CAMP-BASED SCREENING OF PRIMARY OPEN ANGLE GLAUCOMA IN A RURAL VILLAGE OF SOUTH ORISSA

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ABSTRACT

BACKGROUND

Glaucoma is the second most common cause of blindness worldwide and is responsible for 10% of blindness worldwide. Primary open angle glaucoma being more common than primary angle closure glaucoma.

MATERIALS AND METHODS

All patients underwent a comprehensive eye examination in our hospital which included slit-lamp biomicroscopy (stereoscopic examination of fundus and cup disc ratio by 78 diopter lens), visual acuity (illiterate E chart), IOP measurement by schiotz tonometry, gonioscopy using single mirror Goldmann contact lens ,dilated fundus examination, and perimetry in select cases using Humphrey 650 visual field analyser.

RESULTS

12 out of the 150 individuals (8%) screened were found to have POAG out of which 5 were females (7.7%) and 7 males (8.2%). All 12 patients were called for follow-up and perimetry was done which was found to be significant. IOP values were found to be at a higher range as age increased. No correlation was found between prevalence of POAG and sex. The correlation of visual acuity could not be commented due to lenticular opacities.

CONCLUSION

This screening helped to diagnose POAG in rural population. Furthermore, it is simple and non-expensive way to screen and create awareness.

KEYWORDS

POAG, IOP, VA, CD Ratio, Fundus Examination, Gonioscopy, Humphrey Perimeter.

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BACKGROUND

As India is the second most populated housing more than 1 billion people, the impact of visual impairment from glaucoma is a bane. An estimated population of 11.2 million are affected. Region, race and ethnicity plays a significant role in variation in visual loss in these groups. Glaucoma has typically no early warning signs or painful symptoms of open angle glaucoma. It manifests gradually over time without noticeable vision loss. POAG is defined as a chronic progressive optic Neuropathy associated with increased IOP and visual field defects and is comparatively more common than primary angle closure glaucoma affecting around 1% of population more than 40 years of age.[1] It is also known as the silent thief of sight as it gradually steals eyesight hence by early detection, diagnosis and treatment we can help in preserving eyesight. By the time the person is aware of sight loss the disease has already advanced. Pathogenesis of glaucomatous optic neuropathy is mainly caused due to two factors ie raised IOP (mechanical theory) causes mechanical stretch on lamina cribrosa resulting in axonal deformation and ischemia by changing capillary blood flow and pressure independent factors(vascular insufficiency theory) i.e., failure of auto regulatory mechanism of blood flow, vaso spasm affecting vascular perfusion of optic nerve head and systemic hypertension.[2] Factors such as people who have family history of glaucoma, over 40 years of age, people with abnormally high intraocular pressure (IOP), people suffering from diabetes, extremely low/high blood pressure, and myopia are various risk factors. Common diagnostic tools which help in determining the presence of glaucoma are the pachymeter, gonioscopy, ophthalmoscopy, visual field test and the tonometer. Early treatment by medical and surgical intervention is essential.

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Aims and Objectives

To evaluate the prevalence of primary open angle glaucoma in a rural village of south Orissa by camp screening (reach in camps).

MATERIALS AND METHODS

A cross-sectional study was conducted in a rural village of south Orissa from March 2016 to April 2017. 150 adults aged 40 yrs. and above which included 85 males and 65 females were randomly selected. They were asked to attend our hospital for clinical examination and relevant investigation. Before asking for workout we took informed consent individually and for elderly patients from there caretakers. The study was explained in detail to all participants in details and informed verbal consent was taken. As majority of them were illiterate such measure was taken.

Inclusion Criteria

All Individuals above 40 years were included. All camp patients having cataract were included. Previous history of trabeculectomy and family history of POAG were included. Patients with diabetes and hypertension were also included.

Exclusion Criteria

Less than 40 years excluded and having other ocular co-morbidity excluded. Secondary glaucoma and primary angle closure glaucoma excluded.

All patients were subjected to visual acuity tests using illiterate E logarithm chart, retinoscopic refraction tests and best possible correction given, automated full threshold visual fields for selected patients using Humphrey visual field analyser, evaluation of pupillary response, external and anterior segment examination by slit lamp bi-microscope, measurement of IOP with Schiotz tonometer, and gonioscopy using a single mirror Goldmann contact lens. After pupillary dilatation stereoscopic examination of vitreous, retina, optic nerve was done by slit lamp biomicroscopy with 78 diopter lens. The angle was graded using Shaffer system of classification. Condition such as pseudoexfoliation deposits on the corneal endothelium, iris and along its margins were tested for under high magnification slitlamp. We also ruled out variation in angle, hyperpigmentation, and pseudoexfoliation deposits. We used tropicamide 1% and phenylephrine 10% to dilate the patients eye having open angles. On fundoscopy we looked for vertical and horizontal cup to disc ratios, asymmetry of disc, notching, bayoneting, disc haemorrhages, nerve fibre layer defects, peripapillary atrophy, atrophy of disc, neuroretinal rim. Evaluation of family history of POAG and diabetes were undertaken. Diabetes as an inclusion criteria was taken in cases having postprandial blood sugar more than 180 mg/dl and taking antidiabetic medication. Patients having systemic hypertension measuring systolic blood pressure more than 160 mm mercury and diastolic blood pressure measuring more than 90 mm mercury and on anti-hypertensive medications were taken as hypertensives.

The diagnosis of suspected glaucoma was made on the following criteria

- IOP>21 mm of Hg.
- Optic disc changes- C: D ratio > 0.4 especially in vertical axis.
- Asymmetry of C: D ratio of >0.2 between two eyes.

RESULTS

Results were significant in 12 out of 150 subjects.

Sl. No.	Age	Sex	V/A(R/L)		IOP (R/L)		C:D ratio		Diff. of C:D in Two Eyes >0.2
1.	72	M	6/60	6/36	30.4	23.8	0.6	0.5	-
2.	68	M	6/36	6/36	33.0	23.8	0.8	0.5	yes
3.	82	M	cf1mt	PL+	31.8	37.2	0.6	0.9	yes
4.	54	M	6/24	6/18	25.8	23.8	0.5	0.4	-
5.	49	M	6/9	6/9	25.8	21.9	0.5	0.5	-
6.	74	M	6/60	Cf 4mt	30.4	34.4	0.6	0.8	yes
7.	76	M	6/60	6/60	25.8	28.0	0.4	0.7	yes
8.	56	F	6/24	6/18	23.8	23.8	0.7	0.4	yes
9.	47	F	6/12	6/9	23.8	21.9	0.6	0.4	-
10	88	F	cfcr	PL+	31.8	37.2	0.5	0.8	yes
11	77	F	cf3mt	6/60	31.8	25.8	0.6	0.6	-
12	69	F	6/36	6/24	23.8	23.8	0.7	0.5	yes

Observation

The median age of the observed patients with glaucoma was 67.7 years (approx. 68 years).Out of the 12 cases 4 presented with poor vision i.e. 33.3%. Out of the 150 cases for about 7 cases visual acuity tests could not be performed due to extreme poor vision and hazy media. Out of the 12 cases 6/60 VA was found in 4 cases i.e. 33.3% and hence were blinded by POAG in both or one eye accordingly. 6/60 VA was observed in patients aged over 70 years i.e. (72,74,76,77), thus showing an increasing trend of POAG with increasing age. Out of the 12 subjects 5 subjects with visual acuity 6/24 or better were called for visual field test which 2 showed glaucomatous field defects of which 3 were normal. 4 patients were known diabetics out of the 12 cases with postprandial blood sugar more than 180 mg/dl. Out of the 12 subjects 2 gave a significant family history of POAG and Of the 12 subjects 1 gave a significant history of previous trabeculectomy done

Interpretation

After screening a small sample of 150 subjects 9 subjects were diagnosed POAG based on the criteria's (6%).

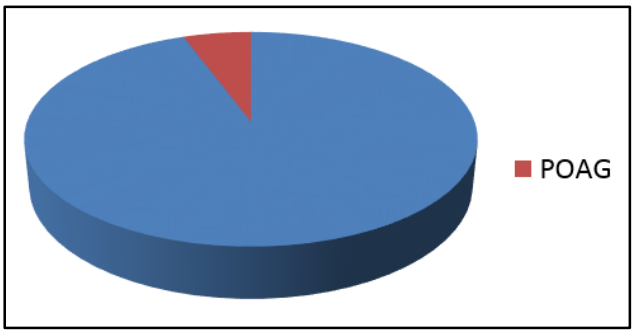

Figure 1

As age increases prevalence of POAG increases.

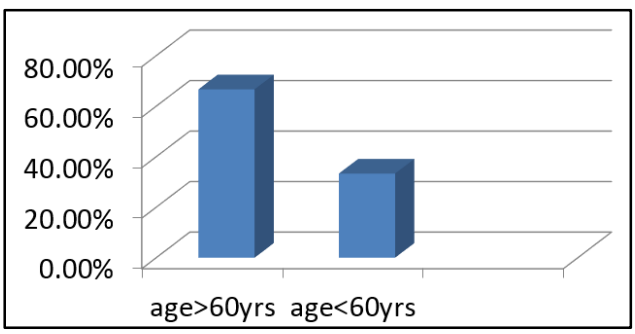

Figure 2

No correlation was found between sex and prevalence of POAG.

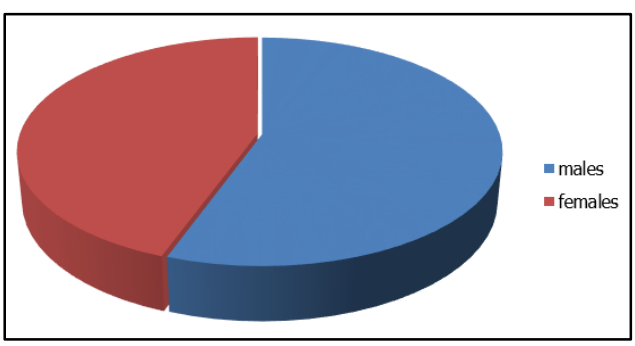

Figure 3

Due to growing awareness of eye diseases as shown in media campaigns more people are attending the village eye health camps and getting diagnosed as compared to previous studies. As we are reaching the unreached in villages the elderly population is easily accessed and hence detection and diagnosis is possible early. In our study the diagnosed POAG cases were later on subjected to medical and surgical intervention. If it hadn't been detected earlier, patients would have led to blindness.

DISCUSSION

In India there is limited data available on the prevalence of glaucoma and possible risk factors. In the Aravind comprehensive eye survey.[3] They found prevalence of POAG in rural population 1.2% and they showed male preponderance but significant gender difference was not present but there was association of increased POAG with increased age and no relationship with diabetes or hypertension was noted. The IOP, Glaucoma relationship has been reported in both Baltimore eye survey.[4] and Blue Mountain eye study.[5] The association between diabetes and POAG is controversial but Baltimore eye survey.[4] suggested that diabetes and POAG are non-related but Blue Mountain study.[4] suggested its relationship. The Chennai Glaucoma study.[6] noted the prevalence of POAG in their urban population as 3.51% which was more than twice than that of rural population ie 1.62% and also there was increase in POAG with increasing age and found no association with gender, diabetes, hypertension, myopia or genetics. In Andhra Pradesh eye diseases study.[7] there prevalence of POAG in urban population is 2.56% and in Vellore eye survey.[8] there prevalence rate was 0.41%. This variation could be due to inclusion of different age groups in their studies. In L. Vijaya et al study.[9] their prevalence of POAG in rural population was 1.62% and they observed increase of POAG with increasing age and no association was found with diabetes, systemic hypertension, gender or myopia. Hence results from several studies have shown that the prevalence of POAG increases with age.[3,6,7,9,10] which is similar to our study. Some studies have shown higher prevalence of POAG in men.[3,10,11] but other studies have not. The Blue Mountain eye study.[5] have reported female preponderance. Some studies have shown diabetes as risk factor for POAG.[5,12] The Baltimore Eye survey has shown no relation between diabetes and POAG.[4] Some studies have shown association between systemic hypertension and POAG.[13,14] AS in previous studies.[3,6,9] we also found no relationship of POAG with diabetes, systemic hypertension, Gender or family history. In our study we found IOP was an important risk factor and elderly population were more at risk for suffering from POAG. In our study we found the prevalence of POAG in rural population in southern Odisha in camp based scenario as 6% and also evaluated associated risk factors. The high prevalence of POAG might explain the fact that people are more aware and want to seek the medical help if it is available in reach in camps in villages due to accessibility. The reported prevalence of POAG among adult black population ranges from 4.2% to 8.82%.[11,15] and prevalence in white population ranges from 1.1 to 3%.[5,10,16,17,18] According to a recent publication the number of people more than 40 years with POAG in India would be 18.6% of the world open angle glaucoma which is alarming and hence the elderly population has to be addressed.

CONCLUSION

This camp-based screening was exclusively done to detect the undiagnosed cases of POAG in rural population. Illiteracy being a major factor for being undiagnosed in some cases. If people were more literate many more cases would have been diagnosed. This was found to be a simple and non-expensive way of screening and creating awareness among rural population. During the screening it was found that POAG prevalence increased as age increased. There was no sex correlation with POAG as we found in our study. Further rural based camps screening studies relating to POAG is required for comparison and prevalence in relation to

community. Thus concluding our study we would like to bring to light the fact that increasing age and higher IOP played a significant role in POAG. Hence with regular eye reach in camps in villages should be done for the early detection and timely treatment one can preserve vision.

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