MANAGEMENT OUTCOME OF LENS INDUCED GLAUCOMA IN A RURAL TERTIARY CARE CENTRE

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ABSTRACT

BACKGROUND
The aim is to study the various modes of presentations of Lens induced glaucomas, their management and various risk factors that affect their final visual outcome following surgery.

MATERIALS AND METHODS
This was a prospective study and included 50 patients who were diagnosed and admitted with Phacomorphic and Phacolytic glaucomas. Following detailed clinical examination, patients were given appropriate preoperative medical management followed by surgical treatment. These patients were followed for 6 weeks and on every follow-up, a detailed ocular examination was performed and the results were analysed.

RESULTS
It was noticed that the main cause for patients developing phacomorphic and phacolytic glaucoma was the delay in getting the cataract removed as majority of them had good vision in the other eye. All the patients presented with varying severity of pain, redness and raised IOP. Also the incidence of intraoperative and postoperative complication was more in the phacomorphic and phacolytic glaucoma as compared to normal population. Another statistically significant factor was that the prolonged duration of symptoms and delay in presentation resulted in poor visual outcome.

CONCLUSION
At the end of the study, it was concluded that the patients have to be stressed on undergoing surgery when the cataract is still immature and not wait till they develop significant visual symptoms. Good visual outcome can be achieved if the time duration between onsets of symptoms to surgery is short and if inflammation and IOP is well controlled before surgery.

KEYWORDS
Phacomorphic; Phacolytic; IOP (Intra Ocular Pressure); Glaucoma.

Medical Sciences, Narketpally. The study was conducted during the period of 2015 to 2016. A total of 50 cases of Phacomorphic and Phacolytic Glaucoma were studied. Phacomorphic glaucoma was diagnosed by subjective complaints of acute pain and redness associated with objective signs such as presence of corneal oedema, shallow anterior chamber, an intumescent cataractous lens and IOP> 21 mm of Hg. Phacolytic glaucomas were diagnosed by the presence of pain, corneal oedema, a normal or deep anterior chamber containing floating lens particles and/or pseudohypony in severe cases.

Preoperative Assessment was detailed and Included
1. Detailed clinical history.
2. Visual acuity by Snellen’s chart.
3. Slit lamp examination.
4. Applanation tonometry.
5. Gonioscopy wherever possible.
6. Posterior segment evaluation by indirect ophthalmoscope and slit lamp biomicroscopy.
7. B-Scan wherever necessary.
8. Investigations like lacrimal syringing.
10. IOL power calculation by keratometry and A-scan by using SRK T Formula.

All the cases were treated preoperatively to bring down the intraocular pressure by topical and systemic medication. After controlling the intraocular pressure, patients were subjected to following surgeries.
1. Small incision cataract surgery with posterior chamber intraocular lens implantation.
2. Combined cataract and filtering surgery in chronic cases with irreversible angle closure.

Postoperatively, all patients were treated with antibiotic steroid eye drops for 6-8 weeks. Antiglaucoma medications were continued if IOP was found elevated postoperatively. All patients were regularly followed up at 1, 3 and 6-week intervals and at each visit patients were evaluated for visual acuity, anterior segment examination by slit lamp, IOP by applanation, disc changes by slit lamp biomicroscopy using 90D lens. Post-operative complications were noted and managed accordingly.

RESULTS
The majority of phacolytic and phacomorphic glaucoma cases observed (82%) were over the age group of 60 years. This is due to the fact that this age group suffers from senile cataract.

The incidence of phacolytic and phacomorphic glaucoma was more in females (60%).

66% of patients attended the hospital within first one week of onset of symptoms.

Phacomorphic glaucoma was more common (58%) when compared to phacolytic (42%).

Good vision in the fellow eye either due to pseudophakic or phakic status was the most common reason for delay in surgery.

Good visual outcome can be achieved if the time duration between onset of symptoms to surgery is short and if inflammation & IOP was well controlled before surgery.

Corneal oedema and uveitis were the most common complications encountered postoperatively. This probably represents the intense inflammation associated with these lens induced glucomas.

Prolonged raised IOP can lead to optic disc damage. Optic atrophy was seen in 2 cases (4%).

Hence, it is to be stressed upon, imparting health education and creating awareness regarding cataract and its implications among the rural community, ophthalmic assistants and peripheral health workers.

<table>
<thead>
<tr>
<th>Age Group in Years</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 - 49</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>50 - 59</td>
<td>8</td>
<td>16%</td>
</tr>
<tr>
<td>60 - 69</td>
<td>26</td>
<td>52%</td>
</tr>
<tr>
<td>70 &amp; Above</td>
<td>15</td>
<td>30%</td>
</tr>
</tbody>
</table>

Table 1. Age Incidence

Age Incidence Analysis According to Duration of Symptoms

<table>
<thead>
<tr>
<th>Duration in Days</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3 days</td>
<td>13</td>
<td>26%</td>
</tr>
<tr>
<td>4 - 7</td>
<td>20</td>
<td>40%</td>
</tr>
<tr>
<td>8 - 14</td>
<td>13</td>
<td>26%</td>
</tr>
<tr>
<td>15 &amp; above</td>
<td>4</td>
<td>8%</td>
</tr>
</tbody>
</table>

Table 2. Duration of Symptoms

Figure 1. Age Incidence

Figure 2. Duration of Symptoms
Reasons for Delay in Surgery

**Figure 3. Reasons for Delay in Surgery**

Diagnosis

**Figure 4. Aetiological Diagnosis**

<table>
<thead>
<tr>
<th>Range of IOP</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 21</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>22 - 30</td>
<td>6</td>
<td>12%</td>
</tr>
<tr>
<td>31 - 40</td>
<td>19</td>
<td>38%</td>
</tr>
<tr>
<td>41 - 50</td>
<td>13</td>
<td>26%</td>
</tr>
<tr>
<td>51 &amp; above</td>
<td>12</td>
<td>24%</td>
</tr>
</tbody>
</table>

**Table 3. Analysis of IOP on Admission**

Lens Status of Unaffected Eye

**Table 4. Lens Status of Unaffected Eye**

<table>
<thead>
<tr>
<th>Lens Status of Unaffected Eye</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSC</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>IMSC</td>
<td>20</td>
<td>40%</td>
</tr>
<tr>
<td>APHAKIA</td>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td>PCIOL</td>
<td>27</td>
<td>54%</td>
</tr>
</tbody>
</table>

Type of Surgery

**Table 5. Type of Surgery Underwent**

<table>
<thead>
<tr>
<th>Type of Surgery Underwent</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIOL with PCIOL/LA</td>
<td>49</td>
<td>98%</td>
</tr>
<tr>
<td>Combined Surgery</td>
<td>1</td>
<td>2%</td>
</tr>
</tbody>
</table>

Fundus Findings after Surgical Management

**Table 6. Fundus Findings after Surgical Management**

<table>
<thead>
<tr>
<th>Fundus Feature</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Fundus</td>
<td>47</td>
<td>94%</td>
</tr>
<tr>
<td>Optic Atrophy</td>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td>CME</td>
<td>1</td>
<td>2%</td>
</tr>
</tbody>
</table>
Analysis of Intraocular Pressure on Final Visual Acuity

<table>
<thead>
<tr>
<th>IOP (in mm of Hg)</th>
<th>6/6 - 6/12</th>
<th>6/18 - 6/60</th>
<th>6/60 to CF3 metres</th>
<th>CF3 metres to PL+/PR+</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-30</td>
<td>5 (10%)</td>
<td>1 (2%)</td>
<td>0</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>31-40</td>
<td>10 (20%)</td>
<td>8 (16%)</td>
<td>1</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>41-50</td>
<td>2 (4%)</td>
<td>9 (18%)</td>
<td>1</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>&gt;51</td>
<td>4 (8%)</td>
<td>7 (14%)</td>
<td>0</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

Chi Square: 11.30; P =0.2555

Table 9. Analysis of Intraocular Pressure on Final Visual Acuity

DISCUSSION

A total of 50 patients with Phacomorphic and Phacolytic glaucoma were included in the study.

Age Distribution

In this study, the age range was from 48 years to 80 years. Highest number of cases (52%) were found in the 60-69 years age group with the above 70 age group coming second constituting 30% of cases. Pradhan et al\(^2\) have found occurrence of LIG in the age range of 40 to 80 years with the highest in the 60 to 69 years(43.1%) age.

Sex Distribution

In our study, females outnumbered the males and the female to male ratio was 1.5:1. It is also found that the majority (77.78%) of cases occurred among lower socioeconomic strata in the society. Madurai study\(^3\) in 1994 found marginally significant increased risk of having these glaucomas in females (p=0.05).

Clinical Features

In our study, majority of cases have similar clinical features i.e. pain, redness, watering, fall of vision. GL Dhar et al\(^4\) noted diminished vision, pain, redness of eye, headache, watering of eye and vomiting as common symptoms and circumciliary congestion, corneal oedema, dilated pupil and raised intraocular pressure to be common signs.
Duration of Symptoms
In our study, 66% of patients attended the hospital within one week, the remaining 34% between 1-4 weeks. The delay in taking treatment is due to lack of awareness, poverty, lack of education and transport facilities.

Socioeconomic Background
All the patients were from rural areas and of poor socioeconomic background. Most of the patients were daily wage workers and housewives. This might be one of the causes for late presentation with complications of cataract.

Diagnosis
Phacomorphic glaucoma was found in 58% of cases whereas phacolytic glaucoma was found in 42% of cases. This may be due to high incidence of cortical cataracts in Indian population, which are more prone for hydration. Lim et al reported a ratio of 1.2:1 for phacomorphic to phacolytic glaucoma.

Status of the Other Eye
On assessing the status of the fellow eye, we found that 5.4% of fellow eyes were pseudophakic, 40% had immature cataracts, 2% had mature cataracts and 4% were aphakic. In Pradan et al study, 3 fellow eyes revealed that 270 (65.4%) were phakic, 123 (29.8%) aphakic, 16 (3.8%) pseudophakic and 4 (1.0%) were one eye.

Reason for Delay in Cataract Surgery
On analysing reasons for delay in cataract surgery, it was found that good vision in the fellow eye was the predominant reason probably due to pseudophakic status of fellow eye, economic reasons, lack of bystanders to accompany the patient, lack of awareness regarding the eye condition and its graveness were other reasons cited (Pradhan et al).

Surgery
98% of patients underwent small incision cataract surgery with posterior chamber intraocular lens. 2% of cases underwent combined surgery.

Visual Acuity
On analysis of visual outcome, it was found that 42% of patients attained a final visual acuity of 6/12 or better. 8% of patients had a final acuity of <6/60 or worse. In 50% of patients, visual acuity was between 6/18 to 6/60 (Ramakrishnan et al), (Pradhan et al), (Prajna et al).

Analysis of duration of Symptoms with BCVA
It was found that 77% of patients who presented early i.e. within 3 days of symptoms had a final BCVA of 6/12 or better. 58% of patients who presented within a week had a final visual acuity of 6/12 or better whereas among those who presented after 2 weeks, only 50% had BCVA of 6/60 or better and remaining 50% of patients had a visual acuity of 6/60 or less. The association between duration of symptoms and final visual acuity was statistically very highly significant (P<0.0001) suggesting that shorter the duration between onset of symptoms and surgery, better is the visual prognosis. Ramakrishnan et al found that there was a significant association between duration of symptoms and postoperative BCVA.

Prajna et al found significant risk of obtaining poor visual acuity when the duration between the onset of pain and surgery exceeded 5 days (OR=3.1; 95% CI=1.21 - 8.13).

Jain et al found if the duration of attack increased there was a progressive decline in the recovery of visual acuity.

Analysis of Preoperative IOP with BCVA
Clinically, significant proportion of cases with IOP at presentation less than 40 mmHg (71.4%) achieved good visual acuity, than cases with IOP more than 40 mm Hg (28.6%). The correlation between height of IOP and visual outcome was, clinically significant but statistically not significant (p>0.05).

Intraoperative Complications
All the cases were treated surgically with small incision cataract surgery with posterior chamber IOL implantation except in 2 cases where SICS was combined with Trabeculectomy.

Out of the 50 cases operated, intraoperative complication was noted in 06 cases (12%) in the form of PCR with Vitreous Loss.

PCR with VL occurred in 06 cases out of which 2 cases (33.3%) were phacomorphic glaucoma while 4 cases (66.7%) were phacolytic glaucoma. All 6 cases were managed with placing PCIOI in sulcus. The incidence of PCR with VL was clinically significant but not statistically significant.

Postoperative Complications
On the 1st postoperative day, AC reaction in the form of flare, cells, exudative membrane was noticed in 11 cases (22.00%) out of 50 cases that were operated. Out of the 11 cases, 8 cases (72.7%) were of phacolytic glaucoma, 3 cases (27.3%) were of phacomorphic glaucoma.

AC chamber reaction was treated with topical steroids and cycloplegics. Majority of the patients recovered within 1 week with the treatment and all the 11 cases did not show any AC reaction at the end of 3 weeks follow-up period.

CONCLUSIONS
The majority of phacolytic and phacomorphic glaucoma cases observed (82%) were over the age group of 60 years. Phacomorphic glaucoma was more common (59%) when compared to phacolytic (42%). Good visual outcome can be achieved if the time duration between onset of symptoms to surgery is short and if inflammation and IOP is well controlled before surgery.

REFERENCES