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PREVALENCE OF GLAUCOMA IN PATIENTS AGED ≥ 40 YEARS ATTENDING A TERTIARY CARE CENTRE

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ABSTRACT

AIM: To estimate the prevalence of glaucoma in patients aged ≥ 40 years attending a tertiary care centre.

BACKGROUND: Glaucoma is the second leading cause of irreversible blindness worldwide. Glaucoma is a chronic progressive optic neuropathy characterized by retinal ganglion cell death and optic nerve head damage with associated visual field loss.

MATERIALS AND METHODS: A prospective cross-sectional study was conducted on 170 patients aged ≥ 40 years attending ophthalmology outpatient department at a tertiary care hospital from 06.03.2022 to 12.03.2022. All patients underwent a comprehensive eye examination including brief history, anterior and posterior segment evaluation, IOP measurement. Perimetry, gonioscopy, pachymetry was done. OCT RNFL was done for glaucoma diagnosed patients.

RESULTS: Glaucoma cases were diagnosed in 6 individuals among the total 170 study participants. In this study, prevalence of glaucoma was found to be 3.52%.

CONCLUSION: People aged ≥ 40 years should be educated about the disease and its visual impact. Routine glaucoma screening should be emphasized in aged individuals for early diagnosis, prompt initiation of treatment and prevention of visual morbidity.

INTRODUCTION:

Glaucoma is a chronic progressive optic neuropathy characterized by retinal ganglion cell death and optic nerve head damage with associated visual field loss. Glaucoma is the second leading cause of irreversible blindness worldwide after cataract[1]. 80 million people have glaucoma worldwide, this number is expected to increase to over 111 million by 2040. Current estimates of the number of persons who are blind worldwide because of primary glaucoma is 8.4 million. In India, around 12 million people are affected and nearly 1.2 million people are blind due to glaucoma.

Glaucoma is broadly classified as Ocular hypertension, Normotension glaucoma, Primary open angle glaucoma, Primary angle closure glaucoma, secondary glaucoma and congenital glaucoma. Glaucoma is associated with risk factors such as advanced age, myopia, diabetes mellitus, hypertension, black population (4.2%), elevated IOP levels, positive family history of glaucoma, prolonged usage of topical corticosteroids.

Because of the silent nature and lack of awareness about the disease, individuals with the disease are diagnosed in late stages leading to blindness. Many activities are proposed under Vision 2020 and other initiatives to strengthen advocacy and public awareness. Community based screening with an effective, reliable and affordable test shall be considered for identifying patients with glaucoma and initiating early treatment. The present study was conducted in patients aged more than 40 years who attended outpatient department of ophthalmology in our college.

MATERIALS AND METHODS:

This study was a prospective cross-sectional study conducted on 170 patients aged ≥ 40 years attending ophthalmology outpatient department at a tertiary care hospital in kilpauk, chennai. The study was conducted from 06.03.2022 to 12.03.2022 during which 170 patients who gave consent and fulfilled the study criteria were included in the study.

Inclusion Criteria:

Patients aged more than 40 years of both sexes who gave consent.

Exclusion Criteria:

Patients aged less than 40 years, Patients already diagnosed with glaucoma, Patients not willing for study.

Methodology:

Information pertinent to the study such as history of symptoms like pain, redness, watering of eyes, colored halos; any comorbidities like diabetes mellitus, hypertension; family history of glaucoma; treatment history were documented. After informed consent was obtained, participants underwent a comprehensive eye examination including visual acuity measurement, refraction, slit lamp examination. The diagnosis of cases were based on IOP measurement by applanation tonometry, gonioscopy using goldmann three mirror lens, perimetry using Humphrey field analyser and disc changes by direct, indirect ophthalmoscopy and slit lamp biomicroscopy with 90D lens. Central corneal thickness was measured using ultrasound pachymetry. OCT RNFL was done for glaucoma diagnosed patients.

POAG was diagnosed by the presence of glaucomatous cupping, visual field defects, optic disc damage and open angle on gonioscopy with increased IOP. If IOP is within normal limits, it was termed as normal tension glaucoma. PACG was diagnosed by presence of closed angles on gonioscopy with damage to anterior segment structure, raised IOP, glaucomatous optic neuropathy and corresponding visual field defects. If there is an identifiable underlying cause for raised IOP, it was diagnosed as secondary glaucoma.

RESULTS:

In this study, a total of 170 participants were included. 6 glaucoma cases were diagnosed. The prevalence was found to be 3.52%.

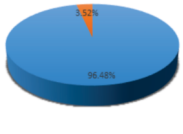

Figure 1: Number Of Study Participants And Glaucoma Cases Detected

In this study, 66 males and 104 females participated. 2 males (3%) and 4 females (3.8%) were detected with glaucoma. This implies female predominance.

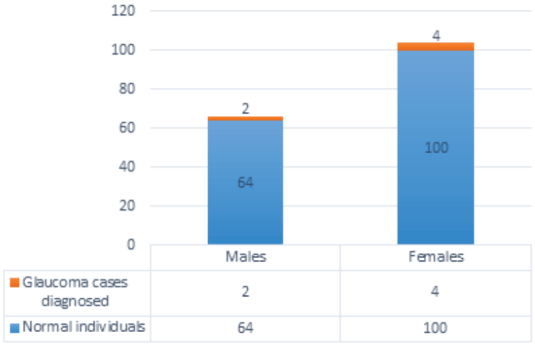

Figure 2: Gender distribution of total participants and cases detected.

Out of 170 participants, maximum number of screened individual belonged to 40-49 age group. Glaucoma was diagnosed maximum number in age group more than 60 years (6.1%). Various studies had shown that risk of glaucoma increased with advancing age.

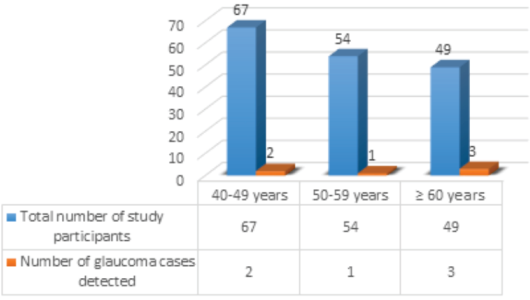

Figure 3: Age distribution of study participants and glaucoma cases detected

In this study, 2 cases were of Primary open angle glaucoma, 2 cases of primary angle closure glaucoma, 1 case of normal tension glaucoma, 1 case of secondary glaucoma (phacomorphic glaucoma).

Table 1: Distribution of various types of glaucoma

TYPE OF GLAUCOMA	MALE	FEMALE
Primary open angle glaucoma	1	1
Primary angle closure glaucoma	-	2
Normal tension glaucoma	-	1
Secondary glaucoma	1	-

Table 2: Hypertension and Diabetes mellitus in study participants and glaucoma cases

COMORBIDITIES	NUMBER OF STUDY PARTICIPANTS	NO OF GLAUCOMA CASES DETECTED
Hypertension	112	5 (4.5%)
Diabetes Mellitus	87	3 (3.4%)
Both Hypertension And Diabetes Mellitus	68	3 (4.4%)
No Comorbidity	39	1 (2.6%)

More number of glaucoma cases were detected in hypertensive individuals (4.5%). Out of the 6 diagnosed glaucoma cases, none of them had positive family history of glaucoma. On comparison of the refractive status of their eyes, 3 of them were myopic, 2 were hyperopic and 1 was emmetropic. Among the diagnosed patients, 2 were asymptomatic, 3 patients presented with eye pain and watering, 4 patients had history of headache, 1 patient had complaints of defective vision.

The central corneal thickness measured using ultrasonic pachymetry was found to be low in patients diagnosed with primary open angle glaucoma and secondary glaucoma.

Table 3: Central corneal thickness of the diagnosed glaucoma cases

TYPE OF GLAUCOMA	NUMBER OF CASES	CENTRAL CORNEAL THICKNESS (microns)
Primary open angle glaucoma	2	486, 492
Primary angle closure glaucoma	2	536, 514
Normal tension glaucoma	1	524
Secondary glaucoma	1	465

IOP was increased in 5 diagnosed glaucoma patients. Arcuate scotoma was detected in a patient with POAG by perimetry. OCT RNFL thickness was reduced in two patients.

DISCUSSION:

In our study, we observed an overall prevalence of 3.52%. The various type of glaucoma, with POAG, PACG and NTG was found in 1.2%, 1.2% and 0.5% of the study population respectively. The prevalence of glaucoma from previous studies has varied results ranging from 2.3-4.7% in India.[2,3] A meta-analysis estimated the global prevalence of glaucoma as 3.54%.[4] Among the subtypes, in India the POAG is a predominant subtype, with prevalence of 1.26%- 4.32%[5]. We observed an equal distribution of POAG and PACG in our study.

The present study showed that the prevalence of glaucoma is higher in women. This is consistent with the Dalby Sweden study[6] which showed higher incidence in women. In our study, more number of glaucoma cases were diagnosed in persons aged ≥60 years (6.1%). A similar age related trend was shown in Barbados incidence eye study.[7] We diagnosed a case of angle closure glaucoma and open angle glaucoma in the age group of 40-49 years (2.9%). In this study, 2 were asymptomatic, 3 patients presented with eye pain and watering, 4 patients had history of headache, 1 patient had complaints of defective vision. On comparing the refractive status of their eyes, 3 of them were myopic and 2 were hyperopic.

IOP was increased in 5 patients diagnosed with baseline IOP as 21mmHg. Previous prevalence studies revealed 25% to 75% POAG with IOP more than 21 mmHg.[8] In our study, CDR was increased in all patients diagnosed with POAG and NTG. The prevalence study in the Baltimore Eye Survey[9] also reported larger cups and discs which had a higher prevalence of POAG. Gonioscopy as per modified Shaffer grading revealed grade III to IV in all 4 quadrants in open angle glaucoma, normal tension and secondary glaucoma. Both the cases of angle closure angle were graded I to II in all 4 quadrants. Arcuate scotoma was detected in a patient with POAG by perimetry.

Although family history is a documented risk factor for glaucoma, our study did not support this finding[10]. Among 6 diagnosed patients, none had positive family history of glaucoma. Prevalence of glaucoma was higher among prior hypertensive patients 4.5% compared to non- hypertensive patients 1.7%. Hypertension has been shown to be associated with glaucoma in several studies.[11] The prevalence of glaucoma among diabetics and non- diabetics were 3.4% and 3.6% respectively. There is no convincing relation found between diabetes and glaucoma in many previous studies.[6]

In our study, we found that central corneal thickness was reduced in all cases of open angle glaucoma and also in secondary glaucoma. OCT RNFL thickness was found to be reduced in a case of open angle glaucoma and a case of normal tension glaucoma. Peripheral iridotomy was done for

PACG patients. This study has some limitations which include short duration of study and small number of participants.

CONCLUSION:

In conclusion, this study has provided information on prevalence of glaucoma consistent with the previous studies. It follows the age related trend of more glaucoma cases being diagnosed with advancing age. Findings suggest that individuals aged ≥ 40 years and hypertensive patients should be screened by ophthalmologists for early diagnosis of glaucoma and prompt initiation of treatment, thus preventing visual morbidity.

Declaration Of Interest:

There is no conflicts of interest.

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