



ORIGINAL RESEARCH PAPER

Ophthalmology

CLINICAL PROFILE OF PATIENTS WITH LENS INDUCED GLAUCOMA: A HOSPITAL BASED OBSERVATIONAL STUDY.

KEY WORDS: Lens induced glaucoma, old age, BCVA, surgical procedures

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ABSTRACT

OBJECTIVES: This present study was to evaluate the clinical profile of patients with lens induced glaucoma.
METHODS: A detailed clinical examination of both eyes including the status of lens, depth of anterior chamber by slit lamp biomicroscopy, tonometry and Gonioscopy. Based on the slit lamp examination, the type of LiG was determined. Phacomorphic glaucoma was diagnosed by circumcorneal congestion, corneal oedema, shallow anterior chamber, dilated and fixed pupil, intumescent cataract. And phacolytic glaucoma was diagnosed by marked diminution of vision, corneal oedema, normal or deep anterior chamber containing floating lens proteins and/ or pseudohypopyon in some cases, and hypermature morgagnian cataractous lens in some cases.
RESULTS: Data was analyzed by using simple statistical methods with the help of MS-Office software. All data was tabulated and percentage was calculated.
CONCLUSIONS: This present study concluded that the lens induced glaucoma was commonly seen in older age group female patients. Phacomorphic glaucoma was very common than phacolytic glaucoma. Majorities of cases were come in hospital with longer duration of symptoms. Most common surgical procedure SICS with PCIOL was performed in majorities of cases. 6/6-6/12 BCVA was achieved in most of the cases of lens induced glaucoma at the time of last follow up. Hence, even after advanced surgical techniques being invented in recent decades and immense efforts of National Programme of Control of Blindness, Lack of awareness among especially rural population of India is causing them to remain with cataractous lens for a prolonged period. So necessary steps should be taken to health educate especially Rural population of India, the importance of timely surgery for better visual outcome and the dangers of poor visual result if cataract surgery is delayed.

INTRODUCTION

LiG is most common in India and in other developing countries due to delay in cataract removal [1,2]. Normally cataract occurs when normal crystalline lens loose its transparency due to ageing process. When left untreated it swells due to osmotic effect of degenerated lens proteins [3]. Cataract is the most important cause of preventable blindness accounting to 63.7 percent in India [4]. The majority of people in our country are poor, uneducated and living in rural areas and they are unaware of the complications of leaving a cataract untreated which finally results in secondary glaucoma [5].

Lens-induced glaucomas (LiGs) can be divided into nontraumatic and traumatic types. The non-traumatic types of LiGs are commonly seen in the form of phacomorphic glaucoma (PG), phacolytic glaucoma, phacoantigenic uveitis and lens-particle glaucoma [6]. This group of patients usually have good vision in the other eye, leading to a delay in seeking treatment for the cataract in the affected eye [7].

Lens-induced glaucoma in the elderly can be subdivided into two major categories. The first category relates to a blockage of the anterior flow of the aqueous humor from the lens that results in an increase of intraocular pressure (IOP). Conditions included in this category are: pupillary block glaucoma caused by an intumescent cataractous lens (phacomorphic glaucoma), and ectopia lentis. The second category is characterized by the blockage of the trabecular meshwork from lens proteins (phacolytic glaucoma), lens material or debris, and rarely by phacoanaphylactic response to lens material [8].

Symptoms of lens displacement include blurring of vision, monocular diplopia and distortion of the images. Examination

of such a case will show an uneven depth of AC, iridodonesis and the edge of the lens becoming visible. Pupillary block may resemble an AAC, while in phacoantigenic uveitis, severe iridocyclitis is present [9,10]. Aim of our study was to evaluate the clinical profile of patients with lens induced glaucoma.

MATERIALS & METHODS

This present study was conducted in department of Ophthalmology, VIMS, Pawapuri, Bihar during a period from January 2017 to August 2018. A total of 80 patients of lens induced glaucoma with irrespective of sex were enrolled in this study.

Procedures:

Random sampling method was used. A complete assessment was performed to all cases of lens induced glaucoma. Inclusion Criteria of this study were the patients with diagnosed for lens-induced glaucoma. Exclusion Criteria was the patients with primary glaucoma, Secondary glaucoma other than lens-induced glaucoma and the Patients unfit for surgery due to very poor general condition.

A detailed clinical examination of both eyes including the status of lens, depth of anterior chamber by slit lamp biomicroscopy, tonometry and Gonioscopy. Based on the slit lamp examination, the type of LiG was determined. On clinical examination the phacomorphic glaucoma was diagnosed by circumcorneal congestion, corneal oedema, shallow anterior chamber, dilated and fixed pupil, intumescent cataract. Likewise the patients were diagnosed with phacolytic glaucoma by marked diminution of vision, corneal oedema, normal or deep anterior chamber containing floating lens proteins and/ or pseudohypopyon in some cases, and hypermature morgagnian cataractous lens in some cases. In these patients preoperative treatment to

reduce IOP included topical timolol, oral acetazolamide and intravenous mannitol was given.

Surgeries done was combined surgery, SICS + (PC) IOL with iridectomy SICS + (PC) IOL, ECCE + (PC) IOL with iridectomy, ECCE + (PC) IOL was done for phacomorphic glaucoma cases. SICS + (PC) IOL with iridectomy was done for phacolytic glaucoma cases. Postoperative stay varied from 2 to 5 days. During postoperative period, antibiotic steroid drops, cycloplegics, systemic antibiotic and anti-inflammatory drugs were used. At discharge a detailed examination including uncorrected VA, IOP, slit lamp examination, fundus examination was performed. The cause of poor visual acuity in some cases was recorded. Patients were discharged with instruction to use topical antibiotic steroid combination 6 times/ day and return for follow up at 1 week, 2 weeks, 4 weeks and 6 weeks.

STATISTICAL ANALYSIS

Data was analyzed by using simple statistical methods with the help of MS-Office software. All data was tabulated. Percentage was calculated.

OBSERVATIONS

In this present study, a total of 80 patients of lens induced glaucoma with age group 35 years to above 65 years were enrolled. Female and male ratio was 5:3. Most of the cases 45(56.25%) of lens induced glaucoma were belonged in age group of 56-65 years.

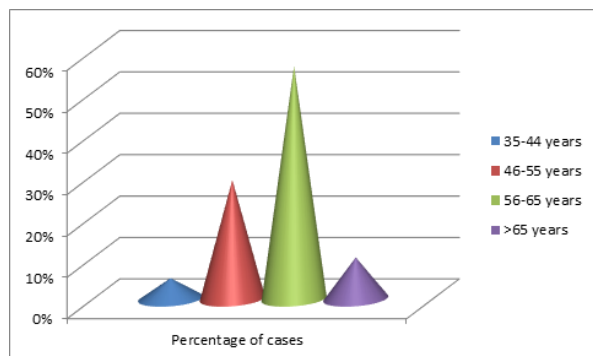


Figure. 1. Age wise distribution of cases with glaucoma

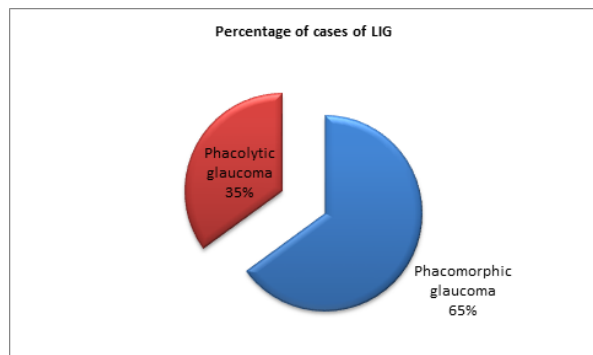


Figure. 2. Showing the type of glaucoma

In this present study, majorities of cases 52(65%) were phacomorphic glaucoma. And phacolytic glaucoma was seen in 28(35%) cases.

Table. 1. Showing duration of symptoms

Duration in days	Phacomorphic glaucoma	Phacolytic glaucoma	Total No. of cases
0-2	0	0	0
3-7	10(83.33%)	2(16.67%)	12(15%)
8-14	8(36.36%)	14(63.63%)	22(27.50%)
15-30	24(77.42%)	7(22.58%)	31(38.75%)

>30	10(66.67%)	5(33.33%)	15(18.75%)
Total	52(65%)	28(35%)	80(100%)

In this present study, majorities of phacomorphic glaucoma cases 24(77.42%) presented with the symptoms Of more than 2 -4 weeks. And majorities of phacolytic glaucoma cases were presented with the symptoms Of 2 weeks.

Table. 2. Visual acuity at the time of admission.

Visual acuity	No. of cases	Percentage
HM	50	62.50%
PL	23	28.75%
noPL	7	8.75%
Total	80	100%

Most of the cases 50(62.50%) had visual acuity of hand movement.

Table. 3. Visual acuity at last follow up.

Visual acuity	No. of cases	Percentage
6/6 - 6/12	34	42.50%
6/18-6/60	27	33.75%
<6/60	19	23.75%
Total	80	100%

6/6-6/12 visual acuity were most commonly seen in majorities of cases 34(42.50%). Second most common visual acuity 6/18-6/60 were seen in 27(33.75%) cases.

Table. 4. IOP at presentation, after medication and at last follow up.

IOP mmHg	At presentation	After medication	At last follow up
0-20	0	65(81.25%)	76(95%)
21-30	17(21.25%)	9(11.25%)	3(3.75%)
31-40	28(35%)	5(6.25%)	1(1.25%)
>41	35(43.75%)	1(1.25%)	0
Total	80(100%)	80(100%)	80(100%)

In this present study, majorities of cases 35(43.75%) had > 41 mmHg intraocular pressure at the time of presentation of symptoms. 28(35%) cases had 31-40 mmHg IOP at the the of presentation of symptoms. After treatment 65(81.25%) cases had normal (0-20 mmHg) IOP. 9(11.25%) cases had 21-30 mmHg IOP. And only 1(1.25%) cases had >41 mmHg IOP after medication. During last day of follow up of patients 76(95%) cases were normal (0-20 mmHg IOP). Only one (1.25%) patients had 31-40 mmHg IOP at the time of last follow up.

Table. 5. Surgical procedure done

Procedure	No. of cases	Percentage
SICS+PCIOL	68	85%
SICS+PCIOL+PI	5	6.25%
Combined	4	5%
SICS	3	3.75%
Total	80	100%

Majorities of cases 68(85%) had undergone SICS with PCIOL surgical procedure. And 5(6.25%) cases had undergone SICS+PCIOL+PI surgical procedure. 4(5%) cases had performed combined surgical procedure. And only 3(3.75%) cases had undergone SICS surgical procedure.

Table. 6. Optic disc changes and last follow up.

Optic disc changes	No. of cases	Percentage
Normal	43	53.75%
GDD- 0.4-0.7	22	27.50%
GDD- 0.8-0.9	15	18.75%
Total	80	100%

At the time of last follow up, 43(53.75%) cases had got normal optic disc. 22(27.50%) cases had optic disc changes GDD-0.4-0.7. And optic disc changes GDD-0.8-0.9 were seen in 15(18.75%) cases.

Table.7. Showing Distribution of Cases According to BCVA at Last Follow-up among LIG Subgroups

BCVA	Phacomorphic Glaucoma	Phacolytic Glaucoma	Total
6/6-6/12	25(48.07%)	9(32.14%)	34(42.50%)
6/18-6/60	15(28.84%)	12(42.86%)	27(33.75%)
<6/60	12(23.07%)	7(25%)	19(23.75%)
Total	52(100%)	28(100%)	80(100%)

In this present study, Best Correct Visual Acuity (BCVA) 6/6-6/12 were seen in most of the cases 25(48.07%) of phacomorphic glaucoma. 6/18 -6/60 and <6/60 visual acuity were seen in 15(28.84%) and 12(23.07%) cases of phacomorphic glaucoma respectively.

Similarly, most of the cases 12(42.86%) of phacolytic glaucoma were seen 6/18-6/60 visual acuity. 6/6-6/12 and <6/60 visual acuity were seen in 9(32.14%) and 7(25%) cases of phacolytic glaucoma. Among total cases of lens induced glaucoma glaucoma, majorities of cases 34(42.50%) had 6/6-6/12 BCVA. 27(33.75%) and 19(23.75%) cases had 6/18-6/60 and <6/60 visual acuity respectively.

Table.8. Showing Distribution of Cases According to BCVA at Last Follow-up and Duration of Symptoms.

BCVA	Duration of symptoms				
	0-2 days	3-7 days	8-14 days	15-30 days	>30 days
6/6-6/12	0	10 (66.67%)	15 (62.50%)	7 (30.43%)	2 (11.11%)
6/18-6/60	0	5 (33.33%)	9 (37.50%)	10 (43.47%)	3 (16.67%)
<6/60	0	0	0	6 (26.08%)	13 (72.22%)
Total	0	15	24	23	18

In this present study, majorities of cases 10(66.67%) who were presentation of symptoms 1 weeks had 6/6-6/12 BCVA. Most of the cases 15(62.50%) who were presentation of symptoms 1-2 weeks had 6/6-6/12 BCVA and rest 9(37.50%) had 6/18-6/60 BCVA. Most of the cases 10(43.47%) who were presentation of symptoms more than 2 weeks had 6/18-6/60 BCVA. Similarly, majorities of cases 13(72.22%) who were presentation of symptoms more than 4 weeks had <6/60 visual acuity.

DISCUSSIONS:

Lens-induced-glaucoma is a distinct pathological entity, clinically recognizable, easily preventable and often curable by cataract extraction [11]. Lens induced glaucoma due to hyper mature cataracts are an important cause of secondary glaucoma and a common cause of ocular morbidity in developing world [5].

Lens induced glaucomas are commonly seen in India [12]. Although phacomorphic and phacolytic glaucomas are clinically different pathologies, they still have few mutual factors that they are induced by lens and they compromise the optic nerve function due to increased intraocular pressure. Surgery for cataract is useful in these cases and has a good prognosis [13]. According to Dr. Damodhar Pradan et al., Nepal 35% cases occurring in patients aged under 60years [14]. In our study, it was observed that 45(56.25%) cases were in between 56-65 years. The incidence of LIG in females was more common than males in our study and ratio was 5:3. This was similar to the studies conducted by Sinha A [15] and Prajan et al. [16] According to Dr.S.K. Agra et al [17] it was F:M ratio 3:1 and according to Dr. Damodhar Pradhan et.al, it was 1.7:1 [14].

In this present study, majorities of cases 52(65%) were phacomorphic glaucoma. And phacolytic glaucoma was seen in 28(35%) cases. Most phacomorphic glaucoma cases

24(77.42%) presented with the symptoms Of more than 2 -4 weeks. And most of phacolytic glaucoma cases were presented with the symptoms Of 2 weeks. At the time of admission, most of the cases 50(62.50%) had visual acuity of hand movement. 23(28.75%) cases were perception of light and 7 (8.75%) cases were no perception of light. This was the group where time lag between development of symptoms of pain/redness and reporting for treatment was the longest. So the long standing Glaucoma caused permanent damage to their Optic nerve. Similar findings were seen in studies conducted by Venkatesh Prajna et al, [18] Rijal Ap et al [19] and Yaakub et al [20] from malaysia.

In this present study, majorities of cases 35(43.75%) had > 41 mmHg intraocular pressure at the time of presentation of symptoms. 28(35%) cases had 31-40 mmHg IOP at the the of presentation of symptoms. After treatment 65(81.25%) cases had normal (0-20 mmHg) IOP. 9(11.25%) cases had 21-30 mmHg IOP. And only 1(1.25%) cases had >41 mmHg IOP after medication. During last day of follow up of patients 76(95%) cases were normal (0-20 mmHg IOP). Only one (1.25%) patients had 31-40 mmHg IOP at the time of last follow up.

We observed that the height of intraocular pressure has no relationship with the duration of attack, and type of cataract. In all these cases IOP decreased with medical management. In study of Verma et.al in 37.5% eyes could not be controlled medically. These eyes were found to have PAS and longer duration of attack [21].

In this present study, SICS with PCIOL surgical procedure was performed in majorities cases 68(85%). And 5(6.25%) cases had undergone SICS+PCIOL+PI surgical procedure. 4(5%) cases had performed combined surgical procedure. And only 3(3.75%) cases had undergone SICS surgical procedure.

At the time of last follow up, 43(53.75%) cases had got normal optic disc. 22(27.50%) cases had optic disc changes GDD-0.4-0.7. And optic disc changes GDD-0.8-0.9 (glaucomatous disc damage) were seen in 15(18.75%) cases.

In the study by Venkatesh Prajna 59% of patients had visual outcome 6/18 or better [18]. And Yaakub et al, a study conducted in Malaysia, visual outcome 6/18 or better was 57.9% [20].

In our present study, Best Correct Visual Acuity (BCVA) 6/6-6/12 were seen in most of the cases 25(48.07%) of phacomorphic glaucoma. 6/18 -6/60 and <6/60 visual acuity were seen in 15(28.84%) and 12(23.07%) cases of phacomorphic glaucoma respectively. Similarly, most of the cases 12(42.86%) of phacolytic glaucoma were seen 6/18-6/60 visual acuity. 6/6-6/12 and <6/60 visual acuity were seen in 9(32.14%) and 7(25%) cases of phacolytic glaucoma respectively. Among total cases of lens induced glaucoma, majorities of cases 34(42.50%) had 6/6-6/12 BCVA. 27(33.75%) and 19(23.75%) cases had 6/18-6/60 and <6/60 visual acuity respectively. And on accordance of duration of symptoms, majorities of cases 10(66.67%) who were presentation of symptoms 1 weeks had 6/6-6/12 BCVA. Most of the cases 15(62.50%) who were presentation of symptoms 1-2 weeks had 6/6-6/12 BCVA and rest 9(37.50%) had 6/18-6/60 BCVA. Most of the cases 10(43.47%) who were presentation of symptoms more than 2 weeks had 6/18-6/60 BCVA. Similarly, majorities of cases 13(72.22%) who were presentation of symptoms more than 4 weeks had <6/60 visual acuity.

CONCLUSIONS

This present study concluded that the lens induced glaucoma was commonly seen in older age group female patients. Phacomorphic glaucoma was very common than phacolytic glaucoma. Majorities of cases were come in hospital with longer duration of symptoms. Most common surgical

procedure SICS with PCIOL was performed in majorities of cases. 6/6-6/12 BCVA was achieved in most of the cases of lens induced glaucoma at the time of last follow up.

Hence, A phacomorphic lens disease secondary to a neglected senile cataract is the major cause of LiG. Even after advanced surgical techniques being invented in recent decades and immense efforts of National Programme of Control of Blindness, Lack of awareness among especially Rural population of India is causing them to remain with cataractous lens for a prolonged period. So necessary steps should be taken to health educate especially Rural population of India, the importance of timely surgery for better visual outcome and the dangers of poor visual result if cataract surgery is delayed.

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