International Journal of Medical Ophthalmology

E-ISSN: 2663-8274
P-ISSN: 2663-8266
www.ophthalmoljournal.com
IJMO 2021; 3(1): 10-14
Received: 06-11-2020
Accepted: 10-12-2020

Dr. Manjula Mangane
Associate Professor, Department of Ophthalmology, M R Medical, Kalaburagi, Karnataka, India

Dr. Vidyashri
Junior Resident, Department of Ophthalmology, M R Medical, Kalaburagi, Karnataka, India

Corresponding Author:
Dr. Manjula Mangane
Associate Professor, Department of Ophthalmology, M R Medical, Kalaburagi, Karnataka, India

A clinical study of management and visual outcome in lens induced glaucoma

Dr. Manjula Mangane and Dr. Vidyashri

DOI: https://doi.org/10.33545/26638266.2021.v3.i1a.55

Abstract
Background: Lens induced glaucoma (LIG) is the cause of poor postoperative vision even after uneventful cataract surgery.
Aim: The aim is to know effect of surgery on post-operative visual acuity, intraocular pressure, inflammation including corneal changes and optic disc changes. And also the importance of early diagnosis, and efficient treatment in preventing these vision-threatening lens induced glaucomas.
Setting: Basaveshwar Hospital, Mahadevappa rampure medical college Gulbarga, Karnataka
Design: Prospective interventional study.
Material and Method: This longitudinal study included 50 cases of lens induced glaucoma, admitted in the ophthalmic wards in Basaveshwar Hospital, Mahadevappa rampure medical college Gulbarga, Karnataka. All consecutive patients diagnosed as LIG on the basis of clinical symptoms and signs were included. And postoperatively patients were followed up regularly at 2 and 7 weeks interval.
Statistical Analysis: The results were tabulated on microsoft excel spreadsheet and data was statistically analysed using various tests such as, Paired 't' test, Chi square test and pooled chi square test wherever applicable and a P value less than 0.05 was considered significant.
Conclusion: A delay in presentation of more than two weeks and intraocular pressure of more than 35 mm Hg in association with severe inflammation affects the optic nerve which would ultimately jeopardize vision, in these potentially blinding lens induced glaucomas. This study has highlighted the characteristics, management and their visual outcome in lens induced glaucomas, and also the importance of early diagnosis, and efficient treatment in preventing these vision-threatening lens induced glaucomas.

Keywords: Lens induced glaucoma, cataract

Introduction
Glaucoma's in which the lens plays a role, either by size or by position or by causing inflammation have been classified as lens induced glaucomas. In the past, significant confusion existed about the terminology and mechanisms causing the glaucoma.
Terms such as phacotoxic reaction, phacogenetic glaucoma, phacotopic glaucoma, lens-induced uveitis and endophthalmitis phacoanaphylactica were used [1].
These are heterogeneous group of uncommon maladies, which can develop through either open angle or angle closure mechanisms [2]. Phacolytic glaucoma and lens particle glaucoma are secondary open angle glaucomas. The iridocorneal angle is open and there is blockage of the trabecular meshwork by lens proteins.
Phacomorphic glaucoma and lens displacement glaucoma are secondary angle closure glaucomas. Phacoanaphylactic uveitis, now termed as lens induced uveitis, is not truly an anaphylactic reaction but is a granulomatous reaction that can result in glaucoma with either open angle, angle closure or combined open angle and angle closure glaucoma.[1]

Materials and Methods
This longitudinal study included 50 cases of lens induced glaucoma, admitted in the ophthalmic wards Basaveshwar Hospital, Mahadevappa rampure medical college Gulbarga, Karnataka. All consecutive patients diagnosed as LIG on the basis of clinical symptoms and signs were included. At presentation visual acuity, IOP, inflammation including corneal changes were recorded, which were repeated after institution of medical line of treatment and postoperatively patients were followed up regularly at 2 and 7 weeks interval and the same parameters evaluated including optic disc changes.

Inclusion Criteria

- All patients diagnosed for lens induced glaucoma.
- Patients who signed written and informed consent

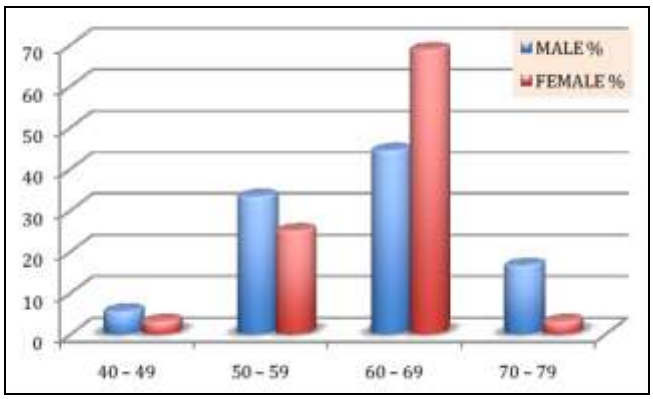
Exclusion Criteria

- Primary glaucoma.
- Secondary glaucoma other than lens induced glaucoma.
- Patients unfit for surgery due to very poor general condition

Result

Table 1: Distribution of cases according to age and gender

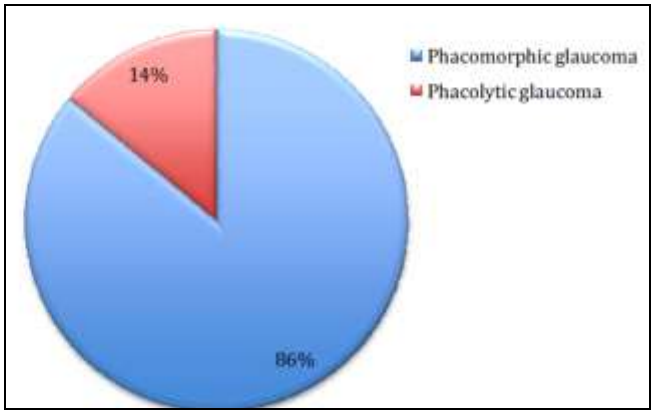
AGE (YEARS)	MALE		FEMALE		TOTAL	
	NO.	%	NO.	%	NO.	%
40 – 49	01	05.56	01	03.1	02	04
50 – 59	06	33.33	08	25.0	14	28
60 – 69	08	44.44	22	68.8	30	60
Above 70	03	16.67	01	03.1	04	08
TOTAL	18	100.00	32	100.00	50	100.00



Graph 1: Distribution and age and gender

Table 2: Distribution of cases according to LIG subgroups

Diagnosis	No. Of cases	Percentage
Phacomorphic glaucoma	43	86
Phacolytic glaucoma	07	14
Total	50	100



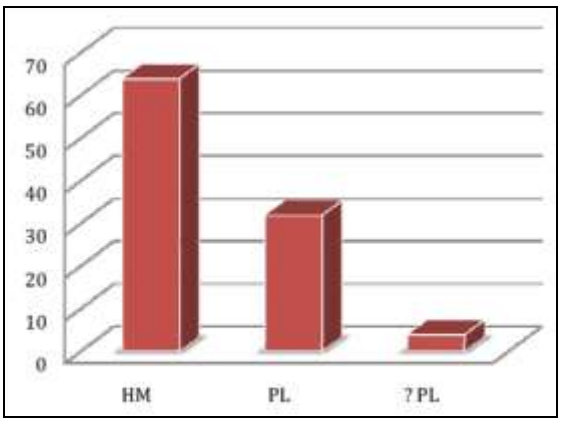
Graph 2: Distribution of LIG subgroups

Table 3: Distribution of cases according to duration of symptoms among LIG subgroups

Duration (Days)	Phacomorphic		Phacolytic		Total	
	No.	%	No.	%	No.	%
00-02	00	00	00	00	00	00
03-07	12	27.91	01	14.29	13	26
08-14	09	20.93	03	42.85	12	24
15-30	13	30.23	01	14.29	14	28
>30	09	20.93	02	28.57	11	22
Total	43	100.00	07	100.0	50	100

Table 4 a: Distribution of cases according to Visual acuity at presentation

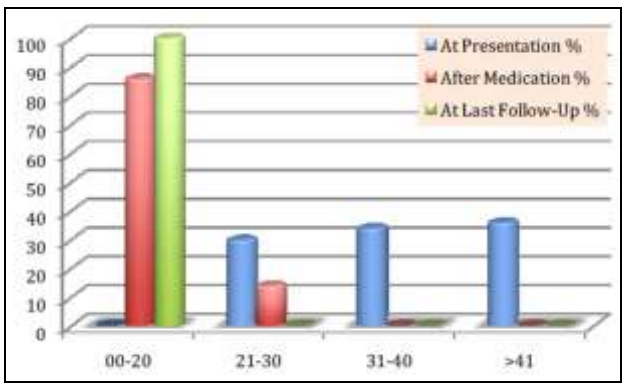
Visual Acuity	At Presentation	
	NO.	%
HM	32	64
PL	16	32
?PL	02	04
Total	50	100



Graph 3 b: Visual acuity at last follow-up

Table 5: Distribution of cases according to IOP at presentation, after medication, and at last Follow-up

IOP mm Hg	At Presentation		After Medication		At Last Follow UP	
	NO.	%	NO.	%	NO.	%
00-20	00	00	43	86	50	100
21-30	15	30	07	14	00	00
31-40	17	34	00	00	00	00
>41	18	36	00	00	00	00
Total	50	100	50	100	50	100



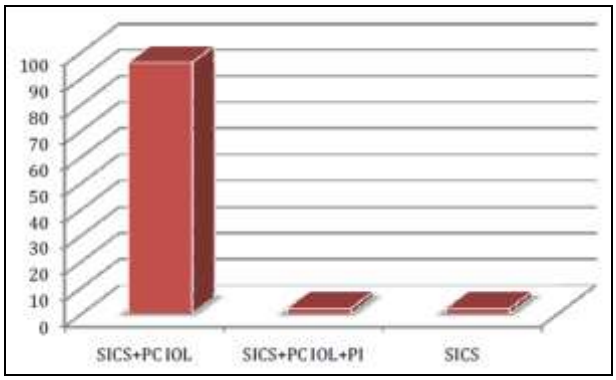
Graph 4: IOP at Presentation, after Medication, and at Last Follow-up

Table 6: Distribution of cases according to Inflammation at presentation, at day 1 and at last follow up

Grade	At Presentation		At Day 1		At Last Follow-up	
	n=50		n=50		n=50	
	NO.	%	NO.	%	NO.	%
Normal	00	00	08	16	49	98
Mild	18	36	20	40	01	02
Moderate	18	36	15	30	00	00
Severe	13	26	07	14	00	00
Very severe	01	02	00	00	00	00
Total	50	100	50	100	50	100

Table 7: Distribution of cases according to surgical procedure done

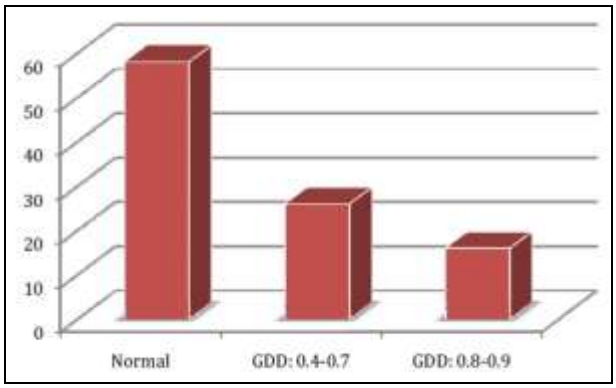
Procedure	No. Of Cases	Percentage
SICS+PC IOL	48	96
SICS+PC IOL+PI	1	2
SICS	1	2
Total	50	100



Graph 5: Surgical procedure done

Table 8: Distribution of cases according to Optic disc changes and last follow-up

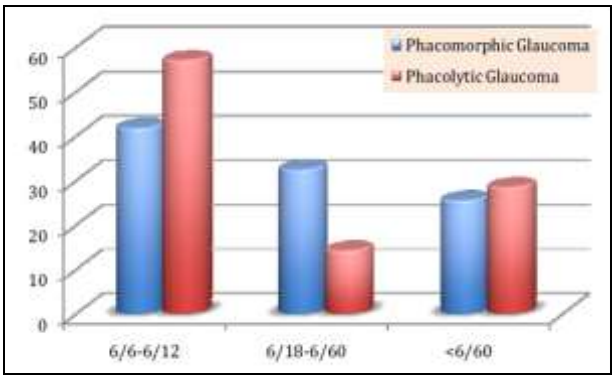
Optic Disc Changes	No. Of Cases (n=50)	Percentage
Normal	29	58
GDD: 0.4-0.7	13	26
GDD: 0.8-0.9	08	16
Total	50	100



Graph 6: Optic disc changes at last follow up

Table 9: Distribution of cases according to BCVA at last follow up among LIG subgroups

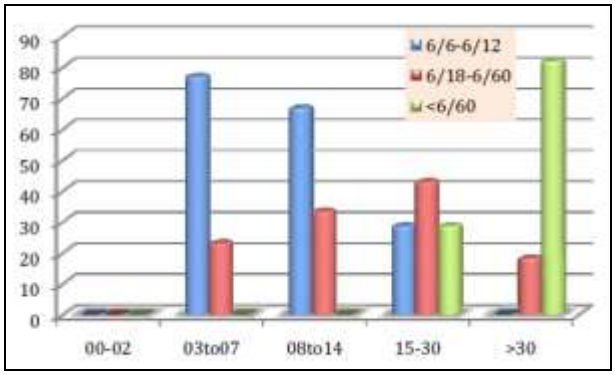
BCVA	Phacomorphic glaucoma		Phacolytic glaucoma		Total	
	NO.	%	NO.	%	NO.	%
6/6-6/12	18	41.86	04	57.14	22	44
6/18-6/60	14	32.56	01	14.29	15	30
<6/60	11	25.58	02	28.57	13	26
Total	43	100.00	07	100	50	100



Graph 7: BCVA at last follow up among LIG subgroups

Table 10: Distribution of cases according to BCVA at last follow up and duration of symptoms

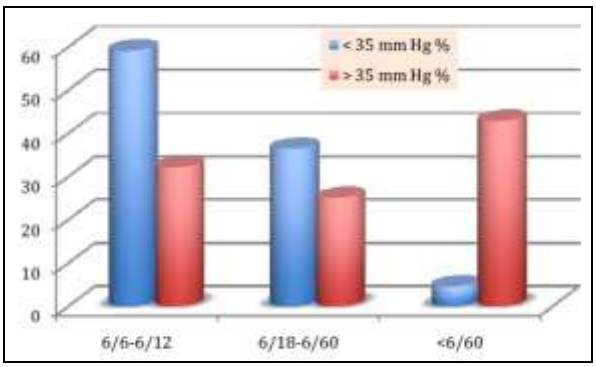
BCVA	Duration Of Symptoms (In Days)									
	0-2	%	3-7	%	8-14	%	15-30	%	>30	%
6/6-6/12	00	00	10	76.92	08	66.67	04	28.57	00	00
6/18-6/60	00	00	03	23.08	04	33.33	06	42.86	02	18.2
<6/60	00	00	00	00.00	00	00	04	28.57	09	81.8
Total	00	00	13	100.00	12	100.00	14	100.00	11	100



Graph 8: BCVA at last follow up by duration of symptoms

Table 11: Distribution of cases according to BCVA at last follow up and IOP at presentation

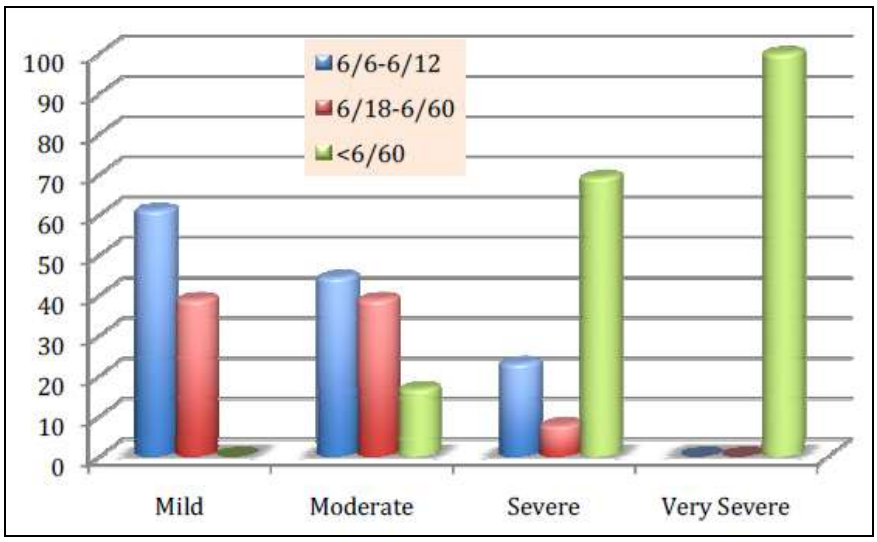
BCVA	IOP at Presentation			
	< 35 mm Hg		> 35 mm Hg	
	No.	%	No.	%
6/6-6/12	13	59.10	09	32.14
6/18-6/60	08	36.36	07	25.00
<6/60	01	04.54	12	42.86
Total	22	100.00	28	100.00



Graph 9: BCVA at last follow up by IOP at presentation

Table 12: Distribution of cases according to BCVA at last follow-up and inflammation at presentation

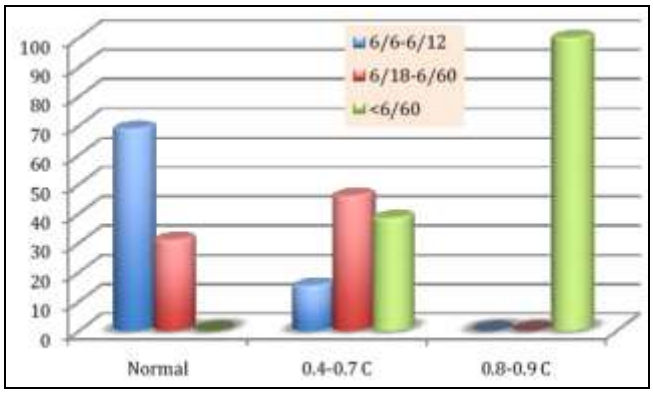
BCVA	Inflammation at Presentation							
	Mild		Moderate		Severe		Very Severe	
	No.	%	No.	%	No.	%	No.	%
6/6-6/12	11	61.11	08	44.4	03	23.08	0	00
6/18-6/60	07	38.89	07	38.90	01	07.69	0	00
<6/60	00	00.00	03	16.7	09	69.23	1	100
Total	**18**	**100.00**	**18**	**100.0**	**13**	100.00	**1**	**100**



Graph 10: BCVA at last follow-up by inflammation at presentation

Table 13: Distribution of cases according to BCVA at last follow up and optic disc changes

BCVA	Optic Disc Changes At Last Follow-Up					
	Normal		Glaucomatous Disc Damage			
			0.4-0.7 C		0.8-0.9 C	
	No.	%	No.	%	No.	%
6/6-6/12	20	68.97	02	15.4	0	00
6/18-6/60	09	31.03	06	46.1	0	00
<6/60	00	00.00	05	38.5	8	100
Total	**29**	**100.00**	**13**	**100.0**	**8**	**100**



Graph 11: BCVA at last follow up by optic disc changes

BCVA at last follow up	Lahan Study[38]		This study	
	No.	%	No.	%
6/6-6/18	33	31.40	27	54
< 6/18-6/60	39	37.10	10	20
< 6/60-3/60	11	10.50	03	06
<3/60	22	21.00	10	20
Total	**105**	**100.00**	**50**	**100**

Discussion

Lens induced glaucomas are a common occurrence in India. 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 curative in these cases, and finally they uniformly share a guarded prognosis.

This longitudinal study was undertaken to study the management of LIG and to study the visual outcome after planned manual small incision cataract surgery. In this study, age range was 46 to 75 years with a mean age of 60.68 ± 6.65 years. Highest number of cases occurred in the age group 60-69 years (60%), Lahan study, has found occurrence of LIG in the age range of 40 to 80 years and highest in the 60 to 69 years (43.1%) age group, indicating that the lens-induced glaucomas are a condition of old age.

In this study, females seemed to have an increased risk of having LIG compared to males with ratio of 1.7:1. A study

done at Madurai in 1994, found marginally significant increased risk of having these glaucomas, in females (p=0.05).

Lahan study has reported female to male ratio of 1.7:1. Though it is possible that these entities are more common in females because of socio – economic constraints, we also have to consider the fact that the prevalence of cataract itself is more common is females than males. This finding was consistent with data from the Punjab study in India and from the Matlab study in Bangladesh [6].

In this study series, it was observed that the most frequent type of LIG was PMG (86%) followed by PLG (14%), similar occurrence was noted by Madurai study [7] (52.68%) 5 and Lahan study (72%) [6].

Occurrences of various lens-induced glaucomas in the above studies shows variations. Nevertheless, phacomorphic glaucoma has been the most frequent and commonest among all the studies including the present one, which is peculiar to the developing countries. In this study, none of PMG occurred below 50 years of age, showing that phacomorphic glaucoma is a disease of old age with preponderance in 60-69 years age group.

This is perhaps because of insidious onset, lack of medical awareness and limited resources in developing countries. On the other hand, phacolytic glaucoma represents, lens induced acute secondary open angle glaucoma associated with rapid onset of pain, redness and watering in the eye and acute rise in intra ocular pressure causes the patient to seek medical advice earlier than phacomorphic glaucoma.

Conclusion

1) The lens-induced glaucomas are a condition of old age and more common in females.
2) The results have shown that, good visual acuity can be achieved in lens induced glaucoma presenting within two weeks, with intraocular pressure of less than 35 mm Hg and with meticulous control of intraocular pressure and inflammation with medications pre operatively.
3) Planned manual small incision cataract extraction with IOL implantation, a good follow up with efficient management of attendant complications and inflammation, are the key factors in the management.

References

1. Principles and Practice of Ophthalmology on CD ROM. Daniel M Albert, Frederick A Jakobiec. Media Solutions Corporation, Philadelphia 1995.
2. Duane's ophthalmology 1999 CD ROM edition. Thomas D. Duane, Edward A Jaeger. Corporate Technology Ventures, Philadelphia, Pennsylvania 1999.
3. Robert Ritch, Bruce Sheild M, Theodore Krupin. The glaucomas clinical sciences. 4th Edn. Mosby St. Louis.
4. Krishnadas R, Ramakrishnan R. Secondary Glaucomas: The Tasks Ahead. Community Eye Health 2001;14(39):40-42.
5. Prajna NV, Ramakrishnan R, Krishnadas R, Manoharan N. Lens induced glaucomas-visual results and risk factors for final visual acuity. Indian Journal of Ophthalmology 1996;44(3):149-55.
6. Damodar Pradhan, Albrecht Hennig, Jitendra Kumar, Allen Foster. A prospective study of 413 cases of lens-induced glaucoma in Nepal. Indian Journal of Ophthalmology 2001;49(3):204.