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Research Article

A study of ophthalmologic profile of patients with glaucoma

E. Vasanthamurthy[1*], Teeku Sinha[2]

[1]Professor & Head, Department of Ophthalmology, Late Baliram Kashyap Memorial Government Medical College, Dimrapal, Jagdalpur, Dist. Bastar, Chhattisgarh, India
[2]Associate Professor, Department of Community Medicine, Late Baliram Kashyap Memorial Government Medical College, Dimrapal, Jagdalpur, Dist. Bastar, Chhattisgarh, India

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***Correspondence:**
Dr. E Vasanthamurthy,
E-mail: vasanthamurthy55@gmail.com

ABSTRACT

Background: There will be 60.5 million people with OAG and ACG in 2010, increasing to 79.6 million by 2020, and of these, 74% will have OAG. Women will comprise 55% of OAG, 70% of ACG, and 59% of all glaucoma in 2010. Asians will represent 47% of those with glaucoma and 87% of those with ACG. Bilateral blindness will be present in 4.5 million people with OAG and 3.9 million people with ACG in 2010, rising to 5.9 and 5.3 million people in 2020, respectively. Objective of the study is to study ophthalmologic profile of patients with glaucoma.
Methods: A hospital based cross sectional study was carried out among 60 glaucoma patients in the department of ophthalmology, at a tertiary care hospital. A pretested, semi structured questionnaire was used as a study tool. Detailed history as per the questionnaire including age, sex, religion, occupation, social class and side affected was taken from each and every patient. Complete clinical examination was done.
Results: Maximum cases (33.3%) were seen in the age group of 40-49 years followed by 25% of cases in less than 20 years of age. No case was seen in the age group of 50-59 years. It was observed that glaucoma was more common in males (66.7%) compared to females (33.3%). Majority were Hindu (75%) compared to Muslim. Majority of patients (58.4%) were labourers. 25% were children and they were dependent on their parents. 50% of cases were found to have right eye affected and only 8.3% had bilaterally affected eyes.
Conclusions: Prevalence of glaucoma was more in the age group of 40-49 years. Prevalence was more among males compared to females. Right side of eye was commonly affected.

Keywords: Profile, Glaucoma, Eye

INTRODUCTION

An appropriate case definition is the keystone of epidemiological research whether measuring prevalence, studying risk factors, or conducting clinical trials. This reconsideration of the definition and classification of glaucoma was prompted by our experiences of cross sectional prevalence research in Africa and Asia, and by the difficulty we experienced in identifying and classifying cases and in making valid comparisons with previously published data. The proposed definition of glaucomatous optic neuropathy has evolved from one initially developed for the Kongwa Eye Study in Tanzania. At the same time, work in Mongolia and Singapore, where there was a high prevalence of primary angle closure glaucoma (PACG), had prompted a re-examination of the definition of this condition. We were concerned that in previous reports subjects with 'latent angle closure glaucoma' had been classified as cases of established glaucoma, despite having normal visual function. This may result in misinterpretation of the estimates of visual morbidity attributable to glaucoma, especially as PACG is believed to be at least as prevalent as primary open angle glaucoma (POAG).[1]

Open and closed angle glaucoma is leading causes of blindness. With aging of the population, the number of people with glaucoma is expected to rise, posing a substantial public health challenge worldwide. Understanding the natural history of glaucoma is essential to our clinical practices. The manifestations of glaucoma range from mechanical angle closure of outflow structures in patients with angle closure glaucoma (ACG), who typically present with ocular pain and acute visual loss, to increased resistance of outflow in patients with open angle glaucoma (OAG), who are often asymptomatic. Although glaucoma embodies a diverse group of diseases, all these diseases share common characteristics, the hallmarks of which include progressive irreversible damage to the optic nerve head and the retinal ganglion cells with corresponding visual field loss. Primary OAG is defined as a chronic optic neuropathy with characteristic changes in the optic disc and visual field. Risk factors for OAG include older age, black race, family history (first-degree relative), thinner central corneal thickness, myopia and elevated intraocular ocular pressure (IOP). ACG is characterized by the opposition of the iris to the trabecular meshwork, resulting in blockage of the aqueous outflow. Risk factors for developing angle closure include Asian race, female gender and advanced age. Anatomic features predisposing to angle closure are hyperopia, anterior iris insertion and shallow anterior chamber.[2]

The pathophysiology of glaucomatous optic neuropathy is not well understood. Whether the site of primary damage is the ganglion cell body or their axons remains fiercely debatable. Irrespective of the initial site of neuronal injury and mechanisms involved, the terminal outcome is the death of RGCs and their axons leading to irreversible visual loss.[3]

There will be 60.5 million people with OAG and ACG in 2010, increasing to 79.6 million by 2020 and of these, 74% will have OAG. Women will comprise 55% of OAG, 70% of ACG, and 59% of all glaucoma in 2010. Asians will represent 47% of those with glaucoma and 87% of those with ACG. Bilateral blindness will be present in 4.5 million people with OAG and 3.9 million people with ACG in 2010, rising to 5.9 and 5.3 million people in 2020, respectively.[4]

METHODS

A hospital based cross sectional study was carried out among 60 glaucoma patients in the department of ophthalmology, at a tertiary care hospital. Institutional Ethics Committee permission was obtained. Individual informed consent was taken from all study participants. They were explained the purpose of the study. A pretested, semi structured questionnaire was used as a study tool. Detailed history as per the questionnaire including age, sex, religion, occupation, social class and side affected was taken from each and every patient. Complete clinical examination was done.

Age was confirmed from the birth certificate if available or as told by the patients. Social class was calculated based on the B. G. Prasad's method of social classification.[5]

Data was entered in the Microsoft Excel Worksheet and analyzed using proportions.

RESULTS

Table 1: Distribution of study subjects as per their age.

Age (years)	Number	Percentage
< 20	15	25
20-29	10	16.7
30-39	05	08.3
40-49	20	33.3
50-59	00	00
≥ 60	10	16.7
Total	60	100

Table 2: Sex wise distribution of study subjects.

Sex	Number	Percentage
Male	40	66.7
Female	20	33.3
Total	60	100

Table 3: Distribution of study subjects as per their religion.

Religion	Number	Percentage
Hindu	45	75
Muslim	15	25
Total	60	100

Table 4: Distribution of study subjects according to their occupation.

Occupation	Number	Percentage
Dependent	15	25
Agriculture worker	05	08.3
Labourers	35	58.4
Merchant	05	08.3
Total	60	100

Maximum cases 33.3% were seen in the age group of 40-49 years followed by 25% of cases in less than 20 years of age. No case was seen in the age group of 50-59 years.

It was observed that glaucoma was more common in males (66.7%) compared to females (33.3%). Majority were Hindu (75%) compared to Muslim. Majority of patients (58.4%) were labourers. (25%) were children and they were dependent on their parents.

Table 5: Distribution of study subjects as per the side of eye affected.

Side affected	Number	Percentage
Right	30	50
Left	25	41.7
Bilateral	05	08.3

50% of cases were found to have right eye affected and only 8.3% had bilaterally affected eyes.

DISCUSSION

Maximum cases (33.3%) were seen in the age group of 40-49 years followed by (25%) of cases in less than 20 years of age. No case was seen in the age group of 50-59 years. It was observed that glaucoma was more common in males (66.7%) compared to females (33.3%). Majority were Hindu (75%) compared to Muslim. Majority of patients (58.4%) were labourers. (25%) were children and they were dependent on their parents. (50%) of cases were found to have right eye affected and only (8.3%) had bilaterally affected eyes.

Saleh A et al[6] in their study of 2296 eyes of 1236 patients found that primary angle closure glaucoma (PACG) was the predominant type (46.6%) followed by primary angle closure (PAC) 17.2%, then primary open angle glaucoma (POAG) 12.8%, and secondary glaucoma 13%. Other types including (normal tension glaucoma 5.9%, childhood glaucoma 2.6%, and juvenile glaucoma 1.9%) were also present but of lower prevalence.

Garudadri C et al[7] found that there were 3724 subjects > or = 40 years, with 934 in the urban and 2790 in the rural cohort. The prevalence of POAG was greater in the urban compared with the rural cohort (4% vs 1.6%; P<0.001). Age and intraocular pressure (IOP) were risk factors for POAG in both cohorts. Blindness owing to POAG was 11.1% in the rural and 2.7% in the urban cohort. The prevalence of PACG (1.8% vs 0.7%; P <0.01), primary angle closure (PAC) (0.8% vs 0.2%; P = 0.02) and primary angle closure suspect (PACS; 3.5% vs 1.5%; P <0.01) were significantly different between the urban and rural cohorts. Increasing age was a risk factor in the urban cohort. Intraocular pressure was a risk factor in both the populations. Blindness owing to PACG was equal 20% in both the populations. Female gender was a risk factor in the rural cohort (P = 0.032).

Ramakrishnan R et al[8] observed that the prevalence (95% confidence interval) of any glaucoma was 2.6% (2.2, 3.0), of POAG it was 1.7% (1.3, 2.1), and if PACG it was 0.5% (0.3, 0.7), and secondary glaucoma excluding pseudo exfoliation was 0.3% (0.2, 0.5). On multivariate analysis, increasing age, male gender, myopia greater than 1 diopter, and pseudo exfoliation were significantly associated with POAG. After best correction, 18 persons (20.9%) with POAG were blind in either eye because of glaucoma, including 6 who were bilaterally blind and an additional 12 persons with unilateral blindness because of glaucomatous optic neuropathy in that eye. Of those identified with POAG, 93.0% had not been previously diagnosed with POAG.

Dandona L et al[9] reported that manifest PACG and occludable angles without ACG were present in 12 and 24 participants, respectively, with age- and gender-adjusted prevalence (95% confidence interval [CI]) of 0.71% (0.34%-1.31%) and 1.41% (0.73%-2.09%) in participants 30 years of age or older, and 1.08% (0.36%-1.80%) and 2.21% (1.15%-3.27%) in participants 40 years of age or older, respectively. With multivariate analysis, the prevalence of these two conditions considered together increased significantly with age (P < 0.001); although not statistically significant, these were more common in females (odds ratio 1.70; 95% CI, 0.82-3.54) and in those belonging to lower socioeconomic strata as compared with middle and upper strata (odds ratio, 1.82; 95% CI, 0.88-3.74). The odds of manifest PACG were higher in the presence of hyperopia of more than 2 diopters (D; odds ratio, 3.69; 95% CI, 0.89-15.2). Only four of 12 participants (33.3%) with manifest PACG had been previously diagnosed, and one of 12 (8.3%) had peripheral iridotomy performed previously. Manifest PACG had caused blindness in one or both eyes in five of these 12 participants (41.7%); best-corrected distance visual acuity less than 20/400 in one or both eyes in four patients, and acuity less than 20/200 in one eye in another patient. Most (83.3%) of those with manifest PACG could be classified as having chronic form of the disease. We may have underestimated manifest PACG because visual fields were per- formed only on those with clinical suspicion of optic disc damage. Secondary ACG was present in two participants.

Senthil S et al[10] found that primary angle-closure glaucoma was present in 35 of 3724 subjects aged > or =40 years, an age- and gender-adjusted prevalence of 0.94% (95% confidence interval (CI), 0.63-1.24). Primary angle closure was present in 12 subjects (0.3%; 95% CI, 0.1-0.5), and PACS was present in 71 subjects (2%; 95% CI, 1.5-2.3). The prevalence of angle-closure disease (ACD=PACG+PAC) was 1.26% (95% CI, 0.90-1.62). Forty-one of 47 subjects (87.2%) with ACD were unaware of their disease. The prevalence of PACG increased from 0.56% (0.17-0.94) in the fourth decade to 2.5% (0.87-4.12) in the seventh decade. Seven (20%) of the 35 subjects with PACG were blind (visual acuity <3/60). Intraocular pressure increase (odds ratio (OR) 1.16; 95% CI, 1.11-1.22; P<0.001), diabetes mellitus (OR 3.18l; 95% CI, 1.34-7.58; P=0.001), and female gender (OR 2.07; 95% CI, 1.09-3.93; P=0.025) were significantly associated with angle-closure disease. No significant association was found with systemic hypertension (P=0.24) and hyperopia (P=0.05).

Vijaya L et al[11] reported that the mean intraocular pressure (IOP) was 26.0+/-14.9 mmHg. Five subjects (14.7%) had been previously diagnosed to have

glaucoma, 1 of whom had undergone glaucoma surgery and 2 of whom had been diagnosed to have open-angle glaucoma. Two subjects (5.9%) were bilaterally and 3 subjects (8.8%) were unilaterally blind. One hundred six subjects (2.75%; 95% CI, 2.01-3.49) were diagnosed to have PAC (62 female, 44 male). Thirty-nine subjects (36.8%) had presenting IOP > 24 mmHg, 83 (78.3%) had peripheral anterior synechiae, and 16 (15.1%) had both. Two hundred seventy-eight subjects (7.24%; 95% CI, 6.38-8.02) had PACS (183 female, 95 male). Prevalences of PACG and PACS were similar in the urban and rural populations. Primary angle closure prevalence was higher in the urban population (P <0.0001). Primary angle closure and PACG were positively associated with increasing age and IOP in both populations and were more common in rural women (odds ratio (OR), 4.3; 95% CI, 2.2-8.3). Association with hyperopia was seen only in the urban population (OR, 2.0; 95% CI, 1.4-2.8).

CONCLUSION

Prevalence of glaucoma was more in the age group of 40-49 years. Prevalence was more among males compared to females. Right side of eye was commonly affected.

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