The Glaucoma, Maculopathy and Cataract Surgery in Rural Area of Chhattisgarh, India

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Abstract

Aim: The main objective of the current study is toinvestigate that the prevalence of maculopathy in rural area of Chhattisgarh. *Material and methods:* A retrospective study was conducted inthe department of ophthalmology at Lakhiram Agrawal Memorial Govt. Medical College and associated Kirodimal Govt. Hospital, Raigarh, (CG), total 415 patients were screening in the aged group of 40 years to above. Essential ophthalmic examination was done before the oparation. *Result:* Out of 415 patients, fifty-four (10.52%) were diagnosed tomaculopathy suspect. out of 54 (27) patients were POAG, 18 (3.5%) had PACG, 5 (0.97%) had lens induced glaucoma and 4 (0.77%) wereglaucomasuspected. *Conclusion :* Finding of the current study concluded that the Performing of a comprehensive eye evaluation for cataract surgery was great importance in the detection of undiagnosed maculopathy (retinal disease blindness). It is the most important causes of the rural area of Chhattisgarh in central India population.

Keywords: Glaucoma; Maculopathy; Cataract Surgery; Prevalence.

Introduction

The term glaucoma,maculopathy and cataract surgery is a group of progressive optic neuropathies; it is characterizedby the degeneration of retinal ganglion cells and resulting from the changes in the optic nerve head. It causedby the loss of ganglion cells, therefore related to the level of intraocular pressure [1]. The Cataract, maculopathy and glaucoma are frequently coexisting ocular conditions in the elderly group of population worldwide; cataract, maculopathy and glaucoma are a natural part of the aging process [2]. People over 60 years of age have affected more common with glaucoma, this is the more common and serious sight-threatening conditions. Glaucoma and maculopathy is responsible for significant ocular morbidity in India [3]. Primarily glaucoma was accountedfor the 2/3rds of the morbidity in India and worldwide [4]. Currently there is a significant lacuna of studies about cataract and glaucoma in this region of India. Our study is a step toward it with the aim to find out the prevalence of maculopathy, glaucoma in the patients with cataract who were referred to thehigher study center and institutions.

Research design-the current study was done by the retrospective research design.

Methods

Sample and Procedure

For the purpose of our study we used screening techniques and scientific method for sample selection, total 415 participants were involved in the present study, 54 out of 415 patients which were affected with the disease of glaucoma and maculopathy.

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The retrospective study was conducted in the department of ophthalmology, at Lakhiram Agrawal Memorial Govt. Medical College and associatedKirodimal Govt. Hospital, Raigarh, Chhattisgarh, India. All the 415 consecutive patients werereferred for cataract surgery in the month of September to November 2016, before the cataract surgery some screening techniques were done.

Procedure of Sampling and Screening for Cataract Surgery

The detailed history and demographical profile were taken using self-made questionnaire, slit lamp examinations were done, ocular co-morbidity, intraocular pressures, fundus examination, gonioscopy, 90D examination, and visual fields were done by the appropriate apparatus. The External examination and pupillary evaluation were done in the normal flashlight. The Slit lamp bio-microscopy was doneto rule out any abnormalities of the anterior segment. The anterior chamber depth was graded according to the Van Herick's technique. Intraocular pressure (IOP) was recorded with the Goldmannapplanation tonometer under the topical anesthesia. Gonioscopy was performed to examine the irideocorneal angle. The Goldman three mirror lenses were used and the angle was graded according to the Shaffer system. The degree of trabecular meshwork pigmentation and other angle abnormalities were recorded. Stereoscopic evaluation of the optic nerve head was performed using a 90 diopter (D) lens at the slit lamp. The vertical and horizontal cup-disc ratios (CDRs) were measured and recorded with the notching, splinter haemorrhages, and peripapillary atrophy.

Statistical Analyses

Purpose of the current study, the data was analyzed by descriptive analyses technique with the help of the SPSS 22 version.

Results

Finding of the result in the present study shows in the different tables. Total 415 subjects were examined (170 men 40.96%, 245 women 59.04%) of which 54 (13.01%) patients were suspected of maculopathy, 5.26% have OAG, 3.50% have ACG, 0.78% are glaucoma and maculopathy suspect and 0.98% have Lens induced glaucoma.

Table 1: Shows the age and sex distribution in thepatients

Variables		N	n%
Age (years)	40-50	43	10.36
	50-60	152	36.62
	>60	220	53.01
Sex	Male	170	40.96
	Female	245	59.04

Table 2: shows the Glaucoma and maculopathy suspect and Gonioscopy findings in the pateints

Variables		N	n%	Mean
Glaucoma and maculopathy Suspect	No	361	86.98	
	Yes	54	13.02	
	OAG		5.26	
	ACG		3.50	
	Lens-induced glaucoma		0.98	
Gonioscopy	Performed	52		
	Not Performed	2		
	IOP (mmHg)			20.1
	VCDR			0.4-0.6

Table 1 and table 2 shows that the males were more commonly involved among OAG and females were more among angle closure disease. Majority of patients with maculopathy were found to be >60yr of age. The mean IOP by Goldman applanation tonometer was 20.1 mmHg. Gonioscopy performed in both eyes of 52 maculopathy suspect subjects. Gonioscopy could not be done in 2 subjects because of corneal opacities. The mean Vertical cup-disc ratio (VCDR) was 0.4-0.6. Majority of cases with OAG was found to be in an early glaucomatous stage while ACG was found in moderately advanced glaucoma stage, which suggests that ocular morbidity and early progression is more common with angle closure disease.

Primary Open Angle Glaucoma

Table 3 reveal that there were 27 (5.26%) subjects (12 women, 16 men). The mean age was > 60 years. The mean IOP value was 21.2 mm Hg. Mean VCDR 0.4-0.6, fundus could not be seen in 3 subjects because of dense cataract and corneal opacity. Humphrey visual fields 30-2 were done in 20 subjects and advised after cataract surgery in rest. Out of 20 subjects, 14 were atearly glaucomatous stage, 4 were moderately advanced glaucoma, 1 severe glaucoma and 1 patient withend-stage glaucoma. Pseudo exfoliation was noted in 2 subjects.

Table 3: shows the sex distribution and examination finding of the Primary Open-Angle Glaucoma in the patients

Variables		N	n%	Mean
Primary Open Angle Glaucoma		27	5.26	
Age				64 years
Sex	Male	15	55.5	
	Female	12	44.5	
	IOP (mmHg)			21.2
	VCDR			0.4-0.6
Staging of Glaucoma (n=20)	early glaucomatous stage	14	70	
	Moderately advanced glaucoma	4	20	
	severe glaucoma	1	5	
	end-stage glaucoma	1	5	

Primary Angle-Closure Glaucoma

Table 4 shows that the primary angle-closure glaucomawas found in 18 subjects (3.50%) (10 women, 8 men); the mean age was between 40 to 50 years. The mean IOP value was 22 mm Hg. The mean VCDR was 0.5-0.6. The fundus could not be seen in 4 subjects because of dense cataract in 3 subjects and 1 has corneal opacity. On gonioscopy, out of 17 patient 3 patients had PAS present. Out of 14 patients, 3 were atearly glaucomatous stage, 10 were moderately advanced glaucoma and 1 patient withend-stage glaucoma.

Table 4: shows the sex distribution and findings of the primary Angle-Closure Glaucoma

Variables		N	n%	Mean
Primary Angle-Closure Glaucoma		18	3.50	
Age				46 years
Sex	Male	8		
	Female	10		
	IOP (mmHg)			22
	VCDR			0.5-0.6
Staging of Glaucoma (n=14)	early glaucomatous stage	3	21.4	
	Moderately advanced glaucoma	10	71.4	
	severe glaucoma	0	0	
	end-stage glaucoma	1	7.1	

Glaucoma Suspects

Table 5 reveals thatthere were 4 persons have glaucoma suspect (1woman, 3 men). Out ofwhich 2 subjects had ocular hypertension, 1 was diagnosed as PACS, and 1 had suspicious discs but no field changes.

Table 5: shows the sex distribution and findings of the Glaucoma suspects

Variables		N	n%
Glaucoma Suspects		4	
Sex	Male	3	75
	Female	1	25
	ocular hypertension	2	50
	PACS	1	25
	suspicious discs	1	25

Lens-induced Glaucoma

Table 6 reveals that5 patients showing the lens induced glaucoma.Fourpatients with phacomorphic glaucoma presented with very high IOP (unrecordably high) were advised urgent cataract surgery after control of IOP. One patient with phacolytic glaucoma presented with IOP 39mm Hg has also advised cataract surgery after controlling IOP.

Table 6: shows the IOP examination findings in the Lens-induced Glaucoma

Variables		N	n%	Mean
Lens-induced Glaucoma		5		
IOP (mmHg)	phacomorphic glaucoma	4	80	Unrecordably high
	photolytic glaucoma	1	20	39

Discussion

Purpose of the present study we have search the various studies done in thisfield and various research agencies reports, some reports and findings were supported our current work. The WHO report estimated that the 47.8% of global blindness is due to the glaucoma, the cataract burden was significantly high in the South Asia region with includes the India, 51% of blindness is due to the cataract [5]. The cataractsurgery is a major causes of avoidable blindness in the developing countries [6]. Cataractsurgery and glaucoma are frequently coexisting ocular conditions in the elderly age population worldwide. Our study finding are similar to the Chennai glaucomastudy, it reported that the glaucoma was detected in 20% of aphakic and 4.3% of pseudophakic eyes in urban population [7]. Other similar studieshave found that the age-specific prevalence for the eight population groupswas derived by regional models separately for OAG and ACG. Similar findings were obtained fromstudies conducted in different region

and countries of the world i.e. Europe OAG [8,9] Europe ACG, [10,11] Africa OAG, [12,13,14] Africa ACG, India OAG, [15,16,17] India ACG, [18,19,20] China and South East Asia OAG, [12,18,19] China and South East Asia ACG, [12,18,19] Japan OAG, [21,22,23] Japan ACG, [24] Latin America OAG, [25,26] Latin America ACG (Europe estimate used), and Middle East/North Africa OAG and ACG. The Glaucoma blindness was estimated by the Foster et al (2002) and they found that 10% of those with OAG and 25% of those with ACG were assumed to be bilaterally blind in the world wide [27].

Other studies have estimated that the numbers of glaucoma in worldwideby 2020, 60 million people will have OAG and ACG, and glaucoma will be the second leading causes of the world blindness, These estimates could be done by the surveys of different research in different regions such as North Africa and the Middle East Africa, OAG was estimated that the 2.22 million people wereaffected with glaucoma in the United States in 2002 [28]. another studies have predicted that 9.4 million Chinese people had OAG and ACG in 2001 [29]. Another studies predicted for the years 2010 that 9.2 million will have either OAG or ACG in China [30]. Another study, based on the major population were suggested that the12% of world blindness (4.4 million people) is caused by glaucoma [31].

Klien, et al. (2002), examined the association between cataract surgery of the 10 year incidence in age related maculopathy (ARM). Variables are controlled in age, sex, systolic blood pressure and vitamin uses. Finding of the result had suggested that the cataract baseline was associated with incidence of early ARM (RR, 1.30; 95% confidence interval (CI), 1.04-1.63), soft indistinct drusen (RR, 1.38; 95% CI, 1.08-1.75); increased retinal pigment (RR, 1.38; 95% CI, 1.07-1.79) and progression of ARM (RR, 1.37; 95% CI, 1.06 -1.77). [32] Klien et al. (1995) investigated the relationship of age related maculopathy, cataract surgery and glaucoma to visual visual acuity I the population based beaver dam eye study. Those are find that fifty-seven percent of those who were legally blind at late age related maculopathy in both eyes. The frequency of visual acuity of 20/200 or worse was not significant different in eyes with exudative mascular degeneration (48%) than in eyes with pure geographic atrophy (42%) [33]. Linton, Klien & Klien (1991) investigated the ocular disease ia a population based study of persons aged 43 to 86 years residing in Beaver Dam, Wisconsin. The study was reported that the cataract showed a sensitivity of 20.4% for surrogate by telephone,

30.2% for self-report by telephone and 37.8% for self-report at the examination. Sensitivity of reported age related mascular degeneration was poorer, with the highest rate of 17.9% for the in person self- report [34]. Wang, Foran & Mitchell (2011) investigated the age specific prevalence and causes of bilateral and unilateral visual impairment in older Australian population. The study was suggested that the prevalence of bilateral and unilateral visual impairment was strongly associated with age. Bilateral and unilateral visual impairment prevalence rates were respectively 0.6% and 3.6% for person aged 49-59 years, 1.1% and 8.2% for ages 60-69 years, 5.4% and 20.01% for ages 70-79 years and 26.3% and 52.2% for persons aged 80 + years. Age related maculopathy (ARM) was the predominant cause of bilateral blindness (13/17) and of moderate to severe bilateral visual impairment in persons aged 70+ years. ARM and cataract were jointly most frequent causes of moderate to severe unilateral visual impairment in people aged 70+years [35].

Freeman, et al. (2003) determined their study that cataract surgery is associated with an increased prevalence of age related macular degeneration (AMD) in three independent population based data sets. The result was showed the history of cataract surgery was associated with an increased prevalence of late AMD in all three data sets. The severe cataract in the eye was also associated with a slightly higher prevalence of late AMD [36]. Pollack, Marcovich, Bukelman and Oliver (1996), evaluated the course of age related maculopathy after cataract surgery. Finding of the study suggested that the wet AMD developed in nine eyes (19.1%) that were treated with surgery compared with two fellow eyes (4.3%). Progression of the wet AMD occurred significantly more often in men than in women (p< 0.05). soft drusen were found that the significant of ocular risk factor (p<0.05) [37]. Fletcher (2010), investigated the cataract and age related macular degeneration (AMD) are the major causes of vision impairment and blindness. Reported the study both condition was strongly associated age related with earlier signs (usually asymptomatic) occurring in middle age and becoming severe and more prevalent with increasing age [38].

The prevalence of glaucoma and maculopathy in our study is 10.36% of those planned for cataract surgery. If these numbers are similar for the rest of the country this approach would result in detection of a large number of those with undiagnosed glaucoma and maculopathy.

Conclusion

For many people in the country the only point of contact with the eye care system is when they seek or are "screened" for cataract surgery inadequate examination at this time is a lost opportunity to detect and treat other non-cataract ocular pathology, hence our approach in eye camps should be on holistic eye examination and comprehensive treatment for all ocular pathologies including cataract. Finally, we are concluded that findings of our study, it was a great accomplishmentof a comprehensive eye appraisal for cataract surgery. There was importance highly useful of therevealing of undiagnosed glaucoma in the urban area of Chhattisgarh in central India population.

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