a range of 20 to 51 years. 30 patients (71.4%) were male and 12 patients (4.6%) were female. 24 patients (57.1%) had the right eye involvement, 18 patients (42.9%) had the left eye involvement. The mean log MAR VA before treatment was 0.92±0.28 and after treatment 0.27±0.22 respectively in the range of 0.05-1.60 and 0-0.7($p<0.0001$). Mean central macular thickness using OCT before and after treatment was 334.86±33.03 and 278.04±23.94µm, respectively ($p<0.0001$).15 patients (35.7%) hadless thancollege education and 16 (38.1%) diploma and 11 (26.2%) had more than diploma. 4 patients (9.5%) were housewives, 19 (45.2%) employees and 19 (45.2%) self-employed. The age group 31-40 years had the highest frequency among patients (Figure 1).

Based on the examinations, The mean logMAR VA before and after laser in men was respectively 0.99±0.27 and 0.27±0.21 and in women 0.76±0.23 and 0.28±.25, which a statistically significantrelationship was observed (respectively $p<0.0001$ and 0.0003). The mean OCT before and after laser in men was 341.77±36.21 and 281.33±23.97µm and in women 317.58±12.45 and 271.08±23.23µm, which was statistically significant relationship (respectively $p<0.0001$ and 0.0002).

DISCUSSION

Choosing an appropriate treatment for patients who suffer from a long time CSCR disease may decrease the severity of the problem. Several methods have been used to treat CSCR. Given the role of stress in causing the disease, the beneficial effects of the use of beta-blockers have been shown in limited studies [12, 13]. In addition, other medications such as acetazolamide and tranquilizers are used.Laser therapy for leakage spots reduces duration of illness. [14, 15]. Laser effect on the treatment of central serous retinopathy-related problems is undeniable. However, it is possible for some specific conditions such as macular ischemia, severe proliferation and macular edema to find other treatment methods more useful

In the present study, the prevalence of CSCR in the age group 31-40 years was higher. In study conducted by Kitzmann *et al.* [16], the incidence of CSCR in the age group 35-39 years was 21 cases per 100 thousand people, which was more than other age groups (16). The studies conducted byYannuzzi *et al*. [7], Tittl *et al.* [17], Karadimas [18] and Chobanianin [19] were consistent with the results of our study.

In our study, the average logMARof visual acuity was declined from 0.92 to 0.27. As a result, the visual acuity after laser therapy was improved considerably. In the study byMastropasqual *et al*. [20], the mean logMAR VA was improved from 0.1±0.3 to 0.1±0.1 which is in line with our results.

Based on present results, the mean central macular thickness before treatment was334.86±33.03µm which was reached to278.04±23.94 µm with a significant reduction after treatment. In the study ofMastropasqual *et al*. [20], all cases had a decrease in centralmacular thickness (50.6±2.9 µm).

Among the patients, CSCR of right and left eyes was observed in 24 and 18 cases. In Kitzmann [16] alsostudiedthe prevalence of CSCR in the right eye was 36 cases and the left eye in 35 cases, which is similar to the findings of our study.

In our study, male patients were more than female patients. Various studies also clearly expressed that the disease has been reported in men 6 times more than women [3]. In the studies conducted by Liew [21], Kitzmann [16] and Tsai *et al*. [22], the prevalence and incidence of CSCR in men was more than women.

CONCLUSION

Based on the results of this study, the laser is useful in the treatment of CSCR patients and enhances visual acuity. Laser also reduces CMT byaffecting the fluid absorption.

REFERENCES

1. Amos, A.F., D.J. McCarty and P. Zimmet, 1997. The rising global burden of diabetes and its complications: estimates and projections to the year 2010. Diabetic medicine: a Journal of the British Diabetic Association, 14 Suppl 5: S1-85.
2. Wang, M., I.C. Munch, P.W. Hasler, C. Prunte and M. Larsen, 2008. Central serous chorioretinopathy. Acta ophthalmologica, 86(2): 126-145.
3. Brodie, F.L., E.S. Charlson, T.S. Aleman, R.T. Salvo, D.Y. Gewaily, M.K. Lau, *et al.,* 2015. Obstructive sleep apnea and central serous chorioretinopathy. Retina, (35): 238-243.
4. Hayashi, K., Y. Hasegawa and T. Tokoro, 1986. Indocyanine green angiography of central serous chorioretinopathy. Int. J. Ophthalmol., 9(1): 37-41.
5. Piccolino, F.C., L. Borgia, E. Zinicola and M. Zingirian, 1995. Indocyanine green angiographic findings in central serouschorioretinopathy. Eye., 9(Pt 3): 324-332.
6. Prunte, C. and J. Flammer, 1996. Choroidal capillary and venous congestion in central serous chorioretinopathy. American journal of ophthalmology, 121(1): 26-34.
7. Yannuzzi, L.A., 2010. Central serous chorioretinopathy: a personal perspective. American journal of ophthalmology, 149(3): 361-363.
8. Ciulla, T.A., A.G. Amador and B. Zinman, 2003. Diabetic retinopathy and diabetic macular edema: pathophysiology, screening and novel therapies. Diabetes care, 26(9): 2653-2664.
9. Kim, D.Y., S.G. Joe, S.J. Yang, J.Y. Lee, J.G. Kim and Y.H. Yoon, 2015. The association between choroidal thickness variations and response to intravitreal bevacizumab in central serous chorioretinopathy. Korean journal of ophthalmology: KJO., 29(3): 160-167.
10. Mehany, S.A., A.M. Shawkat, M.F. Sayed and K.M. Mourad, 2010. Role of Avastin in management of central serous chorioretinopathy. Saudi journal of ophthalmology: official journal of the Saudi Ophthalmological Society, 24(3): 69-75.
11. Morsel, M., M. Mehdizadeh, M. Farvardin, H. Ashraf, M. Rahimi, H. Moghaddasi, *et al.,* 2003. Early treatment with diode laser chorioretinopathy. Hormozgan University of Medical Sciences, 7(3): 141-144.
12. Teng, Y.T., C.H. Chen, J.J. Lee, H.K. Kuo and P.C. Wu, 2013. Intravitreous injection of bevacizumab for chronic central serous chorioretinopathy. Taiwan Journal of Ophthalmology, 3(2): 67-70.
13. Browning, D.J., 1993. Nadolol in the treatment of central serous retinopathy. American journal of ophthalmology, 116(6): 770-771.
14. Ficker, L., G. Vafidis, A. While and P. Leaver, 1988. Long-term follow-up of a prospective trial of argon laser photocoagulation in the treatment of central serous retinopathy. The British journal of ophthalmology, 72(11): 829-834.
15. Yap, E.Y. and D.M. Robertson, 1996. The long-term outcome of central serous chorioretinopathy. Archives of ophthalmology, 114(6): 689-692.
16. Kitzmann, A.S., J.S. Pulido, N.N. Diehl, D.O. Hodge and J.P. Burke, 2008. The incidence of central serous chorioretinopathy in Olmsted County, Minnesota, 1980-2002. Ophthalmology, 115(1): 169-173.
17. Tittl, M.K., R.F. Spaide, D. Wong, E. Pilotto, L.A. Yannuzzi, Y.L. Fisher, *et al.,* 1999. Systemic findings associated with central serous chorioretinopathy. American journal of ophthalmology, 128(1): 63-68.

18. Karadimas, P. and E.A. Bouzas, 2004. Glucocorticoid use represents a risk factor for central serous chorioretinopathy: a prospective, case-control study. Graefe's archive for clinical and experimental ophthalmology, Albrecht von Graefes Archiv fur klinische und experimentelle Ophthalmologie, 242(9): 800-802.
19. Chobanian, A.V., G.L. Bakris, H.R. Black, W.C. Cushman, L.A. Green, J.L. Izzo, Jr., *et al.,* 2003. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. Hypertension, 42(6): 1206-1252.
20. Mastropasqua, L., L. Di Antonio, L. Toto, A. Mastropasqua, A. Di Iorio and P. Carpineto, 2015. Central serous chorioretinopathy treated with navigated retinal laser photocoagulation: visual acuity and retinal sensitivity. Ophthalmic surgery, lasers and imaging retina, 46(3): 349-54.
21. Liew, G., G. Quin, M. Gillies, S. Fraser-Bell, 2013. Central serous chorioretinopathy: a review of epidemiology and pathophysiology. Clinical and experimental ophthalmology, 41(2): 201-14.
22. Tsai, D.C., S.J. Chen, C.C. Huang, P. Chou, C.M. Chung, W.L. Chan, *et al.,* 2014. Risk of central serous chorioretinopathyin adults prescribed oral corticosteroids: a population-based study in Taiwan. Retina, 34(9): 1867-74.