VOLUME - 12, ISSUE - 02, FEBRUARY - 2023 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Ophthalomology

TO STUDY THE ASSOCIATION OF PRIMARY OPEN ANGLE GLAUCOMA WITH DIABETES MELLITUS, HYPERTENSION AND MYOPIA IN PATIENTS ATTENDING EYE OUT PATIENT DEPARTMENT.

Sanchita Handa* Junior Resident, Dept. of Ophthalmology, Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India.*Corresponding Author

V. K. Malik Professor and Head, Dept. of Ophthalmology, Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India

Malvika Dhar Assistant Professor, Dept. of Ophthalmology, Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India

ABSTRACT

Purpose: To study the association of primary open angle glaucoma with diabetes mellitus , hypertension and myopia in patients attending eye out patient department. **Methods:** This prospective comparative study consisted of patients between 40-80 years diagnosed as a case of diabetes mellitus , hypertension and myopia. All the patients underwent thorough examination on slit lamp and for visual field defects .VFD was recorded for all the patients and noted. **Results:** Mean age of patient for this study was +/- 45 years. Maximum subjects were from age group of 41-50 years (43.33%) where n=39. Diabetes, hypertension and myopia was reported among 42.22% (n=38), 32.22% (n=29)and 25.56%(n=23) of the subjects respectively . Out of 38 diabetic subjects, 27 (71.05%) were suffering from moderate to severe VFD while 11 (28.95%) were suffering from mild VFD. **Conclusion:** With hypertension, myopia and diabetes mellitus are the major risk factors of POAG. Patients with such risk factors could be thought to represent high-risk patients and should be identified as such and be explained and sensitized about their condition.

KEYWORDS : Primary open angle glaucoma , Diabetes , Hypertension and Myopia

INTRODUCTION

Glaucoma is chronic progressive optic neuropathy caused by a group of ocular conditions, that may lead to raised intraocular pressure causing damage to the optic nerve along with loss of visual function(2).Glaucoma is one of the main cause of irreversible blindness in the population worldwide, as a progressive optic neuropathy(1).As the age increases over 40, so will the prevalence of glaucoma. Primary open angle glaucoma (POAG) is a common form of the disease worldwide. POAG is described as a progressive optic neuropathy along with loss of ganglion cells and visual field deterioration in the eyes which have gonioscopically open angles, with or without elevated intraocular pressure (IOP)(3). The pathogenesis of POAG is uncertain. Multiple ocular risk factors have been proposed, which includes IOP, ocular perfusion pressure, ocular blood flow, myopia, central corneal thickness, and optic disc hemorrhages. Systemic risk factors which include age, smoking, family history, genetic factors, systemic hypertension (HTN), atherosclerosis, lipid dysregulation, type 2 diabetes mellitus (DM), glucose intolerance, obesity, vasospasm, migraine, Raynaud syndrome, stress, and primary vascular dysregulation. Genetic abnormalities are believed to initiate a series of events that leads to glaucomatous optic nerve injury and its remodeling. Several studies have revealed a significant role of myocilin gene, optineurin gene, and cytochromeCYP1B1 genes in glaucoma development(3).

MATERIAL AND METHODS

This was a prospective comparative study conducted in the Department of Ophthalmology at Netaji Subhash Chandra Bose Subharti Medical College, Swami Vivekanand Subharti University, Meerut and a total of 90 patients were enrolled. In this study Informed written consent was taken from all the participants prior to their enrollment. Detailed history of the patients was taken regarding their Diabetes Mellitus status , Blood Pressure was recorded using sphygmomanometer and relevant investigations were done. Applicable preliminary details were obtained from the patients and mentioned in the performa. Visual acuity and refractive status of the patients was assessed using Snellen chart.

For each patient refraction was done after dialating the pupils by retinoscopy . Slit lamp examination was done for detailed ocular evaluation. Tonometry is the measurement of the intra ocular pressure and is one of the cornerstone for diagnosis for glaucoma. Objectively it was measured by non contact tonometer (NCT)/ schoitz tonometer.

Gonioscopy is a method in which a contact lens is placed between the lids to lie upon the anaesthetized cornea and is also fitted with a mirror placed at an angle of 62 or 64 degree, in which the image of recesses of the angle is reflected. It was done for all patients to examine the angle of anterior chamber using a 4 mirror gonioscope. Visual fields were assessed by Humphrey's field analyser which is a method of static perimetry. MILD VISUAL FIELD DEFECTS were taken to be – Generalised depression, Baring of the blind spot and small wing shaped Paracentral scotoma. MODERATE TO SEVERE VISUAL FIELD DEFECTS were taken to be – Siedel's sickle shaped scotoma , Arcuate or Bjerrum's scotoma , Ring or Double arcuate scotoma , Roenne's central nasal scotoma, Peripheral field defects and Tubular vision.

Fundus was examined using direct and indirect ophthalmoscope and various lenses, mainly for estimation of optic nerve head, cup disc ratio, vessels and also the peripapillary area.

A statistically significant result was considered when the P value was < 0.05.

RESULTS

Mean age of patient for this study was +/- 45 years. Maximum subjects were from age group of 41-50 years (43.33%) where n=39 followed by 51-60 years (35.56%) where n=32 .

Diabetes, hypertension and myopia was reported among 42.22% (n=38), 32.22% (n=29)and 25.56%(n=23) of the subjects respectively. VFD (visual field defect) viz. mild and moderate to severe was reported in 53.33% (n=48)and 46.67% (n=42) of the subjects respectively .

Out of 38 diabetic subjects, 27 (71.05%) were suffering from moderate to severe VFD while 11 (28.95%) were suffering from mild VFD. Univariate analysis revealed that diabetic subjects had 5.91 times more chances of suffering from moderate to severe VFD. Out of 29 hypertensive subjects, 19 (65.52%) were

suffering from moderate to severe VFD while 10 (34.48%) were suffering from mild VFD. Univariate analysis revealed that hypertensive subjects had 4.03 times more chances of suffering from moderate to severe VFD . Out of 23 myopic subjects, 14 (60.87%) were suffering from moderate to severe VFD while 9 (39.13%) were suffering from mild VFD. Univariate analysis revealed that myopic subjects had 3.42 times more chances of suffering from moderate to severe VFD .

Table – 1 Age Distribution Among The Study Subjects

Age Group (in years)	N	%
41-50	39	43.33
51-60	32	35.56
>60	19	21.11
Total	90	100

Table – 2 Distribution Of Participants Based On Presence Of Diabetes, Hypertension And Myopia

Variables	N	%
Diabetes	38	42.22
Hypertension	29	32.22
Myopia	23	25.56

Table – 3 Distribution Of Study Participants According To Vfd (visual Field Defect)

VFD	N	%
Mild	48	53.33
Moderate to Severe	42	46.67

DISCUSSION

Primary open-angle glaucoma (POAG), one of the most common forms is a chronic and progressive variant of glaucoma- accounting for nearly 74% of all glaucoma cases(3). POAG results in optic neuropathy that is associated with characteristic cupping and atrophy of the optic nerve head which may or may not be associated with increased IOP. S Bhattarai et al (4) conducted a study where 63.3 %(n=38) patients were males and 36.7%(n=28) patients were females, which is comparable to our study. In a study by Jacob et al(2), 150 patients aged above 40 years, there was more than two-fold increased risk of POAG among patients with hypertension and diabetes. Mean age of cases were 63.63 ± 8.24 years, of controls 58.79 ± 10.9 years. The findings of our study are similar to the research conducted by Jacob.

In this study out of 38 diabetic subjects, 27 (71.05%) were reported to be having moderate to severe VFD while 11 (28.95%) patients had only mild VFD. Univariate analysis revealed that diabetic subjects had 5.91 times more chances of suffering from moderate to severe VFD. The findings are similar to Beaver Dam Eye Study and Los Angeles Latino Eye Study.

Out of 29 hypertensive subjects, 19 (65.52%) were suffering from moderate to severe VFD while 10 (34.48%) were suffering from mild VFD. Univariate analysis revealed that hypertensive subjects had 4.03 times more chances of suffering from moderate+severe VFD. Similarly, Jacob et al (2) in their study showed that there is a significant association between hypertension and POAG statistically (p value 0.02) and the odds ratio 2.2.

Out of 23 myopic subjects, 14 (60.87%) were suffering from moderate to severe VFD while 9 (39.13%) were suffering from mild VFD. Univariate analysis revealed that myopic subjects had 3.42 times more chances of suffering from moderate+severe VFD. The research conducted by us is in alignment with the Tajimi study by Suzuki et al highlighting high myopia as a major risk leading to the onset of primary open angle glaucoma(4).

CONCLUSION

From the study, it can be concluded that with hypertension, myopia and diabetes mellitus are the major risk factors of POAG. Patients with such risk factors could be thought to represent high-risk patients and should be identified as such and be explained and sensitized about their condition. Proper documentation of all and any previous investigation is needed to accurately examine the rate of progression – and modification in the treatment may be required. Patients need to be made aware of the numerous risk factors they may present with, which may modify the course of the disease. They ought to be provided advice with regards to the necessity of evaluations on frequent basis to access the progression and or severity of POAG. Thus, patients with these risk factors could be identified early , screened for glaucoma and treatment be started at earlier stage to halt the progression of this disease, hence preventing visual deterioration and blindness.

REFERENCES:

1. Sihota R, Tandon R. Parson's Diseases of the Eye: twenty –first edition; 2011; chapter 19:280.
2. Tatham A J, Weinreb RN, Zangwill LM et al. The relationship between cup-to-disc ratio and estimated number of retinal ganglion cells. Investig. Ophthalmol. Vis. Sci. 2013; 54: 3205–14.
3. He JN, Lu S, Chen LJ et al. Coding Region Mutation Screening in Optineurin in Chinese Normal-Tension Glaucoma Patients. Dis. Markers 2019; 2019: 5820537.
4. EGS Foundation. European Glaucoma Society Terminology and Guidelines for Glaucoma, 4th Edition—Part 1 Supported by the EGS Foundation. Br. J. Ophthalmol. 2017; 101: 1–72.