Original Article

Prevalence of Primary Open Angle Glaucoma among the Patients Attending the A Tertiary Care Hospital in Andhra Pradesh: A Cross Sectional Study

PL Sireesha Reddy[1], G Chandrasekhar[2]

Abstract

Background: Of the glaucoma types primary open angle glaucoma is the most common type. People of Asian origin are more likely to have glaucoma when compared to those of African or European origin. In the last *10 to 15 years* many population based studies have been conducted to understand the prevalence of glaucoma in the community. *Aims:* To understand the prevalence of primary open angle glaucoma among the patients attending our tertiary care center and correlation the disc cup ratio with the change in intra-ocular pressure. *Materials and Methods:* A cross sectional study was conducted in the department of ophthalmology in Narayana Medical College and Hospital, Nellore from the period of *2010* to *2012.* Detailed clinical history and evaluation was done for all the patients and noted in the case record form. Intra-ocular pressure was measured by Goldmann Applanation Tonometry. Gonioscopy was done by Goldmann Three-mirror gonioscope. *Statistical Analysis:* All the qualitative data was expressed in percentages and quantative data was expressed in mean and standard deviation. *Results and Conclusions:* The mean age of the sample was *52.15 ± 3.45 years* with male preponderance. The most common symptom was headache and diminished vision in the present study. The prevalence of the primary open angle glaucoma increased as the intra-ocular pressure increased. Disc cupping increased proportionately with increase in intra-ocular pressure, thus establishing progression of glaucoma with rise in IOP.

Keywords: POAG; Field defects; IOP; Disc: Cup ratio.

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Introduction

According to World Health Organisation statistics Glaucoma is the second leading cause of blindness across the world after cataracts.[1] Of the glaucoma types primary open angle glaucoma is the most common type. People of Asian origin are more likely to have glaucoma when compared to those of African or European origin. In the last *10 to 15 years* many population based studies have been conducted to understand the prevalence of glaucoma in the community.[2–6] Some of them specifically mentioned were Vellore Eye Survey, Andhra Pradesh Eye Disease Study, Aravind Comprehensive Eye Survey and Chennei Glaucoma Study.[7] Primary open angle glaucoma occurs which increase in intra-ocular pressure with gradual loss of vision. This in turn makes it hard to diagnose it at an early stage. With this background we conducted a study to understand the prevalence of primary open angle glaucoma among the patients attending our tertiary care

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center and correlation the disc cup ratio with the change in intra-ocular pressure.

Materials and Methods

A cross sectional study was conducted in the department of ophthalmology in Narayana Medical College and Hospital, Nellore from the period of *2010* to *2012*. During the study period, 120 study subjects with primary angle glaucoma were included. Detailed clinical history and evaluation was done for all the patients and noted in the case record form. Intra-ocular pressure was measured by Goldmann Applanation Tonometry. Gonioscopy was done by Goldmann Three-mirror gonioscope. Disc evaluation was done by both direct ophthalmoscopy and slit lamp bio microscopy using 78D and 90D lenses.

Statistical Analysis

All the data was entered in Microsoft Excel and analysed using Epi info version 7.2. All the qualitative data was expressed in percentages and quantative data was expressed in mean and standard deviation.
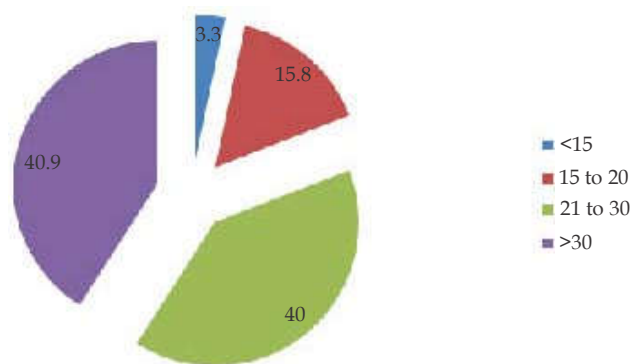
Results

We included 120 study subjects in the present study, (**Table 1**).

Table 1: Demographic characteristics of the sample

Demographic characteristics	Frequency	Percentage
Age group		
< 40	3	2.5
40 to 50	22	18.3
50 to 60	41	34.16
60 to 70	39	32.5
> 70	15	12.5
Gender		
Male	62	51.6
Female	58	48.4

The mean age of the sample was *52.15 ± 3.45 years* with male preponderance,

Table 2: Clinical presentation of the study sample (*n* = 120)

Clinical presentation	Frequency	Percentage
Headache	92	76.67
Diminished vision	85	70.83
Other symptoms	3	2.5

Chart 1: Prevalence of primary open angle glaucoma based on intra-ocular pressure

The most common symptom was headache and diminished vision in the present study, (**Chart 1**).

The prevalence of the primary open angle glaucoma increased as the intra-ocular pressure increased, (**Table 3**).

Table 3: Correlation of disc cupping with IOP

Intra ocular pressure	Cup: disc ratio
< 15	0.4
15 to 20	0.5
21 to 30	0.8
> 30	0.9

Disc cupping increased proportionately with increase in intra-ocular pressure, thus establishing progression of glaucoma with rise in IOP.

Discussion

Glaucoma is one the leading causes of gradual onset blindness across the world. According to a systemic review and meta-analysis done by Kapetanakis VK *et al*.[8] it was estimated that Globally 57.5 million people (95% CI 46.4 to 73.1 million) were affected by POAG in 2015, rising to 65.5 million (95% CI

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52.8, 83.2 million) by 2020. We conducted a study to understand the prevalence of the primary open angle glaucoma in the patients attending department of ophthalmology in a tertiary care hospital in Andhra Pradesh.

We included 120 study subjects with glaucoma and found that the mean age of presentation was *52.15 ± 3.45 years* with male preponderance. Similar findings were reported by Shreekanth B *et al.*,[9] Mahesh Reddy M *et al.*,[10] Tidake, P *et al.*,[11] Agarwal S *et al.*,[12] Raychaudhari A *et al.*,[12] Jacob A *et al.*,[13] and Nangia V *et al.*[14] In Handan Eye study, using the *40-* to *49-year-old* Group As a reference population, the Odds Ratio (OR) increased from 3.4 (95% confidence interval [CI], 1.2–9.8) for the *50-* to *59-year-old* Group to 9.6 (95% CI, 3.2–28.6) for the *70 year* of age and older Group.[15] In a study conducted by Vijaya L *et al.*[16] subjects with POAG were significantly older (*p* < 0.001) than the overall study population (mean age, *59.9 ± 10.4 years* vs *53.8 ± 10.7 years*). The prevalence of POAG increased from 0.63% (95% CI, 0.44–0.83) in the age Group of *40* to *49 years* to 3.64% (95% CI, 1.16–6.12) in the age Group of > *80 years*.

The prevalence of the primary open angle glaucoma increased as the intra-ocular pressure increased. The mean IOP in a study conducted by Shreekanth B *et al.*[9] was 14.79 ± 3.60. Mahesh Reddy M *et al.*[10] studied the diabetic patients in their setup for prevalence of glaucoma and its types. The mean IOP of the patients with primary open angle glaucoma was *28.12 ± 3.99 mm hg*. A study conducted by Liang YB *et al.* among the Chinese adults (Handan Eye Study) revealed that older age, male gender and IOP are main predictors for primary open angle glaucoma. The OR was 1.5 (95% CI, 1.2–1.8) for every *5 mm Hg* of higher IOP.[15] In a study conducted by Vijaya L *et al.*[16] they found significant association between the older age and raised IOP with primary open angle glaucoma.

Disc cupping increased proportionately with increase in intra-ocular pressure, thus establishing progression of glaucoma with rise in IOP. In study conducted by Vijaya L *et al.*[16] The mean CCT in the normal study population was *505.9 ± 31.1* μm. The mean CCT in subjects with POAG (*502.8 ± 35.3 μ*m) was not different from the normal study Group (*p* = 0.43). Subjects with POAG with an IOP > *21 mm Hg* had slightly thicker CCT (*511.1 ± 26.7 μm*) in comparison with subjects with POAG with IOP < *21 mm Hg* (*500.2 ± 37.5μ*m). This difference, however, was not statistically significant (*p* = 0.30). A study conducted by Nangia V *et al.*[14] inferred

that older, higher IOP and vertical cup: Disc ratio was important predictors of primary open angle glaucoma in their study.

Conclusion

The most common age Group was *50* to *60 years* to have primary open angle glaucoma and males were more likely to get it according to our study. Raised IOP had higher prevalence of the primary open angle glaucoma and disc changes are more frequently found with increase in the intra ocular pressure.

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