Original Article

Comparative Study of Effectiveness of Subconjunctival Injection of Dexamethasone Versus Intracameral Injection of Dexamethasone in Controlling Immediate Post-Operative Anterior Uveitis After Cataract Surgery in Cases of Phacomorphic Glaucoma

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Purpose: To compare the effectiveness of subconjunctival injection of dexamethasone with intracameral injection of dexamethasone in controlling immediate postoperative anterior uveitis after cataract surgery in patients of phacomorphic glaucoma.

Materials and Methods: Sixty patients of phacomorphic glaucoma underwent conventional Extracapsular cataract extraction (ECCE) with intraocular lens (IOL) implantation by same surgeon. They were divided into two groups comprising of 30 patients each. Patients in Group A, received subconjuctival injection of deamethasone while patients in group B received intracameral injection of dexamethasaone at the end of surgery. Patients were examined on 1st and 3rd post-operative day on slitlamp for signs of anterior uveitis.

Results: on 1st post-operative day, in group A findings were, cells in AC ≤ +2 (17 patients, 57%), cells in AC ≥ +3 (11 patients, 36%), membrane in AC (19 patients, 63%) while in group B findings were, cells in AC ≤ +2 (14 patients, 47%), cells in AC ≥ +3 (13 patients, 43%), membrane in AC (21 patients, 70%). The data was analyzed statistically by applying T test using SPSS version 8. It showed that there was no statistically significant difference in results between group A and group B on 1st and 3rd post-operative day.

Conclusion: Intracameral injection of Dexamethasone provides an equally effective alternative to subconjunctival injection of Dexamethasone per-operatively and avoids the adverse effects associated with subconjunctival injection.

"Phacomorphic glaucoma" is lens-induced secondary angle closure glaucoma which results from mature cataract or intumescent cataract which blocks the angle by a forward push of the iris[1,2]. In the European races, there is a gradual shrinkage of lens with development of cataract and thereby a progressive deepening of the anterior chamber occurs[3]. Phacomorphic glaucoma is

unusual in those people. On the other hand, cataract in Indians seems to become intumescent rather commonly[4] and lens gets thickened through the process of cataractogenesis[5]. It appears that in these cases there is an acute angle closure by forward push of the iris root rather than a physiologic pupil block and iris bombe as seen in acute closed angle glaucoma. This is encountered more in developing countries, where patients present late. They tend to wait until the cataract becomes mature, because it is common belief among these patients that cataract should not be operated on until vision drops to the level of hand movements or light perception[6].

Often, patients will present with acute onset of ocular redness and pain with an edematous cornea and elevated IOP. There will be a shallow anterior chamber. Extracapsular cataract extraction, either with or without lens implantation, remains the most common procedure to correct phacomorphic glaucoma[7]. Immediate argon laser peripheral iridoplasty (ALPI), replacing systemic antiglaucomatous medications, appears to be safe and effective first-line treatment of acute phacomorphic angle-closure. ALPI obviates the need to operate in highly inflamed eyes in an emergency setting[8]. This is followed by Cataract extraction as definitive treatment[9]. Extracapsular cataract extraction (ECCE) with heparin surface modified (HSM) posterior chamber intraocular lens (PCIOL) implantation may be carried out in an attempt to optimize visual acuity gains in patients with phacomorphic glaucoma[10]. Single-port, sutureless transconjunctival limited pars plana vitrectomy may be done to facilitate phacoemulsification in eyes with a shallow anterior chamber and high intraocular pressure[11].

Our hospital is charity based, located in rural area of Shahpur Sadar, district Sargodha. Its main focus is underprivileged population of central Punjab. Due to negligence about eye diseases, poor financial condition and absence of a person to escort them, patients with cataract delay cataract surgery till many patients feel severe pain in the eye and present in OPD as Phacomorphic glaucoma.

PURPOSE OF STUDY

To compare the effectiveness of subconjunctival injection of dexamethasone 0.5 ml (2 mg) with intracameral injection of dexamethasone 0.1 ml (0.4 mg) in controlling immediate post-operative anterior uveitis following cataract surgery.

MATERIALS AND METHODS

This was a hospital based interventional comparative study conducted at LRBT Shahpur Sadar from 01-12-2006 to 30-05-2008.

All patients with senile cataract presenting with phacomorphic glaucoma were included in the study. Patients with history of diabetes mellitus, history of anterior uveitis, previous anterior segment surgery and single functioning eye were excluded from study. Total numbers of patients included in the study were 60.

All patients underwent Extracapsular cataract extraction with posterior chamber intraocular lens implantation by same surgeon. They were randomly divided into two groups. Group A comprised of 30 patients and received subconjunctival injection of dexamethasone 0.5 ml (2 mg) at the end of surgery, while group B consisted of 30 patients who received intracameral injection of dexamethasone 0.1 ml (0.4 mg) at the end of surgery.

Pre-operatively detailed history was taken, visual acuity noted and anterior segment examination carried out by slit lamp. Ciliary congestion, corneal edema, keratic precipitates (KP), flare and cells in anterior chamber, inflammatory membrane formation and posterior synechiae were noted. Fundal glow was checked with distant direct ophthalmoscopy. Fundus examination carried out with 90 Dioptre lens in the fellow eye where possible. Intraocular pressure was checked with Goldmann applanation tonometer and gonioscopy carried out with gonio lens. Glycerine was applied topically in cases of corneal edama to obtain relatively clear view for gonioscopy. Preoperatively patients were treated medically to control IOP using Levobunolol eye drops b.i.d, tablet Acetazolamide 250 mg q.i.d and tablet KCl once daily. Intravenous Mannitol was given when IOP was more than 30 mm of Hg. Topical dexamethasone eye drops QID were used to control intraocular inflammation.

Post-operatively eye pad was removed at morning on 1st postoperative day and patients were examined by the same surgeon following the same protocol as used in preoperative evaluation. Patients were advised dexamethasone and tobramycin combination eye drops 1 hourly for 3 days, then 2 hourly for 1 week, then 4 hourly for 2 weeks and then q.i.d for 1 month. Dexamethasone and tobramycin combination eye ointment was advised at bed time for 6 weeks. Patients were again examined on 3rd postoperative day.

RESULTS

Out of total 60 patients, 27 patients were male while 33 were female. Average age of presentation was 63.25 years. Duration of pain ranged from 1 day to 2 months. Patients presenting with no perception of light were 4 (7%), normal perception of light but faulty projection were 18 (30%) and normal perception and projection of light were 38 (63%). Mean IOP was 32.88 mm of Hg. Nine patients (15%) were already on IOP lowering medication at the time of presentation.

Table 1 shows clinical findings of Group A on 1st post-operative day. In 2 patients (7%), flare and cells in AC could not be assessed because of corneal edema. Table 2 shows clinical findings of Group B on 1st post-operative day. In 3 patients (10 %), flare and cells in AC could not be assessed because of corneal edema.

The data has been analyzed statistically by applying T test using SPSS version 8. It shows that there is no statistically significant difference in results between group A and group B.

Table 1: Group A: on 1st postoperative day

Features	No. of patients n (%)
Ciliary congestion	30 (100)
Corneal edema	19 (63)
KPs	1 (3)
Flare in AC ≤ +2	16 (53)
Flare in AC ≥ +3	12 (40)
Cells in AC ≤ +2	17 9 (57)
Cells in AC ≥ +3	11 (36)
Membrane in AC	19 (63)
Posteroir synechiae	4 (13)

DISCUSSION

In our study out of total 60 patients, 27 patients were male while 33 were female (male to female ratio 1:1.2). In a similar study by Jain[1] out of 86 patients, 40 were males and 46 were females: (male to female ratio 1:1.15), while Rijal[12] in his study at Nepal Eye Hospital, Kathmandu, has recorded male to female ratio 1:1.2.

In our study average age at presentation was 63.25 years, duration of pain ranged from 1 day to 2 months and mean IOP was 32.88 mm of Hg. Jain has reported 62 years average age at the time of presentation, duration of pain varying from one day to three months and mean IOP of 45.50 mm of Hg. Low mean IOP in our study was probably due to the fact that nine patients (15%) in our study were already on IOP lowering medication at the time of presentation.

Table 2: Group B: on 1st postoperative day

Features	No. of patients n (%)
Ciliary congestion	30 (100)
Corneal edema	21 (70)
KPs	1 (3)
Flare in AC ≤ +2	15 (50)
Flare in AC ≥ +3	12 (40)
Cells in AC ≤ +2	14 (47)
Cells in AC ≥ +3	13 (43)
Membrane in AC	21 (70)
Posteroir synechiae	6 (20)

Table 3: Group A: on 3rd postoperative day

Features	No. of patients n (%)
Ciliary congestion	20 (67)
Corneal edema	11 (37)
KPs	0 (0)
Flare in AC ≤ +2	20(67)
Flare in AC ≥ +3	10 (33)
Cells in AC ≤ +2	19 (63)
Cells in AC ≥ +3	11 (37)
Membrane in AC	12 (40)
Posteroir synechiae	6 (20)

Post-operatively, severity of uveitis was measured by ciliary congestion, keratic precipitates (KPs), flare in anterior chamber (AC), cells in AC, membrane formation in AC and posterior synechiae (PS). The

result shows that severity of uveitis was similar in both groups. Although in group A, on Ist post-operative day membrane in AC formed in 19 cases as compared to 21 cases in group B, the difference is not statistically significant. Similarly on 3rd post-operative day, these two groups donot show statistically significant difference regarding parameters of uveitis.

Table 4: Group B: on 3rd postoperative day

Features	No. of patients n (%)
Ciliary congestion	22 (73)
Corneal edema	12 (40)
KPs	0 (0)
Flare in AC ≤ +2	19 (63)
Flare in AC ≥ +3	11 (37)
Cells in AC ≤ +2	20 (67)
Cells in AC ≥ +3	10 (33)
Membrane in AC	14 (47)
Posteroir synechiae	5 (5)

On 3rd post-operative day corneal edema was present in 37% cases in group A and 40% cases in group B. Pradhan D in his study at Sagarmatha Choudhary Eye Hospital, Lahan, Nepal, has reported corneal edema in 25.5% cases[13].

In Pubmed we did not find any study in which subconjunctival injection of dexamethasone has been compared with intracameral injection of dexamethasone for control of immediate postoperative anterior uveitis after cataract surgery, so direct comparison cannot be made with a similar study. Further multicenter clinical trials are needed to confirm the results of this study.

During cataract surgery in cases of phacomorphic glaucoma, subconjunctival injection of Dexamethasone is usually given per-operatively to control accompanying anterior uveitis. It can lead to subconjunctival hemorrhage postoperatively which may be alarming to many patients. In addition it can lead to accidental perforation of globe. All these problems can be avoided by intracameral injection of Dexamethasone. No clinically adverse effects have been found after intracameral injection.

CONCLUSION

Intracameral injection of Dexamethasone provides an equally effective alternative to subconjunctival injection of Dexamethasone per-operatively and avoids the pain associated with subconjunctival injection.

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