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Original research article: A cross sectional study of primary adult glaucoma in an urban population of Rajasthan, India

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Abstract

Background: Glaucoma is a disease that damages your eye's optic nerve. It usually happens when fluid builds up in the front part of your eye. That extra fluid increases the pressure in your eye, damaging the optic nerve.

Objectives: The purpose of this study is to review the epidemiology of different types of glaucoma relevant to discuss the evidence regarding the risk factors for onset and progression of glaucoma, including risk factors for glaucoma blindness.

Methodology: Total 18000 patients of age group 40-70 year attending the eye OPD of pacific institute of medical sciences, Udaipur, Rajasthan, India were screened and treated for glaucoma over a period of 1 year from October 2016 to September 2017.

Results: Total of 245 cases of all types of glaucoma was identified. Out of these 39 were angle closure glaucoma and 206 were open angle glaucoma. Newer cases diagnosed were 122(80 of open angle glaucoma and 42 of angle closure glaucoma). Thus the overall incidence was 6.77 cases per 1000 population. Overall prevalence of glaucoma was 13.61 cases per 1000 population. The overall male to female distribution was 113 male cases to 132 female cases but this figure was skewed towards 28 females to 11 males in case of angle closure. Family history for glaucoma was positive in 70 percent of all cases (171 cases). 3 cases required surgery and 29 cases required laser iridotomy (new and augumentation). 61 percent of the overall patients were diabetics and 25 percent were smokers.

Conclusion: The glaucoma's irreversibility, lacking of glaucoma specialists and patients unawareness demand for an economic and effective glaucoma diagnosis system for screening. Disease control and elimination require an adequately trained functional workforce with an enabling infrastructure and technology. Glaucoma is the second leading cause of blindness in the world accounting for upto 8% of total blindness. In India, glaucoma is the leading cause of irreversible blindness with at least 12 million people affected and nearly 1.2 million people blind from the disease.

Keywords: glaucoma, epidemiology

Introduction

Glaucoma is a chronic progressive optic neuropathy which is characterized by typical optic disc and retinal nerve fiber layer (RNFL) changes with correlating visual field defects wherein intraocular pressure (IOP) is a major risk factor. Glaucoma is the third leading cause of blindness in India. [1] According to NPCB-WHO survey (1986- 89) glaucoma accounts for 5.80% of total blindness in India. Most epidemiological studies in India have concentrated on detection of primary open-angle glaucoma but it has been found that in oriental races including India, primary angle closure glaucoma accounts for nearly 30% of all cases of glaucoma.[2,3]

A look at the number of persons who are blind or heading towards blindness due to glaucoma in 50+ population gives an inkling of the gravity of this problem, as shown on next page. Late diagnosis is the main hindrance in preventing blindness due to glaucoma. Majority of the people, particularly in the rural and remote parts of country, come to know about it when vision in one eye has already been lost and there is significant diminution of vision in the other eye. Therefore, it becomes mandatory that the PMOAs, Medical Officers posted in the PHCs and the ophthalmologists working in district hospitals are able to pick up the patients suffering from glaucoma at early stages by looking at the fundus for optic disc changes, measuring intraocular pressure to find out any elevated levels and by doing visual field charting. Local drug treatment with eye drops should be started only when the diagnosis has been amply confirmed by an ophthalmologist working in the district hospital, better still in a medical college or tertiary level NGO eye hospital. [4,5]

Under-diagnosis of glaucoma is either a result of patients not presenting to their ophthalmologist at all or on time, or ophthalmologists missing the diagnosis. Unfortunately, this issue itself is multifaceted. In many cases, patients do not understand the crucial importance of preventive eye care or are not aware of their own risk for glaucoma. In other cases, some patients do not have access to professional eye care because of insufficient financial resources or no means of transportation.

Materials and Methods

This cross sectional study was conducted at department of

Ophthalmology at Pacific Institute of Medical sciences, Udaipur, Rajasthan, India.
Total 18000 patients of age group 40-70 year attending Eye OPD during above mentioned period and among them number of Glaucoma patients were 245.
Patients were classified into open and closed angle based on gonioscopy utilizing schaffer's grading of angles. Risk factors assessed were family history, smoking, diabetes and hypertension.
Among them cases of open angle glaucoma are 206 and close angle glaucoma is 39 only.

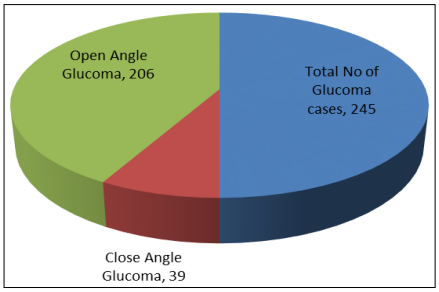
Exclusion criteria: secondary cases of Glaucoma as well as pediatric Glaucoma cases were excluded from our study.

Results

Total of 245 cases of all types of glaucoma were identified.
Out of these 39 were angle closure glaucoma and 206 were open angle glaucoma (Table 1).
Newer cases diagnosed were 122(80 of open angle glaucoma and 42 of angle closure glaucoma). Thus the overall incidence was 6.77 percent per 1000 population.

Table 1: Epidemiological data of Glaucoma

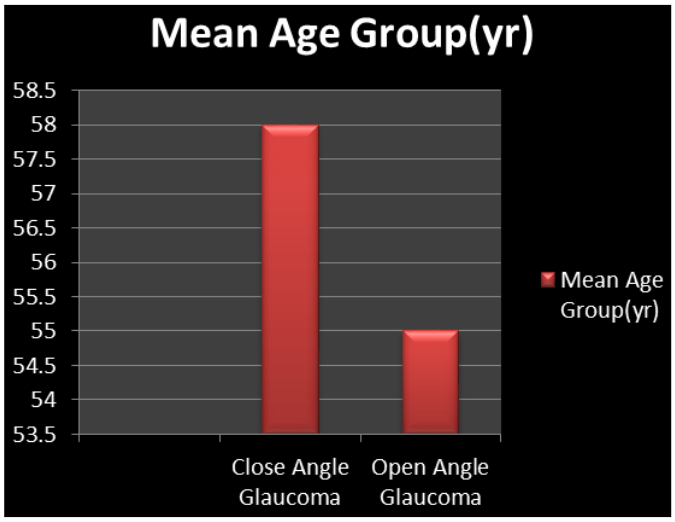
Type of Glaucoma	Number (n)
Total No of Glucoma cases	245
Close Angle Glucoma	39
Open Angle Glucoma	206



Graph 1: Graphical distribution of glaucoma cases

Table 2: Age wise distribution of Glaucoma cases

Type of Glaucoma	Mean Age Group(yr)
Close Angle Glaucoma	58 ±4.5
Open Angle Glaucoma	55 ±3.5



Graph 2: Graphical distribution according to age

Table 2: Sex wise distribution of Glaucoma cases

Sex	Number(n)
Total	245
female	132(54%)
male	113(46%)

Overall prevalence of glaucoma was 13.61 percentage per 1000 population.
The overall male to female distribution was 113 male cases to 132 female cases (Table 2) but this figure was skewed towards female side in case of angle closure-28 females to 11 males in case of angle closure (Figure 4).
Family history for glaucoma was positive in 70 percent of all cases (171 cases). 61 percent of the overall patients were diabetics (n=147) and 25 percent were smokers (n=61)
3 cases required surgery and 29 cases required laser iridotomy (new and augumentation) (Figure 6).

Mean Age of a diagnosed patients was 57, it being on a n average 55 for open angle patients and 58 for closed angle patients. Female patients constituted the larger portion of closed angle patients contributing 30 out of 43 patients nearly 70 percent. (Table 2)

Discussion

Glaucoma affects about 70 million people worldwide, of whom about 10 per cent are believed to be bilaterally blind. It is estimated that by the year 2020, this number would rise to around 79.6 million. Statistics gathered by the World Health Organization (WHO) show that glaucoma is the second leading cause of blindness globally, after cataract. [6] Glaucoma, however, presents greater health challenge than cataract because the blindness it causes is irreversible. India has the third largest number of glaucoma patients, after China and Europe/USA. Glaucoma is the third leading cause of blindness in India, but the alarming thing is that by the time a

patient is detected to be having glaucoma, 90% have lost 50% of their sight In India, it is estimated that glaucoma affects 12 million people accounting for 12.8% of the countries blindness and by 2020; this is expected to be 16 million. Population based studies report a prevalence between 2 to 13 % in India. In India, more than 90 per cent of glaucoma in the community is undiagnosed. Statistics say one in eight persons above the age of 40 years in India is either suffering from glaucoma or is at risk of the disease. Glaucoma can affect any age group, including newborn, infants, children and elderly. [7, 8]

In our study all patients were above 40 years with Mean Age of a diagnosed patients was 57, it being on a n average 55 for open angle patients and 58 for closed angle patients.

More importantly it was observed that more than 90% cases of glaucoma were undiagnosed and identified only at the time of survey (98.6% in the Chennai Glaucoma Study and 93% in ACES). The National Blindness survey 2001 showed that glaucoma is the third major cause of blindness in India and responsible for 5.9% of blindness (VA<6/60) [6]. There has been a more than threefold increase in proportion of glaucoma blindness compared to that found in the previous National survey in 1986-1989. Initiatives to increase public awareness and comprehensive eye examinations by ophthalmologists are the key to reducing or eliminating undiagnosed glaucoma. If all ophthalmologists perform comprehensive eye examinations (that includes basic slit-lamp examination, intraocular pressure (IOP) measurement, pachymetry, gonioscopy and dilated fundus examination), we can definitely minimize under-diagnosis. [9, 10]

Conclusion

The glaucoma's irreversibility, lacking of glaucoma specialists and patients unawareness demand for an economic and effective glaucoma diagnosis system for screening. Disease control and elimination require an adequately trained functional workforce with an enabling infrastructure and technology. Glaucoma is the second leading cause of blindness in the world accounting for upto 8% of total blindness. In India, glaucoma is the leading cause of irreversible blindness with at least 12 million people affected and nearly 1.2 million people blind from the disease.

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