



SPECTRUM OF GLAUCOMA IN CATARACT PATIENTS: A HOSPITAL BASED PROSPECTIVE STUDY.

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ABSTRACT **Objectives:** This present study was to evaluate the different type of glaucoma and its diagnosis in various age group cataract patients. **Methods:** A total of 50 patients of cataract with irrespective of age and sex were enrolled. Patients diagnosed with closed angle, fundus examination were performed with direct ophthalmoscope. Patients with glaucomatous changes were subjected to visual field testing to look for field defects. Diagnosis was done based on IOP, gonioscopy, fundus examination and visual fields. Patients were classified as primary open-angle glaucoma, primary closed-angle glaucoma and secondary glaucoma, which includes lens-induced glaucoma, pseudoexfoliation glaucoma and others. **Results:** Majorities of patients 33(66%) were belonged in age group of 61-80 years. Most of the patients were males 30(60%). Most of the patients 28(56%) of glaucoma had in unilateral involvement of eye. Most of the patients 28(56%) had open angle glaucoma. 17(34%) disc suspect and 13(26%) lens-induced glaucoma were the common type of glaucoma seen. **Conclusions:** Cataract and glaucoma are both more prevalent among the elderly age population and commonly coexist. Patients with glaucoma should be carefully assessed and monitored. And effective awareness programme is needed to prevent visual impairment and blindness from glaucoma in older age group population.

KEYWORDS : Cataract, Glaucoma, age group, open angle glaucoma, close angle glaucoma

INTRODUCTION

In a survey of the Middle East and North Africa in 2010, cataract was the leading cause of blindness (23.4%), while glaucoma accounted for a significant percentage (9.6%), exceeded only by refractive error (13.1%) and macular degeneration (10.3%) [1]. Recent World Health Organization reports from 2002 highlight cataract and glaucoma as the two greatest sources of visual impairment worldwide, with 17 (47.8%) and 4.4 million (12.3%) persons affected, respectively [2].

Numerous studies over the past few decades have shown that cataract surgery leads to a sustained decrease in IOP in POAG patients. As early as the 1970s, Bigger and Becker observed decreased IOP in patients undergoing uncomplicated intracapsular cataract extraction [3]. In the mid-1990s, Matsumura *et al.* prospectively followed 93 eyes and found that cataract surgery lowered IOP an average of 1.5 mmHg at 3 years [4].

Cataract surgery rises as one of the most common surgical procedures performed worldwide and it has been suggested to be of clinical benefit for both diseases. Besides removing the opacified lens, cataract surgery has been suggested to reduce intraocular pressure (IOP) in eyes either with or without glaucoma, although with variable magnitude and influenced by several factors, including anterior chamber anatomy and angle configuration (open-angle vs. angle-closure) [5]. Also, it has the ability to increase the accuracy of functional and structural analyses currently used for diagnosing and evaluating glaucoma and its progression, since a visually significant cataract may act as a confounder. Objectives of this present study was to evaluate the different type of glaucoma and its diagnosis in various age group in cataract patients.

MATERIALS & METHODS

This present study was conducted in Department of Ophthalmology, SKMCH, Muzaffarpur, Bihar, with collaboration of the Department of Ophthalmology, PMCH, Patna, Bihar, India during a period from January 2020 July 2020.

Entire subjects signed an informed consent approved by institutional ethical committee of SKMCH, Muzaffarpur, and PMCH, Patna, Bihar, India was sought. Data was collected with irrespective of age and sex.

METHODS:

A total of 50 patients of cataract with irrespective of age and sex were enrolled in this study.

Patients diagnosed with closed angle, fundus examination were performed with direct ophthalmoscope. Patients with glaucomatous changes were subjected to visual field testing to look for field defects and to confirm diagnosis.

Diagnosis was done based on IOP, gonioscopy, fundus examination and visual fields. Patients were classified as primary open-angle glaucoma, primary closed-angle glaucoma and secondary glaucoma, which includes lens-induced glaucoma, pseudoexfoliation glaucoma and others. Some of the patients had features of disc suspect and angle suspect who were advised for regular check up to assess for diagnosis of progression of the disease. Primary Angle-Closure Glaucoma (PACG) was defined as an eye with glaucoma as defined in the presence of narrow angles and features of trabecular obstruction by peripheral iris (such as peripheral anterior synechiae, elevated IOP, iris whorling, "glaukumflecken", lens opacities or excessive pigment deposition on the trabecular surface). Subjects with glaucoma and an open, normal drainage angle with no identifiable secondary pathologic processes were said to have Primary Open-Angle Glaucoma (POAG). Phacomorphic and phacolytic glaucoma were included in secondary glaucoma. Pseudoexfoliation glaucoma was diagnosed on the basis of pseudoexfoliation material on slit-lamp examination over lens, angle, iris and increased intraocular pressure >21 mm of Hg, glaucomatous optic nerve head damage, gonioscopy findings with corroborative visual field changes when a reliable visual field was obtained and was included in secondary glaucoma.

Procedures:

Visual acuity was recorded using Snellen's chart. Detailed slit-lamp

examination of anterior segment is done to grade the cataract, look for presence of pseudoexfoliation and also look for anterior chamber depth by using Van Herick grading. IOP was recorded using Perkins applanation tonometer. Gonioscopy was performed using Goldmann three-mirror gonio lens and angle were classified as open angle and closed angle based on Shaffer's classification. Angles were examined to look for Sampaulesi line in cases of pseudoexfoliation and pigmentation in pigment dispersion syndrome.

STATISTICAL ANALYSIS

Data was analysed by using simple statistical methods with the help of MS-Office software. All data were tabulated and percentages were calculated.

OBSERVATIONS

In this present study, majorities of patients 33(66%) were belonged in age group of 61-80 years. 12(24%) patients were in age 41-60 years. And 5(10%) cataract patients were belonged in age 20-40 years.

Table.1. Age wise distribution in cataract patients

Age group (Years)	No. of patients	% of patients
20-40	5	10%
41-60	12	24%
61-80	33	66%
Total	50	100%

Most of the patients were males 30(60%) and females were 20(40%).

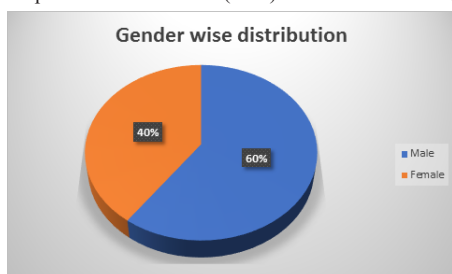


Figure.1. Gender wise distribution in cataract patients.

Most of the patients 28(56%) of glaucoma had in unilateral involvement of eye. And 22(44%) had bilateral involvement.

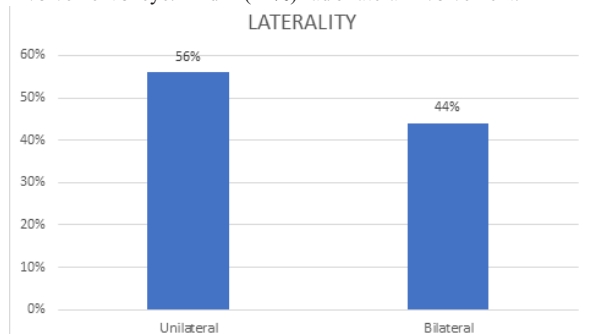


Figure.2. Laterality.

Table.2. On gonioscopic findings of glaucoma patients

Type of angle	No. of patients	% of patients
Open angle	38	76%
Closed angle	12	24%
Total	50	100%

On gonioscopic findings, majorities of patients 28(56%) had open angle glaucoma. 22(44%) patients had closed angle.

Table.3. Type of glaucoma

Type	No. of patients	% of patients
Primary open-angle glaucoma	7	14%
Primary angle-closure glaucoma	2	4%
Pseudoexfoliative glaucoma	8	16%
Lens-induced glaucoma	13	26%
Disc suspect	17	34%
Angle-closure suspect	3	6%
Total	50	100%

In this present study, majorities of glaucoma patients 17(34%) had disc suspect. 13(26%) patients had lens-induced glaucoma. And rest patients of glaucoma had 8(16%) pseudoexfoliative, 7(14%) primary open angle, 3(6%) angle closure suspect and 2(4%) primary angle-closure glaucoma.

DISCUSSIONS

Glaucoma is a worldwide leading cause of irreversible vision loss. It is a neurodegenerative condition that affects the eye and is associated with increased intraocular pressure (IOP). When left untreated, patients may gradually experience visual field loss, and even lose their sight completely. It is the second leading cause of blindness around the globe [6].

In this present study, a total of 50 cataract patients with age group 20 to 80 years were enrolled. Majorities of patients 33(66%) were belonged in age group of 61 to 80 years. Males 30(60%) were more preponderance than females 20(40%).

Bayesian meta-analysis found that men were more likely to have OAG with the reservation that gender influence depends on the definition of glaucoma [7]. For example, a review of the literature concluded that women are at higher risk for angle-closure glaucoma (ACG) but that there is no clear gender predilection for OAG [8]. Women usually live longer than men increase their risk for glaucoma and glaucoma blindness [7]. But, in our study glaucoma was more commonly seen in males than females. In this present study, unilateral glaucoma was found in majorities of patients 28(56%).

Many patients with glaucoma also have a concomitant cataract. The most common form of cataract is age-related, which is characterized by nuclear sclerosis, cortical opacities, and posterior subcapsular opacities. Cataract surgery alone has been shown to lower IOP in eyes that do not have glaucoma. Patients with ocular hypertension who do not yet have glaucomatous damage even experience better IOP lowering from cataract surgery than normotensive eyes [9]. In this present study, most of the patients had unilateral eye glaucoma.

On gonioscopic findings, majorities of patients 28(56%) had open angle glaucoma. 22(44%) patients had closed angle.

Primary open angle glaucoma is characterized by an open anterior chamber angle and painless, slowly progressive optic nerve damage. Although the pathophysiologic mechanism is not completely understood, there is a component of elevated IOP due to outflow obstruction at the level of the trabecular meshwork, Schlemm's canal, and distal collector system [10] Additionally, the optic nerve may have increased susceptibility to axonal damage due to premature apoptosis, [11] local vasculopathy, [12] and even autoimmune factors.

In this present study, most of the glaucoma patients 17(34%) had disc suspect and 13(26%) lens-induced glaucoma. And rest patients of glaucoma had 8(16%) pseudoexfoliative, 7(14%) primary open angle, 3(6%) angle closure suspect and 2(4%) primary angle-closure glaucoma.

Pseudoexfoliative syndrome is characterized by progressive accumulation and deposition of extracellular material at the trabecular meshwork, which has been hypothesized to be the cause of the increased IOP in PXG. PXG is most commonly a secondary open angle glaucoma but may also present as secondary angle closure characterized by anterior displacement of the lens due to zonular weakness/dehiscence. Several studies have shown that phacoemulsification leads to long-lasting IOP control in PXG [13,14]. In a study by Shingleton et al of 44 glaucoma suspect eyes, cataract surgery alone resulted in an IOP decrease of 1.4 ± 4.2 mmHg ($P = 0.004$) at 3 years postoperatively [15]. A prospective study on ocular hypertension and early glaucoma patients reported cataract surgery alone reduced IOP 8.5 ± 4.3 mmHg at 12 months postoperatively [16].

CONCLUSIONS

This present study concluded that the glaucoma was more preponderance in cataract patients of older age group of males than females. Unilateral eye involvement was commonly seen. Open angle glaucoma was more common than close angle. Disc suspect, lens induced glaucoma and pseudoexfoliative were the most common type of glaucoma. Hence, Cataract and glaucoma are both more prevalent among the elderly age population and commonly coexist.

Patients with glaucoma should be carefully assessed and monitored. And effective awareness programme is needed to prevent visual impairment and blindness from glaucoma in older age group population.

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