Original Article

Role of Initial Preoperative Medical Management in Controlling Post-Operative Anterior Uveitis in Patients of Phacomorphic Glaucoma

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Purpose: To determine the role of initial preoperative medical treatment in controlling severe post operative anterior uveitis after cataract surgery in patients of phacomorphic glaucoma.

Material and Method: After diagnosis of phacomorphic glaucoma patients were divided into two groups. Group A included 30 eyes which were operated very next day after controlling intraocular pressure only. Group B included 30 eyes which were given anti-glaucoma andfour hourlytopical steroid drops to reduce inflammation for at least 5 days and then they were operated. Patients in both the groups were operated by extra capsular cataract extraction technique with intra ocular lens implantation by a single surgeon. Evaluation of patients on slitlamp for the signs of postoperative inflammation in both the groups was done on the first three post operative days while the patients were in the ward. Follow up visits were done after one week, three weeks and finally after six weeks postoperatively.

Results: The study was conducted on 60 eyes at eye department, Mayo hospital Lahore. On first postoperative day Group A slitlamp findings showed, +2 cells in 3eyes, 27 eyes showed $\geq$+3 cells,27 eyes showed corneal edema, 12 eyes showed membrane in A/C, and 7 eyes showed hypopyon. While in Group B slitlamp findings showed, +1 cells in 7 eyes, +2 cells in 20eyes, 3 eyes showed $\geq$+3 cells,2 eyes showed corneal edema, 2 eyes showed membrane in A/C, and no eye showed hypopyon. The data was analyzed statistically by applying T test using SPSS version 8.

Conclusion: Preoperative reduction of inflammation in phacomorphic glaucoma helps to minimize post operative complications due to anterior uveitis.

Phacomorphic glaucoma is a type of lens-induced glaucoma in which there is pathologic rise in intraocular pressure (>21mmHg) precipitated by the shape and size of the lens. It is acute secondary angle closure glaucoma which results from sudden hydration of lens that blocks the angle by a forward push of the iris and ciliary body resulting in shallowing of the anterior chamber.

Rapid lens swelling may result in pupillary block or forward displacement of the lens-iris diaphragm. [1]Phacomorphic glaucoma may be manifested by pain, blurred vision, rainbow coloured halos around lights, nausea and vomiting. The IOP rise to relatively high levels and causes corneal epithelial edema.

Initial management of phacomorphic glaucoma includes reduction of the intraocular pressure with topical B adrenergic antagonist, pilocarpine (parasympathomimetic), carbonic anhydrase inhibitors and osmotic agents[2].

Phacomorphic glaucoma is a relatively common occurrence in the subcontinent[3]. It is a surgical emergency. Lens extraction with intra ocular lens implantation is the treatment of choice for phacomorphic glaucoma[4]. Visual outcome is dependent on timely management. Its results are often marred by pressure related optic atrophy and post operative Uveitis[5]. Fibrin release, which leads to membrane formation, posterior synechiae and pupil block glaucoma is commonafter cataract surgery for the treatment of phacomorphic glaucoma.

We conducted this study to determine the role of initial preoperative medical treatment in controlling post operative anterior uveitis after cataract surgery in patients of phacomorphic glaucoma.

MATERIAL AND METHOD

This hospital based interventional comparative study was conducted on 60 eyes at eye department Mayo hospital Lahore from 1-08-09 to 31-07-10. The duration of study was one years.

Patients of both gender who presented with symptoms of pain, redness and decreased vision and were diagnosed as phacomorphic glaucoma were included in the study.

Patients of phacomorphic glaucoma having faulty projection of light, patients in which after initial medical treatment pupillary miosis was not achieved due to synechiae formation, in which IOP was not controlled persistently by medical therapy due to the permanent angle closure, with history of diabetes, with any previous history of trauma, history of anterior uveitis, with previous glaucoma history, with any past ocular surgical history were excluded from the study.

After the diagnosis of phacomorphic glaucoma, patients were admitted in the ward. Patients were randomly divided into two groups. Group A included the patients who were operated on the very next day after control of just the IOP. While in Group B, patients were given anti-glaucoma to lower the intra ocular pressure and topical steroid drops to reduce inflammation for at least 5 days and then they were operated on. In both the groups, Timolol eye drops were used twice a day, and tablet acetazolamide 250 mg was given tid. Intravenous mannitol or oral glycerin was given in patients in whom the IOP was more than 30 mmHg. 4% pilocarpine eye drops were used intensively when mannitol/glycerin was given then used QID, to open the angle after achieving miosis. Intraocular inflammation was controlled with topical dexamethasone eye drops 4 hourly.

Group A patients were operated very next day after control of just the IOP. While in Group B patients both antiglaucoma and topical steroid eye drops were given for at least 5 days. The aim was to control the IOP as well as intra-ocular inflammation. Once there was minimal ciliary congestion, clear cornea, anterior chamber was devoid of reaction and pupil had constricted. Patients in both the groups underwent extra capsular cataract extraction (ECCE) with intra ocular lens (IOL) implantation by a single surgeon. Patients were evaluated for signs postoperative inflammation on the first three post operative days while patients were in the ward, and after one and three week of discharge.

Postoperatively patients were advised topical tobramycin and dexamethasone eye drops 2 hourly for 1 week, then 4 hourly for three weeks and then TID for next three weeks. If required antiglaucoma drugs were also added.

RESULTS

Out of 60 eyes, 26 eyes were of male while 34 eyes were of female. Duration of pain ranged from 1day to 1 ½ month. Preoperatively in all the eyes visual acuity was counting finger to perception of light with projection in all quadrants.

In Group A mean intraocular pressure on presentation was 37.25 mmHg and after preoperative treatment it was controlled to 14.50 mmHg. While in group B preoperative mean intraocular pressure was 38.75 mmHg and after initial preoperative medical treatment mean IOP was 15.25. After 6 weeks postoperative mean IOP in Group A pts was 21.75mmHg (with anti-glaucoma therapy) due to membrane formation, posterior synechiae, pupil block and iris bombe. While postoperative mean intraocular pressure in Group B pts was 17.25 mmHg without antiglaucoma therapy.

Table 1&2 shows preoperative clinical findings of both groups. While table 3 shows preoperative clinical findings of Group B patients, in which initial medical therapy was given.

Table 4 shows that in Group A on first postop day slitlamp findings were, +2 cells in 3eyes, 27 eyes showed $\geq$+3 cells, 27 eyes showed corneal edema, 12 eyes showed membrane in A/C, and 7 eyes showed

hypopyon. While in Group B (table 5) slitlamp findings showed, +1 cells in 7 eyes, +2 cells in 20eyes, 3 eyes showed ≥+3 cells,2 eyes showed corneal edema, 2 eyes showed membrane in A/C, and no eye showed hypopyon.

Table 1: Preoperative findings of Group A patients

Feature		**No of patients n (%)**
Ciliary congestion		30 (100)
Corneal edema		30 (100)
Keratic precipitates (Kps)		30 (100)
Flare in A/C		30 (100)
Cells in A/C	+ 1cells	0
	+ 2 cells	0
	+ 3 cells	30 (100)
Status of pupil	Mid dilated	26 (86)
	Miosed	04 (13)
Mean IOP		37.25

Table 2: Preoperative findings of Group B patients

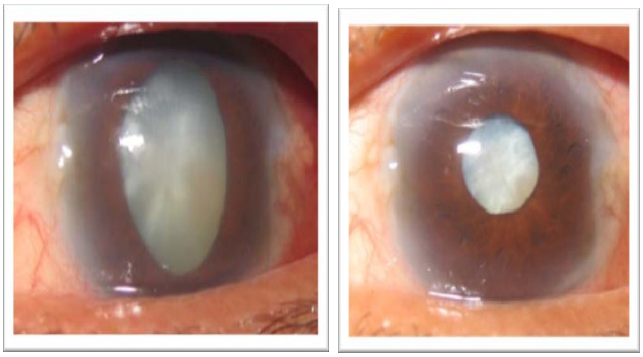
Feature		**No of patients n (%)**
Ciliary congestion		30 (100)
Corneal edema		30 (100)
Keratic precipitates		30 (100)
Flare in A/C		30 (100)
Cells in A/C	+ 1cells	0
	+ 2 cells	0
	+ 3 cells	30 (100)
Status of pupil	Mid dilated	28 (93)
	Miosed	02 (6)
Mean IOP		38.75

In Group A (table 6) on first postoperative day, 1 pt achieved good (≥6/18) visual acuity, 2 pts achieved borderline (6/24-6/60), 27 achieved poor visual acuity (≤6/60).While in Group B (table 7) on first postoperative day, 5 pt achieved good (≥6/18) visual acuity, 15 pts achieved borderline (6/24-6/60), 10 achieved poor visual acuity (≤6/60).

The data was analyzed statistically by using SPSS version 8.

Table 3: Preoperative findings of Group B patients after initial medical management

Feature		**No of patients n (%)**
Ciliary congestion		2(6)
Corneal edema		1 (3)
Keratic precipitates		3 (10)
Flare in A/C		30 (100)
Cells in A/C	+ 1cells	24 (80)
	+ 2 cells	05(16)
	+ 3 cells	01 (3)
Status of pupil	Mid dilated	-----
	Miosed	30 (100)
Mean IOP		15.25



Preoperative photograph of Group B pt Preoperative photograph of group B pt after Initial management

DISCUSSION

In our study, out of 60 eyes, 26 eyes were of males while 34 eyes were of females. This is almost consistent to the previous studies which showed that phacomorphic glaucoma is more common in females[5]. In our study average at presentation was 61.75 years and duration of pain ranged from 1 day to 1 ½ month.

Table 4: Postoperative findings of Group A patients

Findings		1st Postop day n (%)	3rdPostop day n (%)	After 1 wk n (%)	After 3 wk n (%)	After 6 wk n (%)
No A/C details visible		05 (16)	01(3)	----	----	-----
Cells	No cells	----	----	03 (10)	11 (36)	11 (36)
	+1	----	01 (3)	11 (36)	18 (60)	19 (63)
	+2	03 (10)	09 (30)	15 (50)	01 (3)	-----
	≥+3	27 (90)	20 (66)	01 (3)	----	-----
Flare		30 (100)	30 (100)	21 (70)	09 (30)	05(16)
Membrane		12 (40)	09 (30)	06 (20)	05 (10)	04 (13)
Hypoyon		07 (23)	05(16)	----	----	-----
Corneal edema		25 (83)	19 (30)	02(6)	----	-----
KPs		10(33)	07 (23)	02(6)	-----	-----
Posterior synechiae		10(33)	10(33)	07 (23)	06 (20)	04 (13)
Pupil Block		12 (40)	09 (30)	06 (20)	05 (10)	04 (13)
Iris Bombe		------	-------	-------	05 (10)	04 (13)

Table 5: Postoperative findings of Group B patients (after preop medical management)

Findings		1st Postop day n (%)	3rdPostop day n (%)	After 1 wk n (%)	After 3 wk n (%)	After 6wk n (%)
No A/C details visible		-----	-----	-----	-----	-----
Cells	No cells	-----	07 (23)	21 (70)	29 (96)	30 (100)
	+1	07 (23)	13 (43)	08 (26)	01 (3)	-----
	+2	20(66)	09(30)	01 (3)	-----	-----
	≥+3	03 (10)	01 (3)	-----	-----	-----
FLARE		30 (100)	23 (76)	11 (36)	01 (3)	-----
MEMBRANE		02(6)	01 (3)	-----	-----	-----
HYPOYON		-----	-----	-----	-----	-----
CORNEAL EDEMA		02(6)	-----	-----	-----	-----
KPs		01 (3)	01 (3)	-----	-----	-----
Posterior synechiae		-----	-----	-----	-----	-----
Pupil Block		------	-----	------	-----	------
Iris Bombe		------	------	------	------	------

Table 6: Best corrected visual acuity of Group A patients

Best corrected VA	1st Postop day n (%)	3rd Postop day n (%)	After 1 wk n (%)	After 3 wk n (%)	After 6 weeks n (%)
Good ≥6/18	1 (3)	2 (6)	4 (13)	6 (20)	6 (20)
Borderline 6/24-6/36	2 (6)	3(10)	6 (20)	7 (23)	8 (26)
Poor ≤6/60	27 (90)	25 (83)	20 (66)	17 (56)	16 (56)

Table 7: Best corrected visual acuity of Group B patients

Best corrected VA	1st Postop day n (%)	3rd Postop day n (%)	After 1 wk n (%)	After 3 wk n (%)	After 6 weeks n (%)
Good ≥6/18	5 (16)	5 (16)	7 (23)	9 (30)	11 (36)
Borderline 6/24-6/36	15 (50)	17 (56)	18 (60)	19 (63)	17 (56)
Poor ≤6/60	10 (33)	8 (26)	5 (16)	2 (6)	2 (6)

Our study showed that preoperatively in both the groups there was high IOP and severe inflammation, so antiglaucoma and anti inflammatory medication was given. Group A patients were operated very next day after just the control of IOP, but Group B patients were given that treatment for at least 5 days and then they were operated. As a result, postoperative inflammation was less in group B patients as compared to Group A patients.

Pradhan D in his study at Sagarmatha Choudry Eye Hospital, Lahan, Nepal reported that sometimes, severe postoperative corneal edema is found in patients of lens induced glaucoma[6]. On first postoperative day severe corneal oedema was found in group A patients while it was minimal in Group B patients.

A study was done in Nepal to determine the causes of poor outcome in patients presenting with phacomorphic glaucoma. It showed that there is significantly higher risk of poor visual outcome post-operatively in which the glaucoma was present for more than 5 days[7].Our study showed that early visual outcome was better in Group B as compared to Group A patients due to severe postoperative corneal edema, anterior chamber reaction, membrane formation. The reason of poor visual outcome was also identified, and it showed that many patients in Group A developed postoperative glaucoma due to membrane formation, posterior synechiae and iris bombe, leading to shallowing of anterior chamber and formation of peripheral anterior synechiae. Poor visual outcome was also noted in some patients of Group B due to glaucomatous optic atrophy.

Generally patients are being operated on the same day or very next day just after controlling of IOP and postoperative inflammation which is very common in patients of phacomorphic glaucoma leading to membrane formation, posterior synechiae and pupil block glaucoma if inflammation is not controlled properly preoperatively. We also operated one group of patients the very next day of presentation. And in second group we properly controlled the IOP and inflammation for at least 5 days and then they were operated, when cornea was clear, there was normal IOP and there were no signs of inflammation. And as a result we got the results almost identical to normal age related cataract surgery.

In this study, we included the patients in whom, after our medical treatment IOP was persistently controlled and pupil was miosed and there were no peripheral anterior synechiae. Patients in which IOP was persistently raised due to the synechiae formation were excluded from the study and these patients were operated under mannitol immediately.

In the past multiple studies has been done which showed that cataract extraction with intraocular lens implantation in the setting of meticulous preoperative control of inflammation can optimize visual outcome in adults and children with uveitis[8]. However there are no studies published in local or international literature in which role of initial medical therapy to control postoperative inflammation in cases of phacomorphic glaucoma has been the subject of study. There are studies which showed that antiglaucoma and topical steroids should be given to patients of phacomorphic glaucoma but the duration and the efficacy of this management on reducing severe postoperative anterior uveitis is not clearly mentioned. So further multicenter trials are needed to confirm the results of this study.

Our study showed that post operative severe inflammation which is sometimes one of the major problems of phacomorphic glaucoma surgery leading to membrane formation, posterior synechiae and pupil block glaucoma is much reduced if inflammation is properly controlled pre operatively.

CONCLUSION

We conclude from this study that timely management and proper preoperative reduction of inflammation produces less post operative complications due to anterior uveitis.

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