

Prevalence of glaucoma in rural India

Rakesh Shori^{1*}, G. Laxmi Prasad², Chaaya Shori³, Asha Latha A⁴

^{1,3}Associate Professor, ⁴Assistant Professor, Lt. BRKM Govt. Medical College, Jagdalpur, ²Assistant Professor, ESIC Medical College, Hyderabad

***Corresponding Author:**

Email: mahi92003@gmail.com

Abstract

Glaucoma is a group of disorders characterized by chronic progressive optic neuropathy resulting in irreversible visual loss. It is a second leading cause of blindness worldwide while it is third leading cause of blindness in India. The present study was carried out to study the prevalence of different types of glaucoma in rural population. In all cases, detailed clinical history and family history was taken. A thorough ophthalmic examination was carried out which includes visual acuity with snellen's chart, slit lamp examination, optic disc evaluation by slit lamp biomicroscopy and direct ophthalmoscopy, angle evaluation by gonioscopy, intraocular pressure (IOP) recording by Applanation tonometry, visual field analysis by Humphrey visual field analyser(24-2) and general medical examination. A total of 17792 patients were examined of which 133 (0.74%) of various type of glaucoma were diagnosed. It was noted that overall prevalence of primary open angle glaucoma was 0.26%, 0.06% for normal tension glaucoma, 0.06% for angle closure glaucoma and 0.03% for juvenile glaucoma. The prevalence of common type of secondary glaucoma was 0.15% for lens induced glaucoma, 0.06% for traumatic and 0.05% for aphakic glaucoma. We concluded that primary open angle glaucoma was more common with maximum number of cases in the age group of 56-75 years, average age being 61 years. High prevalence rate of glaucoma was due to poor health education, low socioeconomic status and inaccessibility of ophthalmologists specifically in rural and tribal areas.

Keywords: Glaucoma, Prevalence, Rural India.

Introduction

Glaucoma is a group of disorders characterized by chronic progressive optic neuropathy resulting in irreversible visual loss. Glaucoma is a second leading cause of blindness worldwide and third leading cause of blindness in India. The number of people suffering with glaucoma in the year 2013 was estimated to be 64.3 million worldwide. This was expected to increase up to 76 million in 2020 and 111.8 million in 2040. According to Glaucoma Society of India, the prevalence of glaucoma in India is between 2% to 13%. Glaucoma is estimated to affect 12 million Indians and causes 12.8% of the blindness in the country.⁽¹⁾

Material and Method

The present prospective clinical study was carried in Department of Ophthalmology BRKM Medical College, Jagdalpur from January 2015 to January 2016 after obtaining permission from Institutional Ethics Committee. A total of 17792 patients were examined. Out of which 133 cases were diagnosed with various types of glaucoma. In all cases, detailed clinical history and family history was taken. After obtaining consent, a thorough ophthalmic examination is carried out which includes visual acuity, slit lamp examination, optic disc evaluation by slit lamp biomicroscopy and direct ophthalmoscopy, angle evaluation by gonioscopy (Goldmann indirect gonioscope). IOP recording by applanation tonometry and visual field analysis by Humphrey Visual Field Analysis(24-2) and general medical examination. Ocular history was taken in detail about the onset and duration, progression of disease,

history about various symptoms such as diminution of vision, frequent change of presbyopic glasses, headache, coloured haloes, pain, watering and redness was taken. Family history was also taken because family history of glaucoma carries 15 to 20 fold increased risk of developing the disease.

Results

Out of 17792 patients examined, 133 (0.74%) patients with various types of glaucoma were diagnosed. On further analysis, it was noted that overall prevalence of primary open angle glaucoma (POAG) was 0.26% and 0.06% for normal tension glaucoma (NTG) and 0.06% for angle closure glaucoma (PACG). The prevalence of Juvenile glaucoma was 0.03%. In secondary glaucomas prevalence for lens induced glaucoma was 0.15%, 0.06% for traumatic glaucoma and 0.05% for aphakic glaucoma(Table 1).

Table 1: Types of glaucoma detected in patients

Types of glaucoma	Sex		Total	Percentage
	M	F		
Open Angle Glaucoma				
POAG	31	15	46	34.59%
NTG	4	7	11	8.27%
Angle Closure Glaucoma	6	5	11	8.27%
Juvenile Glaucoma	6	1	7	5.26%
Secondary Open Angle				

Glaucoma				
Steroid induced	2	1	3	2.26%
Traumatic	9	2	11	8.27%
LIG	11	16	27	20.30%
Inflammatory	0	3	3	2.26%
Aphakic	4	5	9	6.77%
Pseudophakic	2	1	3	2.26%
Secondary Angle Closure Glaucoma				
Neovascular	1	0	1	0.75%
Mixed mechanism glaucoma	1	0	1	0.75%
Total	77	56	133	100.00%

The prevalence of various types of glaucoma observed in our study is depicted in Fig. 1.

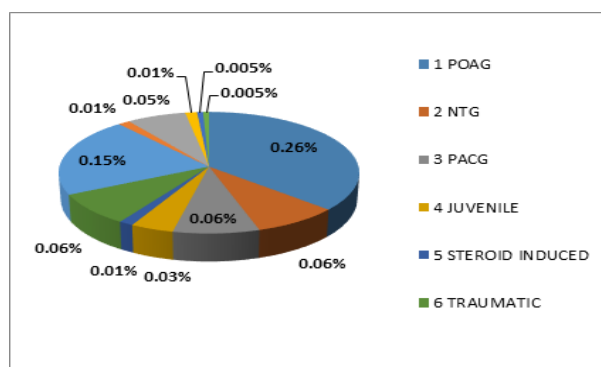


Fig. 1: Prevalence of various types of Glaucoma

In this study, total 34.5% cases were diagnosed as POAG. Out of which, 67.3% are males while 32.6% were females. In the present study, NTG was observed 8.2% and 8.2% cases were diagnosed as PACG, out of which 54% were men and 45.5% were females. We also found that cases of lens induced glaucoma (LIG) was found to be 20.3% and juvenile glaucoma was 0.03%.

Discussion

In the present study, 133 (0.747%) patients with various types of glaucoma were diagnosed. We found that overall prevalence of primary open angle glaucoma (POAG) was 0.26% and 0.06% for normal tension glaucoma (NTG) and 0.06% for angle closure glaucoma (PACG). The prevalence of Juvenile glaucoma was 0.03%. In secondary glaucoma, prevalence for lens induced glaucoma was 0.15%, 0.06% for traumatic glaucoma and 0.05% for aphakic glaucoma. Shiose Y et al⁽²⁾ examined 8126 cases aged over 40 years and noted that overall prevalence of POAG 0.58%, lens induced glaucoma 2.04%, ocular hypertension 1.37% and other type of glaucoma 0.6%. Very high prevalence of lens induced glaucoma in Japanese reflects a racial peculiarity.

As per Shiose Y et al,⁽²⁾ POAG was more common in females 65.9% as compared to males 34%. This difference may be due to less attendance of female population seeking medical advice in the tribal and rural settings. In the present study NTG is observed 8.2% while Shiose Y et al⁽²⁾ mentioned it 41.3%. This high incidence in Japanese reflects a racial peculiarity. In our study, 8.2% cases were diagnosed as PACG which is nearly identical to the study of Luntz MH⁽³⁾ who found sex incidence of 68.3% in females and 31.6% in white males and 57.1% in males and 42.8% in females in negro race. Cases of lens induced glaucoma (LIG) was found to be 20.3% in our study. David Loluf⁽⁴⁾ studied 68 cases of age between 10 to 35 years and found that 25 cases were classified as juvenile ocular hypertension and 43 as POAG. Teikari JM⁽⁵⁾ et al examined 31981 persons from general population and found that 67% were of POAG and 33% are of secondary glaucoma. Prevalence of POAG was 1.43%. In the present study the prevalence of juvenile glaucoma was 0.03% while it was 0.05% as per Bengtsson BO.⁽⁶⁾ This difference may be due to the fact that our patients reported very late to the ophthalmologists.

In the present study, the prevalence of POAG was found to be 0.26% which was lower as compared to other studies such as Shiose Y et al⁽²⁾ (0.58%), Mitchell P⁽⁷⁾ (3%), M. Christina Leske et al,⁽⁸⁾ Tielsch MJ⁽⁹⁾ (0.42%) and Thomas R et al⁽¹⁰⁾ (0.41%). The lower incidence rate can be explained by the lower number of total cases studied. As in rural population, patients do not come for routine eye check up. So that it is no wonder that glaucoma is detected in advanced stage with significant vision loss and poor prognosis.

Conclusion

The present study showed the prevalence of various type of glaucoma as 0.26% for POAG which was more common among all primary glaucomas. The maximum number of cases were in age group of 55-75 years (78.2%) average age being 61 years. Lens induced glaucoma was found most common among all secondary glaucomas and its prevalence being 0.15%. Lens induced glaucoma seems to be very common in rural India.

References

1. Glaucoma Society of India. <http://www.glaucomaindia.com/>.
2. Shiose Y, Kitazawa Y, Tsukahara S, Akamatsu T, Mizokami K, Futa R, et al. Epidemiology of glaucoma: A nationwide glaucoma survey. *Jpn J Ophthalmol* 1991;35(2):135-155.
3. Luntz MH. Primary angle closure glaucoma in urbanized South Africa Caucasoid and Negroid communities. *British J Ophthalmology* 1973;57:445.
4. D Lotufo, Robert R Ritch, L Szmyd, James F Burriss. Juvenile glaucoma race and refraction. *JAMA* 1989;261:249-52.

5. Teikari JM, O'Donnell J. Epidemiologic data on adult glaucomas. Data from the Hospital Discharge Registry and the Registry of Right to Free Medication. *Asian J Ophthalmology* 1989;67(2):184-191.
6. Bengtsson BO. The prevalence of glaucoma. *British J Ophthalmology* 1981;65:46-49.
7. Mitchell P, Smith W, Attebo K, Healey PR. Prevalence of open angle glaucoma in Australia. *Ophthalmology* 1996;103(10):1661-9.
8. M Cristina Leske. Primary open angle glaucoma: Magnitude of the problem in United States. *J of Glaucoma* 1991;1(1):64-8.
9. Tielsch MJ. The epidemiology and control of open angle glaucoma: A population based perspective. *Annual Rev Public Health* 1996;17:121-36.
10. Thomas Ravi, Paul Padma, Muliylil Jayaprakash. Glaucoma in India. *Journal of Glaucoma* 2003;12:81-7.