A STUDY OF 21 CASES OF PHACOLYTIC GLAUCOMA 1 DAY BEFORE AND ON 1ST AND 7TH DAY AFTER CATARACT SURGERY

Papaganti Prabhakar Sastry¹, G. S. Ramesh Kumar², K. Vijaya Sekhar³, P. Raja Kumar⁴, K. Siva Subbarao⁵, P. Pragya⁶, Gogineni Vivek Chowdary⁷, Sai Raja Sekhar Gogineni⁸

¹Assistant Professor, Department of Ophthalmology, Siddhartha Medical College, Vijayawada.

²Professor, Department of Ophthalmology, Siddhartha Medical College, Vijayawada.

³Associate Professor, Department of Ophthalmology, Siddhartha Medical College, Vijayawada.

⁴Assistant Professor, Department of Ophthalmology, Siddhartha Medical College, Vijayawada.

⁵Assistant Professor, Department of Ophthalmology, Siddhartha Medical College, Vijayawada.

⁶House Surgeon, Department of Ophthalmology, Siddhartha Medical College, Vijayawada.

⁷Final Year Medical Student, Department of Ophthalmology, Siddhartha Medical College, Vijayawada.

⁸Final Year Medical Student, Department of Ophthalmology, Siddhartha Medical College, Vijayawada.

ABSTRACT

BACKGROUND

Aim of this study is to evaluate the visual outcome and disc changes in 21 cases of phacolytic glaucoma in hypermature cataract cases presenting with high intraocular pressure (More than 40 mm), severe pain, redness, corneal clouding and with gross decrease in visual acuity.

MATERIALS AND METHODS

21 cases (Male & Female) of phacolytic glaucoma with hypermature cataract attending Government General Hospital's Ophthalmology Outpatient Department have been selected for study. Patients presented with complaints of severe pain, decrease in vision, redness and watering. All these patients were admitted on emergency basis, intraocular pressure was controlled and were immediately taken up for cataract surgery and intraocular lens implantation.

RESULTS

Despite of high intraocular pressure, corneal clouding and with decreased vision, all of them have regained good visual acuity (Ranging between CF 5 metres to 6/12), fundus showed 0.5 to 0.8 cupping. Intraocular pressure came to normal levels in all cases.

CONCLUSION

Earliest possible surgical intervention in cases of phacolytic glaucoma with hypermature cataract can result in regaining good vision along with control of intraocular pressure.

KEYWORDS

Phacolytic Glaucoma, Intraocular Pressure, Ciliary Congestion, Corneal Oedema Flare in Anterior Chamber.

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BACKGROUND

There are twenty million blind people in India; eighty percent of this blindness is due to causes which are preventable. Cataract in India is the most important cause of preventable blindness accounting to 63.7 percent. Lens-induced glaucoma (LIG) was first described in the year 1900 by Gifford^[1] and von Reuss independent of each other. In the year 1998, Pradhan et al reported an incidence of 0.42% of phacolytic glaucoma amongst the 27,073 of patients detected to have senile cataract.^[2]

Phacolytic glaucoma is open-angle glaucoma induced by mature or hypermature cataract. During this condition, the soluble contents of the lens leak into the anterior chamber and obstruct trabecular outflow. The lens capsule in phacolytic glaucoma appears grossly intact or occasionally shows spontaneous non-traumatic defects.^[3-5]

Phacolytic glaucoma (PG) is characterised by an acute rise in intraocular pressure (IOP) in eyes with advanced cataracts, associated with aqueous flare and cells. The pathogenic mechanism is microleakage of high molecular weight lens proteins through an intact anterior lens capsule causing an inflammatory response and leading to obstruction of the aqueous drainage channels by proteins, protein-laden macrophages, and inflammatory debris.^[6,7,8]

Here, our study includes observation of 21 cases of phacolytic glaucoma 1 day before, on 1st & 7th day after cataract surgery and to evaluate the visual outcome, disc changes in them.

The clinical picture usually involves an elderly patient with a history of poor vision who has sudden onset of pain, conjunctival hyperaemia, and worsening vision. Examination revealed a markedly elevated IOP, microcystic corneal oedema, prominent cell and flare reaction without keratic precipitates (KP), and an open anterior chamber angle. In some cases, cellular debris are seen layering in the anterior chamber angle and in some cases pseudohypopyon is present. Large white particles (Clumps of lens protein) is seen in the anterior chamber. A mature or hypermature (Morgagnian) cataract is present, often with wrinkling of the anterior lens capsule representing loss of volume and the release of lens material. Medications to control the IOP are

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Corresponding Author:

Dr. Papaganti Prabhakar Sastry,
Flat No. 2, Door No. 54-20-9/7, Rajeswari Residency,
Srinagar Colony, Vijayawada-520008, Andhra Pradesh.

E-mail: drprabhakarsastry@yahoo.com

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given immediately, followed by definitive therapy i.e. cataract extraction.

MATERIALS AND METHODS

Study includes 21 cases of phacolytic glaucoma and their evaluation regarding post-operative visual recovery.

Data

Total Cases - 21

Male Patients - 6

Female Patients - 15

Age group ranging from 36 years to 72 years.

All the patients are from the remote villages of Krishna district, Andhra Pradesh and were seen by many ophthalmologists before approaching government institution.

All these cases were operated by 2 senior ophthalmic surgeons with SICS procedure in the institute.

Procedure Done

These cases were posted in theatre on emergency basis to preserve and restore the vision.

Routine Small Incision Cataract Surgery (SICS) procedure with posterior chamber intraocular lens (PCIOL) implantation under local anaesthesia was done after controlling the intraocular pressure and bringing it below 20 mmHg.

RESULTS

- One day before cataract surgery these patients showed
- Pain.
- Redness.
- Watering.
- Defective Vision.
- Glare.
- Photophobia.
- In some cases where there is milky fluid in the anterior chamber, after creating a scleral tunnel fluid was taken out by making a side port.
- Bluehex has been used to visualise the anterior capsule and also for capsulorhexis.
- In some cases after taking out the milky fluid, visco is injected and synechiolysis is done with iris repository.
- Removal of milky fluid from anterior chamber has immediately enabled us to visualise the details of the anterior chamber and lens.
- So this has helped us to go for further steps of cataract surgery.

Signs

- High Intraocular Pressure (42 to 72 mmHg and above).
- Circumcorneal congestion.
- Intense flare and cells in AC.
- Milky fluid in AC.
- Hypopyon in some cases.
- Vision PL+ / HM.
- Mid dilated pupil.
- Patients were requested to come to Op Department after discharge once in 2 days and the findings were analysed on 5th and 7th day.

- Even on 1st post-operative day 18 of these 21 cases got good vision ranging from CF 5 m to 6/12 and got relieved of many of the complaints like pain, redness, etc.
- On 7th day refraction was carried out and almost all the patients got good vision.

Figure 1. Pathophysiology of Phacolytic Glaucoma

Figure 2. Phacolytic Glaucoma with Milky Cortex in AC

Figure 3. Hypermature Cataract with Leaked Material in AC

DISCUSSION

The term phacolytic glaucoma was coined by Flocks et al in 1955. Phacolytic glaucoma represents a lens induced acute secondary open angle glaucoma associated with rapid onset of pain, redness and watering in the eye and the intraocular pressure (IOP) may become as high as 60 to 80 mmHg. Visual acuity is reduced to perception of light with sometimes inaccurate or doubtful projection of rays. The lens usually shows a hypermature Morgagnian cataract or mature cataract, rarely an immature cataract. Flocks et al believed that the condition was attributable to obstruction of the intertrabecular spaces by macrophages distended with engulfed lens material and Morgagnian fluid that had escaped from the lens. Goldberg^[9] popularised Millipore filter technique for identification of the diagnostic macrophages. Epstein et al^[10] have shown that direct obstruction of outflow pathways by leaking heavy-molecular-weight soluble proteins (Molecular weight 150x10 daltons) may significantly affect the pathogenesis of human phacolytic glaucoma. Such clogging is more specific than macrophage response in phacolytic glaucoma.^[10]

Both cellular and humoral immune response has been implicated in the process of phacolytic glaucoma. Phacolytic glaucoma is caused by an obstruction of trabecular meshwork by lens proteins or protein-laden macrophages.^[11]

However, the pathogenesis of phacolytic glaucoma is not fully understood. The mechanisms underlying the association between the presence of soluble contents and increased IOP remain under debate. One theory suggests that after leakage of its soluble contents, the aqueous humor becomes saturated with calcium oxalate and cholesterol crystals, which are found as hyperrefracting particles in the anterior chamber. At the same time, the obstruction of the trabecular meshwork with heavy molecular weight proteins from the lens and phagocytic macrophages leads to a characteristically severe elevation in IOP.^[12]

Alternatively, Mavranakas et al^[13] suggests two forms of phacolytic glaucoma: acute onset and gradual onset. Acute onset phacolytic glaucoma is caused by rapid leakage of liquefied lens protein into the aqueous humor through tiny spontaneous ruptures of the anterior lens capsule, without the presence of macrophages. Gradual onset phacolytic glaucoma is characterised by the presence of macrophages in the aqueous humor induced by an immunologic reaction to lens protein through an intact lens capsule.

Clinically, phacolytic glaucoma presents acutely with corneal oedema, cellular exudates in the anterior chamber often with hypopyon, polychromatic hyperrefracting or crystalline particle in the anterior chamber, and hypermature cataract, behind a semidilated pupil with open angle.^[14]

Acute angle closure glaucoma, open angle glaucoma with uveitis, neovascular glaucoma, and glaucoma secondary to trauma are the conditions which can mimic phacolytic glaucoma.^[15]

It is common practice for many of the ophthalmologists not to take up the cases of phacolytic glaucoma with high intraocular pressure and that too with long duration of the condition for 2-3 weeks.

As ours is a government institute we are forced to operate on this type of cases.

We have analysed 21 cases of such type of phacolytic glaucoma which are due to hypermaturation of cataract, leaking of lens proteins through capsule causing rise in intraocular pressure with all clinical signs and symptoms.

Initially intraocular pressure was controlled with administration of IV Mannitol 300 mL, Dorzox-T drops (4 times per day), Tab Diamox along with the supportive treatment.

We have carried out all the local and systemic essential investigations that are required before cataract surgery.

After reducing the intraocular pressure to below 20 mmHg, cases are admitted to the operation theatre on emergency basis and were operated for cataract extraction surgery by Small Incision Cataract Surgery (SICS).

In all the cases, we have implanted posterior chamber intraocular lens (PC IOL) with desired IOL power. As 19 of these 21 cases have approached us within 5-7 days of onset of symptoms they recovered good vision (CF 5 metres to 6/12).

Rest of the 2 cases got only CF to hand movements. This is because of partial optic atrophy following longstanding high IOP.

CONCLUSION

By taking informed consent and explaining the visual prognosis to the patient, it is always better to operate phacolytic glaucoma cases at the earliest possible, not only to restore the vision but also to relieve the patient from acute painful condition. Our study has shown good results with many of these types of cases.

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