



A HOSPITAL BASED STUDY ON CLINICAL AND EPIDEMIOLOGICAL PROFILE OF ADULT PATIENTS WITH GLAUCOMA ATTENDED AT TERTIARY EYE CARE CENTRE IN SOUTHERN RAJASTHAN.

Ophthalmology

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ABSTRACT

Objective: To evaluate the prevalence and clinical-epidemiological profile of patients with glaucoma from January 2019 to December 2019.

Methods: A prospective and hospital based time bound study was carried out on all Glaucoma suspects patients >40yrs of age presenting to Alakh Nayan Mandir Institute Of Ophthalmology and who were willing to give informed consent for participation in the study.

Results: We observed the prevalence of glaucoma in our study is 2.85%. Regarding gender, the majority corresponded to men (57.73% n=482) and 42.27% (n=353) were women. Primary open angle glaucoma demonstrated a higher prevalence. The age group demonstrated the predominance over 60 years, 66.47% (n=555). We found IOP, Diabetes, hypertension were significant associated risk factors. Positive family history were found in 8.14% (n=68). **Conclusion:** Primary glaucomas were the most prevalent type of glaucoma in our study. Age and raised IOP were the established risk factors. In spite of easy availability of ophthalmic services still many people are blind due to lack of awareness about significance of early diagnosis of glaucoma and its management. There is great need to impart health education to public about importance of regular eye evaluation above age of 40 years for better visual outcome.

KEYWORDS

Glaucoma; POAG; PACG; IOP; Diabetes Mellitus; Hypertension.

INTRODUCTION:

Glaucoma can be defined as a chronic multifactorial optic neuropathy with a characteristic accelerated degeneration of retinal ganglion cells presenting as classical optic nerve head features and correlating visual field changes, which may or may not be associated with angle abnormality in the presence or absence of any cause for the disease.^{1,3}

Glaucoma is the second leading cause of blindness worldwide, with preponderance in females, blacks and Asians.^{4,7} Glaucoma afflicts almost 67 million people worldwide of which 10% or 6.6 million are blind. Glaucoma remains the leading cause of irreversible blindness worldwide responsible for 14 % of blindness after Cataract and Trachoma.⁸ The regional burden of blindness (RBB) is the highest for India (23.5% of global blindness), with at least 5.8 million blind due to glaucoma.

This prospective and hospital based study, which was done on the rural, semiurban and urban population of Udaipur district of Rajasthan. The aim of the study was to determine and investigate prevalence and the clinical profile of glaucoma in Southern Rajasthan. It also aims to help in the screening and early detection of the disease. Another motive behind this study was to find out the demographic distribution of the glaucoma and to make observations that reflect the pattern of glaucoma in Southern Rajasthan and provide useful background information with the objective of helping clinicians in better management of glaucoma in this region.

METHODS:

This prospective, hospital based time bound study was carried out on all Glaucoma suspects patients >40yrs of age presenting to Alakh Nayan Mandir Institute Of Ophthalmology and who were willing to give informed consent for participation in the study. An average of 1000 Glaucoma suspects patients were identified during study period of which 165 cases were not willing to participate in study, hence were dropped.

All examinations and diagnostic procedures were done according to a standardized protocol and diagnosis of glaucoma was confirmed by a glaucoma expert.

A diagnosis of glaucoma was made if >2 of the following criteria's were met -

(i) IOP >21 mm of Hg in either eye, (ii) Disc changes Vertical cup disc ratio (VCDR) >0.7 or a cup disc ratio asymmetry >0.2, presence of

focal thinning or notching of NRR, presence of splinter hemorrhage or RNFL defects, (iii) glaucomatous visual field changes.

In cases where optic disc was not seen and visual field evaluation was not possible, diagnosis of glaucoma was made with best corrected visual acuity <3/60 with IOP >25 mm of Hg or best corrected visual acuity <3/60 and the eye showed an evidence of glaucoma filtering surgery or medical records were available confirming glaucomatous visual morbidity.

The various subtypes of glaucoma was defined using the **International Society Of Geographical and Epidemiological Ophthalmology (ISGEO) classification.**

1. Primary Open Angle Glaucoma: Raised IOP and or glaucomatous disc changes in presence of field defects along with open angle on gonioscopy in absence of any secondary cause.

2. Primary Angle Closure Glaucoma

(i). Angle Closure Suspect: Iridotrabecular contact for at least 180 degree on gonioscopy with normal IOP, optic disc and visual fields.

(ii). Primary Angle Closure: Iridotrabecular contact for atleast 180 degree on gonioscopy with raised IOP and or peripheral anterior synechiae, but with normal optic disc and visual fields.

(iii). Primary Angle Closure Glaucoma: Primary Angle Closure with raised IOP, glaucomatous optic disc changes and visual field changes.

3. Secondary Glaucoma: Diagnostic criteria for glaucoma met in presence of an underlying cause - H/o steroids and other drugs causing raised IOP, trauma, Intra ocular surgery, uveitis, evidence of Pseudoexfoliation, Pigment dispersion syndrome, neovascularisation and those with hypermature and intumescent cataract was grouped under secondary glaucoma.

The data of all the glaucoma patients were analysed and descriptive statistics such as mean, standard deviation and percentage were obtained for study variables considering the measurement scale. These analysis were performed according to diagnostic categories. Excel (Microsoft corporation) and SPSSR (IBM) Software was used for data entry and analysis.

RESULTS:

We observed a prevalence of 2.85% (835/29282) glaucoma in our study. Out of total 835 cases POAG, PACG and Secondary glaucoma were 344(41.20%), 264(31.62%) and 227(27.19%) respectively.

Maximum number of patients 332 (39.76%) were encountered in age group 61-70 yrs in all the three groups, Mean age was almost similar in all the three groups, i.e. 62.44±9.16.

Total 508 (60.84%) patients were from urban population as compared to 327 (39.16%) from rural population. Also cases of POAG were more predominant than PACG and secondary glaucoma in both urban as well as in rural population. 16.77% cases were females and 14.85% were males in the primary angle closure glaucoma group, 25.63% were males and 15.57% were females in the primary open angle glaucoma group and 17.25% were males and 9.94% were females in the secondary glaucoma group.

Primary angle closure glaucoma was found to be more common in females. In the secondary glaucoma group of patients, majority had Lens Induced Glaucoma 71 (31.28%) followed by pseudoexfoliation glaucoma 42 (18.50%), uveitic glaucoma 37 (16.30%), post surgery glaucoma 30 (13.22%), and neovascular glaucoma 11 (4.85%). Lens induced glaucoma was found to be more prevalent in females from rural area. In the LIG group of patients >52% had other eye as pseudophakic or visual acuity better than 6/18. This could probably be because in male dominating society, less attention is paid towards health of women.

Table1: Multiple variable analysis

	PACG	POAG	SEC. GLAUCOMA	
Mean Age	62.44±9.16	62.88±9.87	61.42±9.55	62.34±9.57
Urban	155 (18.56%)	230 (27.54%)	123 (14.73%)	508 (60.84%)
Rural	109 (13.05%)	114 (13.65%)	104 (12.46%)	327 (39.16%)
Male	124 (14.85%)	214 (25.63%)	144 (17.25%)	482 (57.73%)
Female	140 (16.77%)	130 (15.57%)	83 (9.94%)	353 (42.27%)
Family History	21 (2.51%)	33 (3.95%)	14 (1.68%)	68 (8.14%)
Diabetes	26 (3.11%)	60 (7.19%)	20 (2.40%)	106 (12.70%)
HTN	24 (2.87%)	54 (6.47%)	22 (2.63%)	100 (11.98%)
Mean IOP	21.56±6.78	20.54±5.85	26.17±10.79	21.87±8.28
Mean CCT	509.99±28.88	510.09±31.66	510.83±36.81	510.26±32.29

Decreased vision, eye ache and headache were the three major presenting symptoms.

257 (30.77%) cases had best corrected visual acuity less than 6/60 and 22 (2.63%) cases were PL negative at time of presentation. Maximum 12 (1.44%) cases with PL negative vision were found to be in the PACG group followed by 7 (0.84%) in the POAG group then 3 (0.36%) in the secondary glaucoma group.

Family history in first degree relatives was reported in 3.95% cases of Primary Open Angle Glaucoma, 2.51% cases of Primary Angle Closure Glaucoma and 1.68% cases of Secondary Glaucoma. Diabetes and hypertension were found to be significant risk factors.

Mean intraocular pressure (IOP) in patients with the secondary glaucoma group was as high as 26.17±10.79 mm of Hg, in the POAG group was 20.54±5.85 mm of Hg and was 21.56±6.78 mm of Hg in the PACG group. Mean IOP was found to be a statistically significant risk factor.

Mean CCT of PACG group was 509.99±28.88 as compared to the POAG group which was 510.09±31.66 and 510.83±36.81 in the secondary glaucoma group. The differences were statistically non significant.

DISCUSSION:

The prevalence of glaucoma in community and OPD based studies has varied results as prevalence varies by region and race. In a systemic meta-analysis in year 2014 the global prevalence of glaucoma was found to be 3.45%.⁹

It is difficult to compare data from different epidemiological studies due to difference in diagnostic criteria used in them. The more recent

studies have used the ISGEO definitions so that there is uniformity in reporting glaucoma prevalence and comparison is rationale. For Indian population, the prevalence of glaucoma has been previously reported by landmark studies like VES, APEDS, ACES, CGS and West Bengal Glaucoma study.¹⁰⁻¹⁴

The estimated prevalence of glaucoma in our study is 2.85% which is comparable to other studies done by Narula et al¹⁵, which showed a prevalence of 2.65% in people above 40 years of age 36 and the ACES study (age 40+) which reported a prevalence of 2.6%.

In our study POAG group had 41.20% cases while 31.62% cases were encountered in PACG group which was comparable to a study done in North India by Agrawal et al (40.8% Vs 20.7%). In our study, the age range was 44 to 89 years with a mean age of 62.34±9.57 years. Mean age of presentation was 62.48±9.67 years among females and 62.14±9.43 years among males.

As regard to gender, overall male preponderance (57.72% Vs 42.27%) was noted in our study which is comparable to Barbados eye study¹⁶. We had more patients 508 (60.84%) from urban population as compared to 327 (39.16%) rural population. Also cases of POAG were more predominant than PACG and secondary glaucoma in both urban as well as in rural population. Andhra Pradesh Eye Disease Study (2010) concluded that the prevalence of POAG was greater in the urban compared to PACG. Ramkrishnan et al found that prevalence of POAG in rural south India among 40+ populations was estimated as 1.7% in the ACES study.

We observed a mean intraocular pressure (IOP) in patients with secondary glaucoma was as high as 26.17±10.79 mm of Hg, in the POAG group was 20.54±5.85 mm of Hg and 21.56±6.78 mm of Hg in the PACG group. Similar observations were made by Mamta et al¹⁷ where a mean intraocular pressure (IOP) of 13.61±4.17 mm of Hg was among the study population, while 20.24±10.8 mm of Hg among glaucoma patients.

CONCLUSION:

Primary glaucomas were the most prevalent type of glaucomas in our study and commonest amongst them was POAG followed closely by PACG. Age and raised IOP were the established risk factors. IOP, Diabetes Mellitus and Hypertension were found to be statistically significant risk factor in our study.

PACG was seen more common in females whereas POAG and Secondary glaucoma more in males. Urban population had higher prevalence of all types of glaucoma except for Lens Induced Glaucoma which were found to be more prevalent in rural area. In spite of easy availability of ophthalmic services still many people are blind due to lack of awareness about significance of early diagnosis of glaucoma and its management. There is great need to impart health education to public about importance of regular eye evaluation above age of 40 years for better visual outcome.

Government and non governmental organisation have to come forward for training of sight savers and building up health infrastructure to provide an affordable and accessible eye care services. To conclude, early detection and management is the key to decrease the global burden of blindness from preventable cause of glaucoma.

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