



A PROSPECTIVE STUDY OF VARIOUS FACTORS LEADING TO LENS INDUCED GLAUCOMA AND VISUAL OUTCOME FOLLOWING ITS MANAGEMENT

Ophthalmology

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ABSTRACT

Aim: To find out the reason behind late presentation of cataract cases as lens induced glaucoma and visual prognosis after management. To give stress upon educating medical officers in identification of mature cataract and to motivate patients for early cataract surgery.

Methods: Participants fulfilling the inclusion criteria were enrolled in the study at a tertiary health care centre from April, 2019 to December, 2020. A questionnaire was prepared and patient's social, economic history was taken. Then cataract surgery was done and visual prognosis assessed.

Results: There were 40 patients enrolled into the study. Female to male ratio was 1.35:1. Mean age of presentation was 65.31 years. Majority of cases (97.5%) had Phacomorphic Glaucoma. Following cataract surgery 14 out of 40 eyes (35%) had visual acuity worse than 6/60. Most of the patients had good vision in the other eye as a result of which they neglected the affected eye till they developed LIG leading to pain during the time of presentation. The main reason for delayed presentation was No escort in 50% of cases, followed by ignored symptoms in 27.5% of cases and Financial problems in 22.5% of cases.

Conclusion: The results give importance on early diagnosis and treatment of lens induced glaucoma. There is a need to impart health education to patients and to educate medical officers regarding lens induced glaucoma and its complications, as usually they are the first contact with the patient.

KEYWORDS

Lens induced glaucoma, phacomorphic glaucoma, medical officers

INTRODUCTION:

Cataract and glaucoma are the major causes of blindness across the world, specially in developing countries. According to national blindness & visual impairment survey of India,^[1] Cataract is the major cause of blindness in India in population aged more than 50 years of age accounting for approximately 66.2% of cases. While glaucoma accounts for 5.5% of cases.

With Cataract Surgical Coverage (eyes) in population aged ≥ 50 year with Visual Acuity $< 3/60$ is 80.2%, we are still lacking in terms of cataract surgery and this backlog is increasing day by day so as number of patients with cataract.

Lens induced glaucoma secondary to hypermature cataract is an important cause of secondary glaucoma and as the backlog of cataract surgery is increasing day by day, so lens induced glaucoma is becoming an important cause of morbidity and significant visual impairment.^[1]

Pre-operative and post-operative morbidity is more in an eye with lens induced glaucoma than that with a simple uncomplicated cataract. Prognosis and visual outcome are also affected to some extent. Hence timely intervention is important in achieving good results.

The cases of lens induced glaucoma is also increasing due to suboptimal utilization of cataract surgery especially in rural population, lack of awareness in general population and also due to lack of training of peripheral health workers in spreading awareness regarding early cataract surgery before it can attain the maturity.^[1]

Methods:

This was a prospective study done at a tertiary centre in southern Rajasthan since April 2019 to December 2020. The study was carried out as per the tenets of the Declaration of Helsinki and was approved by our institutional ethics committee. Prior Informed consent was obtained from all individual participants included in the study.

The study group were the patients who were diagnosed as Lens induced Glaucoma based on the clinical findings and also included those patients who are referred to us with the diagnosis of Lens induced glaucoma and medically treated elsewhere.

Patients with a Primary open or closed angle glaucoma, and Secondary glaucoma due to other causes were excluded from the study.

40 patients of lens induced glaucoma were enrolled into the study after clinical diagnosis and detailed ocular and systemic examination was done. The clinical diagnosis of phacomorphic and phacolytic glaucoma was made according to the definition.^[6] Detailed history

taking, regarding onset of symptoms, socioeconomic status of the patient was ascertained and an elaborative work up was done to find out the cause for late presentation of patients.

The patients were admitted and first medical management was done to bring down the raised intraocular pressure and then patients were scheduled for surgery. The Small incision cataract surgery was done and postoperative evaluation was done on next day and medications were started. Patients were followed up on day 3, 7 at 1 month and visual acuity assessment and fundus examination was done.

RESULTS:

Out of total 2695 cataract surgeries done during the study period of April 2019 to December 2020, total no. of lens induced glaucoma patients were 40 (1.48%). 39 patients (97.5%) had Phacomorphic glaucoma while only 1 patient presented with phacolytic glaucoma.

The majority of patients were in age group 61-70 years (45%). There was a slight female preponderance (57.5%) compared to male population (42.5%). Majority of patients (60%) presented within 6-10 days of onset of symptoms. 80% of patients (32 patients) had prior history of defective vision in affected eye for more than 1 month duration. 34 patients (85%) had Perception of light with accurate projection of rays while 6 patients (15%) had faulty projection of rays. At presentation, 17 patients (42.5%) had IOP in the range of 30-40 mmHg. While 4 Patients presented with IOP (> 50 mmHg). Out of 40 patients, 21 patients had IOL in other eye (52.5%), while 18 patients (45%) had cataract in another eye (Immature senile cataract).

Out of 40 patients, 20 patients (50%) cited reason for delayed presentation as they didn't have any attendant to accompany them at hospital, while 9 patients (22.5%) said that they didn't have money to spend, while 11 patients (27.5%) said that because they had good vision in other eye, they ignored diminished vision in the affected eye and only presented when they had significant symptoms of Pain, watering due to lens induced glaucoma.

All 40 patients are from rural background and 95% of patients said that they first contacted at their primary health centre upon onset of symptoms and only pain killers were advised.

Out of 39 patients with Phacomorphic Glaucoma, Intraoperative complication in the form of Posterior capsular rupture with vitreous loss was found in 5 patients (12.82%), while Zonular dialysis was found in 3 patients (7.69%). Out of 1 patient with Phacolytic Glaucoma, Posterior capsular rupture with vitreous loss was found in 1 patient (100%), while Zonular dialysis was not found.

Regarding Postoperative complications, Out of 39 patients of

Phacomorphic glaucoma, 18 patients (46.15%) had AC reaction in the form of AC cells & flare, and 2 patients (5.12%) had postoperative shallowing of AC. Out of 1 patient of Phacolytic glaucoma, 1 patient had AC reaction in the form of AC cells & flare.

Final Postoperative visual acuity is poor in majority of cases, with most of the patients (80%) had Final visual acuity poor than 6/18.

Table 1: Age Distribution

Age (years)	No. of Patients	Percentage
50-60	11	27.5
61-70	18	45
71-80	10	25
81-95	1	2.5

Table 2: Duration Of Symptoms

Duration (days)	Frequency	Percentage
1-5	7	17.5
6-10	24	60
11-20	9	22.5
Total	40	100

Table 3: Preoperative IOP Levels

IOP (mmHg)	Frequency	Percentage
20-30	12	30
30.1-40.0	17	42.5
40.1-50.0	7	17.5
>50	4	10
Total	40	100

Table 4: Reason For Delayed Presentation

Reason	Frequency	Percentage
No Attendant	20	50
Financial problem	9	22.5
Ignored symptoms	11	27.5
Total	40	100

Table 5: BCVA At Last Follow Up

BCVA	Frequency	Percentage
6/6-6/12	8	20
6/18-6/60	26	65
<6/60	6	15

DISCUSSION:

Lens induced glaucoma are a common occurrence in India, hardly surprising in a situation where the incident of cataract cases far exceeds the total number of surgeries performed currently. Though these are clinically distinct entities, they have certain common factors in that they are lens induced; they compromise the function of the optic nerve due to rise of intraocular pressure, cataract surgery is definitive treatment in these cases, and finally they uniformly share a guarded prognosis.

Regarding magnitude and classification of LIG, In our study, total no. of lens induced glaucoma cases were 1.48% during study period, while in Lahan study^[7] this ratio was 1.5% & In study by Raghunandan Kothari et al,^[12] this ratio was 2.4% while in study by Dr. Jyoti Bhuvan et al,^[13] this ratio was 0.15%.

In our study Phacomorphic glaucoma was more common (39 eyes; 97.5%) than Phacolytic glaucoma (1 eye; 2.5%). Similar occurrence was noted by Madurai study (52.68%) and Lahan study (72%). Phacomorphic glaucoma has been the most frequent and commonest among all the studies including the present one. Phacomorphic and Phacolytic glaucoma which are seen following neglecting the cataract till it attains hypermaturity and leads to glaucoma formed the main bulk of cases. This emphasises the importance of early detection and treatment of cataract. In our study, pain of less than 10 days duration was the most common presentation (77.5%). Majority of cases present within 6-10 days (60%). In Lahan study, pain of more than 10 days was the most common presentation, while in study by Raghunandan Kothari et al, the majority of cases (60%) present in less than 7 days. Also In study by Jyoti Bhuvan et al, 50.98% cases present within 1 week duration. Also in our study, the majority of patients (80%) presented with defective vision of more than 1 month duration. The above data shows that most patients who neglected the loss of vision presented within 10 days of developing pain and redness, which was statistically significant (p-value 0.002). In our study 35 patients

(87.5%) had visual acuity PL+PR accurate, while 5 patients (12.5%) had visual acuity PL+PR inaccurate. In Lahan study, none of the patient had visual acuity more than hand movement. In study by Jyoti Bhuvan et al, maximum cases presented with visual acuity Hand movement. In study by Raghunandan et al, maximum no. of patients had visual acuity PL+. The total Intraocular pressure ranges from 20->50 mmHg. At presentation the maximum no. of patients (42.5%) had IOP in range of 30-40 mmHg. The minimum IOP noted was 22.6 mmHg and maximum IOP in our study was 59.1 mmHg. Out of 29 patients who had IOP less than 40 mm Hg, 75.86% had good visual acuity. 36.36% of the patients had good visual acuity out of the 11 patients who had intra ocular pressure more than 40 mm Hg. Similar results were obtained in the study of Velayutham et al and study by Prajana et al,^[2] which showed that there was no statistically significant difference on the attainment of good postoperative visual acuity and preoperative IOP. In our analysis, the correlation between height of IOP and visual outcome was, clinically significant but statistically not significant (p>0.05). Regarding status of another eye, Out of the 40 cases, 21 cases (52.5%) presented with pseudophakia, 18 cases (45%) presented with either immature or mature cataract, 1 case (2.5%) were aphakic. Overall, 32 cases (80%) had fairly good vision in the other eye while the remaining 8 cases (20%) had poor vision in the other eye. As a result of having fairly useful vision in the other eye, most of these patients neglected the other eye till they developed complication in the affected eye. This emphasis on the importance of early treatment of other eye in patients with bilateral cataract.

The main purpose of our study was to find out the reason for delayed presentation of cases leading to lens induced glaucoma. It was found that out of 40 cases, 20 cases (50%) had no attendant with them, to carry them to hospital, also 9 cases (22.5%) had financial problems, although in government setup (in our hospital) everything including surgery and Intraocular lens is free, but still they didn't know about this, and 11 cases (27.5%) did ignore the decrease vision in the affected eye till the symptoms like pain and redness occurred.

In Lahan study, the major reasons for late presentation were "no escort" in 143 (34.6%) and "lack of money" in 128 (31.0%) cases. Other reasons were "lack of time" in 29 (7.0%), "no desire for surgery" in 27 (6.5%), "uncertainty about where to go" in 25 (6.1%), "feeling of adequate vision" in 22 (5.3%), "no mature cataract" in 19 (4.6%), "fear" in 18 (4.4%) and "uncontrolled systemic diseases" - (diabetes mellitus and hypertension) in 2 (0.5%) patients.

Also in our study, we found that, most of the patients came from Rural area, initially when they had pain and redness, they first contacted the local practitioner and took general medicines, its only when the pain got worse, they came to our hospital. So it is also necessary to educate doctors in periphery about identification of mature cataract and referral for surgery and also about signs and symptoms of lens induced Glaucoma, so that early referral is possible.

Also, in rural area, education of people regarding early cataract surgery before the stage of mature cataract and not waiting too long to vision to be decreased to light perception only.

In our study both Intraoperative and postoperative complications were higher in the study group, which also highlighted the importance of early cataract surgery. The visual acuity at the last follow up was taken as the postoperative visual acuity. A corrected visual acuity of 6/12 or better was taken as good visual acuity and accordingly 20% of cases (8 patients) only get postoperative good visual acuity. 32 patients (80%) had poor visual recovery (6/18- 6/60). In the Lahan study 31.4% eyes achieved 6/18 or better with best correction 21% with visual acuity of less than 3/60. In our study, we found a strong correlation between the duration of attack and final visual acuity, the patient who presented early had significant good visual acuity postoperatively.

CONCLUSION:

To conclude, in our study we found that the main reason for delayed presentation is no escort followed by ignored symptoms, This implies the education of patients regarding early presentation with decrease of vision and not to wait till the cataract is mature.

There is a need to educate health care workers in periphery to identify the mature cataract and early referral to an eye hospital and early identification of signs and symptoms of Lens induced Glaucoma and

referral at the earliest, as the first contact of these patients are health care workers. So that comprehensive training of medical officers in the periphery is needed.

Financial Support And Sponsorship: Nil.

Conflicts Of Interest: There are no conflicts of interest.

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