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KEY WORDS: Best corrected visual acuity, Cystoid macular edema, and Posterior subtenon triamcinolone

POSTERIOR SUBTENON TRIAMCINOLONE INJECTION IN CYSTOID MACULAR EDEMA SECONDARY TO UVEITIS.

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ABSTRACT

Aim: To evaluate the efficacy of posterior sub-tenon triamcinolone injection in cystoid macular edema secondary to uveitis: : A Hospital-based Prospective Interventional study.
Methods: All patients fulfilling the diagnostic criteria were included from 1 January 2012 to 30 June 2013: received PST (20mg/0.5ml) and asked to follow up at 3, 8, and 12 weeks respectively, to assess the positive effects including improvement in visual acuity LogMAR and reduction in mean central macular thickness.
Results: Out of 27 eyes of 23 patients, the mean age was 33.91 ± 14.65 (19-62 years). Nine (39.14%) patients were male. Nineteen patients (50.7 %) had unilateral involvement. Out of 23 patients, 21 (91.30%) had intermediate uveitis and 2 (8.70%) had posterior uveitis. The mean LogMAR BCVA was improved from 0.83± 0.19 at baseline to 0.30 ± 0.20 at 12 weeks. ($p < 0.05$). Improvement in visual acuity by greater than two lines was observed in 21 (77.77%) eyes and that by 2-line improvement in 5 (18.53%) eyes and no improvement was noted in 1 (3.70%) eye at the end of the study. The mean CMT before injection was 461.10 ± 120µm at baseline with mean reduction of 295.93 ± 81 µm (35%) at 12 weeks ($p < 0.05$). No statistically significant rise in IOP was observed during the study period.
Conclusion: No side effects was observed during the study period, and found to be a safe and effective form of treatment in uveitic macular edema.

INTRODUCTION:

Uveitis is one of the major causes of severe visual impairment due to macular edema. 1 The incidence of visual impairment in uveitis is 35% and is mainly due to posterior uveitis, as results of persistent CME. 2 Intermediate and panuveitis had the highest frequency of CME (60 and 66%, respectively).3 Macular edema in uveitis is a consequence of a number of underlying mechanisms including the disruption of the inner blood-retinal barrier due to inflammation, vitreous traction, choroidal inflammation and pigment epithelial dysfunction.4 OCT has the potential for measuring changes in retinal thickness effectively. As uveitic CME occurs at the fovea, a scanning strategy centered on this area minimizes the possibility of significant thickening remaining undetected. 5 To date, there is no completely effective form of treatment for uveitic CME, and this is due in part to the limited understanding of the pathogenesis of CME in patients with uveitis.

MATERIAL AND METHODS:

This is Prospective Interventional, a hospital-based study conducted from 1st January, 2012 to 30th June, 2013 at B. P. Koirala Lions Center for Ophthalmic Studies, Institute of Medicine, Tribhuvan University, Kathmandu Nepal. A total 27 eyes of 23 patients of uveitic macular edema diagnosed by optical coherence tomography were enrolled.

Inclusion Criteria

- All new patients diagnosed as uveitic macular edema by Optical Coherence Tomography of non-infectious etiology
- Adequate media clarity for fundus visualization

Exclusion criteria

- Presence of co-existing ocular disease limiting visual potential. (Corneal opacity, cataract etc)
- Patients not willing to participate in the study
- Patients with traumatic uveitis

Assessment:

Best corrected visual acuity with LogMAR chart was done at baseline and in each follow ups. Detailed anterior segment, posterior segment examination was done. Intraocular pressure measurement was done by Goldmann applanation tonometer at 0, 3, 8, and 12 weeks respectively.

Ocular Coherence Tomography:

Before intervention all patients underwent central macular thickness (CMT) measurement with an Optical Coherence Tomographer 3 (spectral domain Heidelberg) with 5.6.4 version software. CMT was defined as the mean retinal thickness in the circular zone of diameter 1 mm centered on the fovea. Reduction of CMT was evaluated at 3, 8 and 12 weeks respectively.

Posterior sub-Tenon triamcinolone injection:

All the patients meeting the inclusion criteria were treated with posterior sub-Tenon injection (20 mg/0.05ml) by Nozik method.6
Statistical analysis:

Data were analyzed using SPSS, version 20. The paired t-test was used. P-value < 0.05 is considered as statically significant.

Results:

A total of 27 eyes of 23 patients were enrolled. The mean age was 33.91±14.65 years (19-62). Nine (39.14%) patients were male and 14 (60.86%) were female.

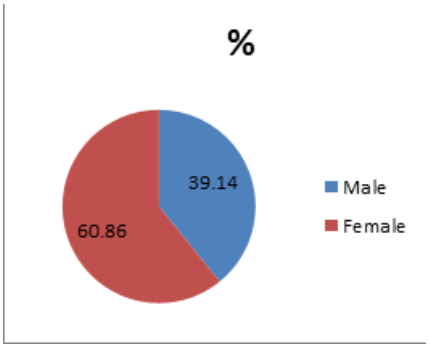

Figure 1: Pie chart showing gender distribution of the cases

Nineteen patients (50.7 %) had unilateral involvement and 4 (29.63%) had bilateral involvement.

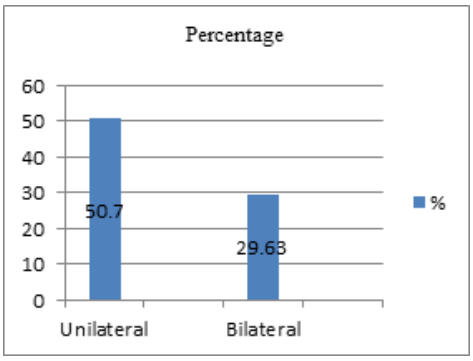

Figure 2: Bar diagram showing laterality of eyes involved

Twenty one (91.30%) patients had intermediate uveitis and 2 (8.70%) had posterior uveitis.

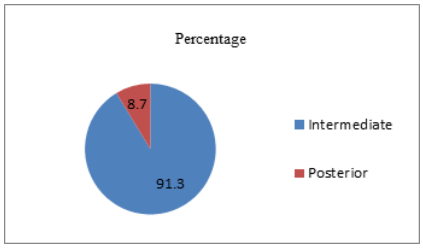

Figure 3: Pie chart showing distribution of types of uveitis

Improvement of visual acuity was statically significant (p< 0.05) from 0.83± 0.19 at baseline to 0.30 ± .20 at 12 weeks.

Table 1: Improvements of visual acuity.

week	Baseline	3	8	12
LogMAR	0.83± 0.19	0.52± 0.22	0.30± 0.20	0.30± 0.20
Paired t-test		p< 0.05	p< 0.05	p< 0.05

In our study, improvement in visual acuity by greater than two lines was observed in 21 (77.77%) eyes and that by 2-line improvement in 5 (18.53%) eyes and no improvement was noted in 1 (3.70%) eye by 12 weeks.

Table 2: Improvements of visual acuity as measured in terms of changes in number of lines.

Improvement in terms of line	12 weeks(eye)
>2 lines	21
2 lines	5
No improvement	1

At baseline the mean CMT was 461.10µm with mean reduction of 356.33µm (22.72%), 317.85µm (31%) and 295.93 µm (35%) at each follow up. (p< 0.05)

Table 3: Reduction of CMT as measured by Optical coherence tomography

week	Base line	3	8	12
Mean CMT (µm)	461.10±120	356.33µm± 108	317.85±60	295.93±81
Mean difference(µm)		104.77	143.25	165.17
Reduction in Percentage		22.72%	31%	35%
P value		p< 0.05	p< 0.05	p< 0.05

The mean IOP was 18 ± 0.8, 22 ± 1.2, 21 ± 0.4 and 19 ± 0.8 at 0, 3, 8 and 12 weeks respectively (p >0.05).

Table 4: Changes in IOP on each follow ups.

week	baseline	3	8	12
Mean IOP(mmHg)	18 ± 0.8	22 ± 1.2	21 ± 0.4	19 ± 0.8
P value		P >0.05	P >0.05	P >0.05

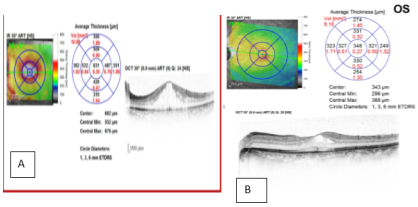

Figure 4: Macular edema before (A) and after treatment (B)

DISCUSSION:

In our study, the mean age of the patients was 33.91 ± 14.65 years (19-62). Nine (39.14%) patients were male and 14 (60.86%) patients were female. The study by Dafflon et al., 7 showed the mean age of 42 years ± 16.6 years (9-75) with the male to female ratio of 2:3. Tanner et al., 8 showed the mean age of the patients were 42 years (20-68) with the male to female ratio of 1.27:1.

Out of 23 patients, 19 patients had unilateral involvement and 4 had bilateral involvement in our study. In a study by Tanner et al., 8 out of 25 patients 22 had unilateral involvement and 3 had bilateral involvement.

In our study, out of 23 patients, 21 (91.30%) cases were of intermediate uveitis and 2 (8.70%) cases were of posterior uveitis, whereas in a study done by Dafflon et al., 7 out of 53 patients, there was 1 (1.9%) case of anterior uveitis, 28 (52.8%) cases of intermediate uveitis and 10 (18.9%) cases of posterior uveitis and 14 (26.4%) cases of panuveitis. The study by Tanner et al., 8 included 25 cases of which 10 (20%) cases were of intermediate uveitis and 15 (60%) cases of panuveitis.

The mean LogMAR BCVA was 0.83± 0.19, 0.52± 0.22, 0.3074 ± 0.20 and0.30± 0.20 at base line, 3, 8 and 12 weeks respectively. Visual acuity was improved from 0.83± 0.19 at baseline to 0.30 ± 0.20 at 12 weeks (p < 0.05). Improvement in visual acuity was observed (0.6 at baseline to 0.14 at 12 weeks) in a study by Veketesh et al, 9. (p< 0.05). Venketash et al, 5 found improvement in visual acuity from 0.231± 80.08 to 0.7110±0.23 at baseline and 12 weeks with significant improvement occurred at 6 weeks. (0.6100 ± 0.22, P <0.05).

In our study, improvement in visual acuity by greater than two lines was observed in 21 (77.77%) eyes and that by 2-line improvement in 5 (18.53%) eyes and no improvement was noted in 1 (3.70%) eye at 12 weeks. Similarly, in a study by Helm CJ et al., 10 there was improvement in Snellen's visual acuity by greater than 2 lines in 12 (67%) out of 18 patients by 3 weeks. Tanner et al., 8 showed 2-line improvement in visual acuity in 12 eyes (43%) after 6 weeks of follow-up, which is less as compared to our study. In the study by Venketash et al, 9 8 out of 10 patients had 2-5 lines of improvement and less than 2 lines of improvement was found in 1 patient. At least three lines of improvement of visual acuity were noted in a study done by Venketash et al. [5]

In our study, the reduction in mean central macular thickness (CMT), there was a 22.72 percent reduction at 3 weeks, 31 percent at 8 weeks and 35-percent reduction at 8 weeks (p <0.05) whereas in a study done by Venketash et al., 9 there was 22.9% reduction of CMT at 2 weeks, 28.38% at 2- 6 weeks and 32.46% reduction of CMT at 6 -12 weeks respectively.(p< 0.05).

Ventetash et al. 5 found the reduction in mean central macular thickness of 55% by the 2nd week and the remaining 45% by the 6th week. (p<0.05). In a study done by Bae et al., 12 there was 70% reduction of CMT by 12 weeks. (p <0.05).

No statistically signifiant rise in IOP was observed which was similar to the study done by Tanner et al. 8 Three out of 175 eyes develop glaucoma following injection in a study by Nozik. 6 Freemann et al. 13 found out of 24 patients, 1 patient develop glaucoma.

No complications were noted during study period. Ocular penetration in one eye (1.6%) and rapidly progressive cataract in 6 eyes (13.3%) have been documented in the study done by His-Kung Kuo et al., 13. Ferrante et al., 14 reported ptosis as a complication in 2 out of 30 cases.

Conclusion:

PST (20 mg instead of 40 mg) has found to be effective in controlling inflammation and CMT without causing side effect in the form of increased IOP. Hence, based on our study, we can recommend this dose to be a practically optimal one for our Nepalese patients.

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