



A Study on Correlation of Intraocular Pressure with Visual Field Defect in Glaucoma Patients

Sivakumar .N

Associate Professor, Department of Ophthalmology, Tirunelveli Medical College Hospital

Hari Rama Subramaniam.S

Assistant Professor, Department of Ophthalmology, Tirunelveli Medical College Hospital

Heber Anandan

Senior Clinical Scientist, Dr.Agarwal's Eye Hospital

Mohamed Ali J

Clinical Research Associate Dr.Agarwal's Eye Hospital

ABSTRACT

Objective: The aim and objective of the study is to correlate the intraocular pressure and visual field defects in glaucomatous patients and to assess whether patients with raised intraocular pressure have similar type of visual field defects or it varies with individuals.

Materials and methods: This is an Observational, cross-sectional case series study. Patients diagnosed with glaucoma in outpatient department of tertiary care hospital were included in the study. During 2 months of the study, intraocular pressure measurement, visual field test, visual acuity assessment and Optic disc changes were measured.

Conclusion: Raised intraocular pressure was one of the major risk factors leading to visual field defects and complete vision loss in our society. Visual blindness was more common among the glaucoma patients who were not on anti-glaucoma treatment. So awareness about glaucoma and its effects is poor among the people.

KEYWORDS : Glaucoma, Intraocular Pressure, Visual Field Defect, IOP

Introduction:

Glaucoma is a chronic, progressive optic neuropathy caused by a group of ocular conditions which lead to damage of optic nerve with loss of visual function. The most common risk factor is a raised intraocular pressure. Intraocular pressure of 10 to 20 mm Hg is considered to be normal but may vary for individuals. The common glaucomatous visual field defects are paracentral scotomas, nasal step, siesel's scotoma, arcuate scotomas, double arcuate or ring scotoma, tubular vision, end stage or total field defect. The glaucomatous optic nerve head changes include pallor of the disc, splinter hemorrhages, irregularity of neuro retinal rim which are early changes and cupping of the optic disc (>0.4), bayonetting sign, glaucomatous optic atrophy which are late changes.

Aim:

The study is to assess the functional defects namely visual field defect in correlation with Intraocular pressure in glaucoma patients.

Materials and Methods:

Observational, cross-sectional case series study was conducted on patients coming to Ophthalmology department of tertiary care hospital for 2 months, who were diagnosed to be glaucomatous. Intraocular pressure of the patients were measured using applanation tonometry and visual field was assessed using automated perimetry. Glaucoma suspects were predominant among the glaucoma population. Severe visual field defects were more commonly present in patients with raised intraocular pressure along with moderate and severe cupping of optic nerve head. Blindness was common in glaucoma patients who were newly diagnosed and not started treatment.

Result Analysis:

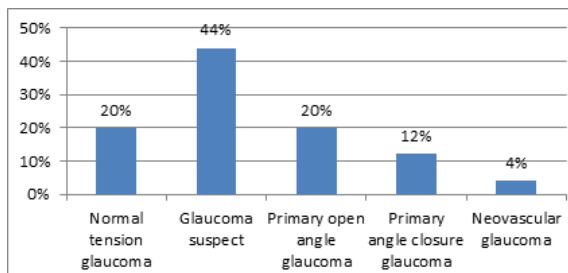


Figure 1: Distribution of Glaucoma patients in study population

Among 25 patients 20 patients are new diagnosed with glaucoma. Among the 50 eyes examined, the intraocular pressure was within normal range in 37 eyes and increased in 13 eyes. Glaucomatous optic nerve head changes were present in 26 eyes with normal intraocular pressure and 8 eyes with raised intraocular pressure. Optic nerve head was normal in 11 eyes. No fundus view was available for 4 eyes. Cup-disc ratio of <0.6 belonging to mild degree was present in 11 eyes, 0.6 to 0.8 belonging to moderate degree was present in 17 eyes and >0.8 belonging to severe degree was present in 3 eyes.

Table 1: Fundus changes in patients with normal IOP and increased IOP of study population

Fundus changes	Eyes with normal IOP	Eyes with increased IOP
Glaucomatous optic nerve head changes	26	8
Normal optic nerve head	10	1
No view	1	3

Visual field was normal in 31 eyes, superior and inferior paracentral scotomas belonging to mild degree of visual field defect was present

in 3 eyes, superior and inferior arcuate scotomas belonging to moderate degree was present in 3 eyes, Tubular vision and poor vision/complete blindness belonging to severe degree was present in 14 eyes. Glaucomatous field defect was present in 6 eyes with normal intraocular pressure and 1 eye with increased intraocular pressure. Poor vision was present in 4 eyes with normal and 9 eyes with raised intraocular pressure.

Table 2: Visual acuity of patients with normal IOP and increased IOP of study population

Visual acuity	Total eyes	Eyes with normal IOP	Eyes with increased IOP
< 3/60	16	6	10
>3/60	34	31	3

Among the 10 eyes of known glaucoma cases already on treatment, glaucomatous field defect was seen in 3 eyes, visual field was normal in 3 eyes and poor vision was present in 4 eyes. Intraocular pressure was normal in 7 eyes and increased in 3 eyes.

Discussion:

Among the 25 patients studied, 44% were glaucoma suspects, 20% had Primary open angle glaucoma, 20% had Normal tension glaucoma, 12% had Primary angle closure glaucoma and 4% had Neovascular glaucoma. From this, Glaucoma suspects were predominant^[1,2].

As regards the visual field defects, among patients with normal intraocular pressure, 6% had mild glaucomatous field defect, 6% had moderate and 10% had severe visual field defect. From this, severe visual field defect was common among patients with normal intraocular pressure^[3,4]. In patients with raised intraocular pressure, 18% had severe visual field defect and none had mild or moderate visual field defects. This shows that severe field defect and very poor vision was common in patients with raised intraocular^[5,6,7].

As regards the cupping of optic nerve head, among patients with normal intraocular pressure, 52% had glaucomatous optic nerve head changes of which 14% had mild cupping, 30% moderate cupping and 2% had severe cupping. The remaining 6% had glaucomatous optic atrophy, bayonetting sign. This shows moderate cupping was common in patients with normal intraocular pressure^[7,8,9,10]. In patients with raised intraocular pressure, 16% had glaucomatous optic nerve head changes of which 8% had mild cupping and 8% had moderate and severe cupping. Among 28% patients with severe visual field defect, 14% had raised intraocular pressure along with moderate/severe cupping, 4% had raised intraocular pressure with mild/no cupping. 10% had normal intraocular pressure with moderate/severe cupping. None had mild/no cupping with normal intraocular pressure. This shows severe visual field defect was more common with raised intraocular pressure present along with moderate/severe^[3,7,8].

Based on treatment, 8% of patients on anti glaucoma treatment had blindness and 18% patients who were newly diagnosed and not on anti glaucoma treatment were blind. This shows that late diagnosis and treatment lead to blindness in glaucoma^[14,15,16]. The preceding data probably shows that the awareness about the effects of glaucoma is poor among the people.

Conclusion

Raised intraocular pressure was one of the major risk factors leading to visual field defects and complete vision loss in our society. Visual blindness was more common among the glaucoma patients who were not on anti-glaucoma treatment. So awareness about glaucoma and its effects is poor among the people.

Summary

Glaucoma suspects form major percentage of glaucoma population. Severe visual field defect and very poor vision is more common in patients with raised intraocular pressure along with moderate/severe cupping of optic disc. Severe visual field defects with moderate cupping of optic disc is more common in patients with normal intraocular pressure. Mild to moderate visual field defects are mostly present within 10-25 mm Hg range of intraocular pressure. Very poor vision or complete blindness is more common with intraocular pressure of above 25mm Hg.

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