World Applied Sciences Journal 10 (9): 992-996, 2010
ISSN 1818-4952


# The Results of Combined Periocular Steroid Injection and Peripheral Laser Photocoagulation in the Treatment of Pars Planitis in Children

*Karim Sadeghi, Ophthalmologist, Leila Alizadeh, Ophthalmologist and Behzad Anari, Ophthalmologist*

Department of Ophthalmology, Nikokari Eye Hospital,
Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, I.R. Iran

**Abstract:** Pars planitis is the idiopathic form of uveitis which usually occurs in children. Corticosteroid therapy, a common protocol of treatment, has several disadvantages in children including repeated injections and repeated anesthesia. Therefore, the aim of the present study is to evaluate a single injection of steroid and simultaneous Peripheral Laser Photocoagulation ( PLP) for treatment of pars planitis in children. In this study, 21 eyes from 17 children, with clinically diagnosed pars planitis, were treated with a single injection of corticosteroid and PLP method. For corticosteroid therapy the patient went under general anesthesia and 40 mg triamcinolone acetonide was administered transseptally. After the injection PLP was carried out. All the patients were clinically examined in 1, 3 and 6 months after treatment for follow up and the parameters such as visual acuity, grade of inflammation, neovascularization, presence of macular edema and snowbank/snowball was recorded and compared with pretreatment values using paired t- test and or chi-square test. The result showed that from the patient studied, 6 were girl and 11 were boy. The mean time between the onset of symptoms and beginning of treatment was 10.5±3.39 months. Follow up examination showed that, after treatment, visual acuity and inflammation was improved significantly ( $p<0.01$). The presence of macular edema and snowbank was decreased ( $p<0.002$). Neovascularization was not observed in any treated cases. However, cataract formation was increased. According to the results it is concluded that the combined technique of single injection of steroid and PLP; remarkably shortens the treatment period, limits repeated anesthesia and therefore is beneficial for treatment of pars planitis in children.

**Key words:** Pars planitis · Corticosteroid therapy · Peripheral laser photocoagulation · Children · Eye

## INTRODUCTION

Uveitis is an inflammatory condition of uveal tract which is classified as anterior, intermediate and posterior uveities [1]. Fifteen percent of uveitis in adult and 25% of uveitis in children occurs as intermediate uveitis [2-4]. Intermediate uveitis is characterized by the presence of posterior cyclitis, hyalitis, choroiditis and chorioretinitis [5,6]. Pars planitis is the idiopathic form of the intermediate uveitis and usually occurs in children or young adualts. The main feature of pars planitis is the presence of cellular activity in the vitreous, accumulation of debries and snowbank or snowball formation over the pars plana and peripheral retina [1,7]. Failure in early treatment of pars planitis may lead to permanent visual loss and amblyopia [8]. When visual acuity is dropped to 20/40 or macular cystoid edema is present the pars planitis treatment is necessary [1, 9]. Main treatment of pars planitis include periocular steroid injection (PSI) and or peripheral laser photocoagulation (PLP) and viterectomy in complicated cases [10-13]. However, corticosteroid therapy will need repeated injections which may have harmful effects and will need repeated anesthesia in children. The aim of the present study is to evaluate a single injection of steroid and simultaneous PLP application in the beginning of treatment of pars planitis in children.

## METHODS AND PATIENTS

In this study, 21 eyes form 17 children were treated for pars planitis. The parents of patients were given consent and the project was approved by ethic committee of Tabriz University of Medical Sciences. Inclusion

**Corresponding Author:** Karim Sadeghi, Department of Ophthalmology, Nikokari Eye Hospital, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, I.R. Iran, Tel: +09141154686, E-mail: dr_k_sadeghi@yahoo.com.

criteria for study were clinically diagnosed pars planitis, maximum age of 14, presence of extensive snowbank and macular edema. Exclusion criteria include; presence of vitreous reaction so that media opacity could prevent visualization for laser therapy and small pupil.

The diagnosed patients were precisely evaluated using slit lamp and biomicroscope. For corticosteroid injection the patient went under general anesthesia and 40 mg triamcinolone acetonide (supplied from HEXAL) was administered transseptally at periocular sites. After the injection of corticosteroid, laser photocoagulation was carried out as fluent photocoagulation burn in 3-4 line and posterior to snowbank using indirect argon laser diode. The treatment was as one clock burn over snowbank at each side and the burn intensity determined as white-gray burn.

All the patients were clinically examined in 1, 3 and 6 months after treatment for follow up. The following parameters were considered for each patient before and after treatment during follow up examinations: time between subjective symptoms and beginning of treatment, visual acuity, grade of inflammation in anterior chamber and vitreous, grading of inflammation was done according to international scale from 0-4 (8). Intraocular pressure, neovascularization at the base of the vitreous, presence and severity of macular edema (based on clinical examination of fleourcin angiography), presence of snowbank and snowball, status of lens and pupil, number of anesthesia given, was also recorded. The data were analyzed using paired t- test, chi-square test and fisher's exact test. The P values <0.05 were considered as significant.

## RESULTS

From 17 patients included in the survey, in 4 patients both eyes and in 13 patients only one eye were affected. From the patients studied, 11 patients were boy and 6 patients were girl and the mean age of the patients were 8.15±2.3 (5-11) years old. The mean time between the onset of symptoms and beginning of treatment were 10.5±3.39 (4-14) months. The parameters examined in the study are shown in Tables 1 and 2.

As it is shown in table 1, visual acuity, in comparison to pretreatment value is improved significantly from 2.88±3.26 to 5.96±3.45 ($p<0.01$). The improvement was detectable at1 month after treatment and continued thereafter. Grade of inflammation in anterior chamber and anterior segment of vitreous body is reduced significantly from 1.4±0.96, before treatment, to 0.36±0.64, after treatment ($p<0.01$). The reduction of the inflammation was evident from the first month post treatment and improved in a time dependent manner. IOP did not change significantly after treatment.

The data in table 2 shows that the macular edema reduced from 19 cases to 4 cases at 6$^{th}$ month post treatment period and the reduction in number of cases were significant ($p<0.002$) as early as in 3$^{rd}$ month post treatment. Neovascularization was not observed in any treated cases. The number of case with the presence of snowbank and snowball decreased significantly ($p<0.001$), as early as at 3 months after treatment and continued to decrease progressively in a time-dependent manner. However, cataract formation was increased after operation.

Table 1: The values of parameters studied in patients with pars planitis before and after treatment with PLP+PSI

| | Pretreatment | 1M Post-treat | 3M Post-treat | 6M Post-treat | P value |
|---|---|---|---|---|---|
| Visual acuity | 2.88±3.26 | 3.92±3.56* | 5.56±3.46* | 5.96±3.45* | <0.01 |
| Anterior chamber inflammation | 1.4±0.96 | 0.88±0.76* | 0.52±0.65* | 0.362±0.64* | <0.01 |
| Anterior vitreal Inflammation | 2.60±0.96 | 1.91±0.68* | 1.520.51* | 1.38±0.59* | <0.00 |
| IOP | 14.16±1.39 | 14.44±1.39 | 14.6±1.38 | 15±2.94 | |

* Values indicated with astrisk are significantly different from pretreated values, at the same row.

Table 2: The presence of symptoms in patients with pars planitis before and after treatment with PLP + PSI, as in number of cases.

| | Pretreatment | 1M Post-treat | 3M Post-treat | 6M Post-treat | P value |
|---|---|---|---|---|---|
| Macular edema | 19 | 18 | 8* | 4* | P<0.002 |
| Neovascular iz. | 2 | 0 | 0 | 0 | |
| Snow bank | 21 | 18 | 2* | 0* | P<0.001 |
| Snow ball | 21 | 14 | 8* | 3* | P<0.02 |
| Cataract | 1 | 6 | 2 | 3 | |

* Values indicated with astrisk are significantly different from pretreated values at the same row.

## DISCUSSION

In this study, the results of simultaneous application of PSI and PLP in children with pars planitis has been reported.

Steroid injection is a routine treatment for pars planitis, but have several disadvantages such as repeated injections, repeated anesthesia and ophthalmic side effects [9, 10]. For reducing the disadvantages of steroid injection method we have used peripheral laser photocoagulation in association with a single steroid injection. This technique has not been sued previously. The results showed that combination of this techniques not only reduced the use of general anesthesia, but also accelerated correction of visual acuity, improved inflammation status and reduced the presence of snowbank and snowball. These results are comparable to those obtained after viterectomy, as a method of safe instead of long term medical therapy [13].

However, our technique is far less invasive than viterectomy. Peripheral laser photocoagulation for the first time has been used for the treatment of pars planitis by park *et al.* in 1995 [11]. They also showed that PLP reduces neovascularization, inflammation and improves visual acuity. However, the number of patients and follow up period were very limited in their study. Pulido *et al.* (1998) evaluated the results of PLP in 22 eyes with 16.3 months follow up period and concluded that PLP leads in a significant reduction of vitreal neovascularization, inflammation and macular edema, but the improvement of visual acuity was not improved significantly [12].

Our results are comparable with the results of previous studies but it is achieved in a very shorter time, i.e. 6 months after treatment.

In our study 4 eyes in the first month of treatment went under viterectomy and end layer therapy because of organized vitreous and excluded from the study.

The mean age of the patients in our study was 7.71 years but in the study of Pulido it was 19.3 years. Pulido *et al.* has mentioned that the out come of the treatment was better in younger patients [12]. In another work, Cluster *et al.* (2005) evaluated the results from pars planitis treatment in 20 eyes from 10 patients using different methods such as topical steroid injection, periocular steroid injection, systemic corticosteroid therapy, periocular steroid injection with cryotherapy and PLP [14]. They have reported; 15% cataract fprmation, 10% vitreal hemorrhage, 25% increasing of intraocular pressure, 5% of neovascularization and 40% of vitreoretinal traction and or vitreopapillary traction. Visual acuity was improved in 85 percent of cases.

In our study, there was not any case of neovascularization but cataract formation and intraocular pressure was increased 20% and 4% respectively. Still our results were better than the results reported by Cluster *et al.* Catract formation is one of the most frequent complications in intermediate uveitis and it is common with corticosteroid treatment.

The other treatment technique, in these patients, is using diathermy. While the results are remarkable but because of the need for making a scleral flap its use is very limited [15, 16].

Our study indicate that the combination of PSI and PLP techniques remarkably shortens the treatment period and limits repeated anesthesia for periocular injection in children. On the otherhand, the complication of treatment, in comparison to other techniques, does not increase. Therefore it is concluded that the combined technique of PSI and PLP is a beneficial method for treatment of pars planitis in children.

## ACKNOWLEDGMENT

The authors are thankful to research deputy of Tabriz University of Medical Sciences for providing the expenses of the present study.

## REFERENCES

1. Jabs, D.A., R.B. Nussenblatt and J.T. Rosenbaum, 2005. Standardization of uveitis nomenclature for reporting clinical data. Results of the First International Workshop. Am. J. Ophthalmol., 140(3): 509-516.
2. Gritz, D.C. and I.G. Wong, 2004. Incidence and prevalence of uveitis in Northern California; the Northern California Epidemiology of Uveitis Study. Ophthalmology, 111(3): 491-500.
3. Chan, S.M., M. Hudson and E. Weis, 2007. Anterior and intermediate cases referred to a tertiary care center in Alberta. Can. J. Ophthalmol., 42: 860-40.
4. Engelmann, K., T. Ness, K. Greiner and T. Hudde, 2007. Uveitis intermedia in children. Klin Monatsbl Augenheilkd, 224: 426-80.
5. Bonfioli, A.A., F.M. Damico, A.L. Curi, F. Orefice, 2005. Intermediate uveitis. Semin Ophthalmol., 20(3): 141-54.
6. Babu, B.M. and S.R. Rathinam, 2010. Intermediate uveitis. Indian J. Ophthalmol., 58: 21-7.
7. Nussenblatt, R.B., S.M. Whitcup and A.G. Palestine, 2004. Uveitis; Fundamentals and Clinical Pracitce, 3rd ed. Mosby. pp: 886-889.

8. Jain, R., P. Ferrante, G.T. Reddy and S. Lightman, 2005. Clinical features and visual outcome of intermediate uveitis in children. Clin Experiment Ophthalmol, 33(1): 22-25.
9. Yanoff, M., J.S. Duker and J.J. Augsburger, 2003. Ophthalmology, 2nd ed. Mosby, pp: 886-889.
10. Helm, C.J. and G.N. Holland, 1995. The effects of posterior subtenon injection of triamcinolone acetonide in patients with intermediate uveitis. AM J. Ophthalmol., 120: 55- 64.
11. Kalina, P.H., J.C. Erie and L. Rosenbaum, 1995. Biochemical quantification of triamcinolone in subconjunctival depots. Arch. Ophthalmol., 113: 867-869.
12. Potter, M.J., S.O. Mychatyn, A.L. Maberley and A.S. Lee, 2001. Vitrectomy for pars planintis complicated by vitreous hemorrhage: visual outcome and long-term follow-up. AM. J. Ophthalmol., 131(4): 514-515.
13. Giuliari, G.P., P.Y. Chang, P. Thakuria, D.M. Hinkle and C.S. Foster, 2010. Pars plana viterectomy in the management of Paediafric uveitis: the massa chusetts eye research and surgery institution experience. Cme. Unedscape. com. View article.
14. Calster, M.KV. and W.C. Casteels, 2005. Clinincal symptoms and complications of pars planitis in childhood. Bull Soc Belge Ophtalmol., 295: 29-33.
15. Welch, R.B., A.E. Maunenee and H.E. Wahlen, 1960. Peripheral posterior segment inflammation, vitreous opacities and edema of the posterior pole. Arch. Ophthalmol., 64: 540-549.
16. Gills, J.P., 1968. Combined medical and surgical therapy for complicated cases of peripheral uveitis. Arch. Ophthalmol., 79: 723-728.