Original Research Paper Ophthalmology

PREVALENCE OF PRIMARY OPEN ANGLE GLAUCOMA IN DIABETIC PATIENTS

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ABSTRACT *A Clinical study of One hundred diabetic patients, both insulin dependent and non insulin dependent, above forty years of age, attending Siddhartha Medical college, Government general hospital, who came directly to Department of Ophthalmology or who were referred here for evaluation, between Nov 2015 and July 2016, were screened for the detection of Primary Open Angle Glaucoma.*

OBJECTIVES

- *To study the hospital based prevalence of POAG among the diabetic patients attending SMC, Vijayawada.*
- *To screen all diabetics for glaucoma.*

KEYWORDS : Primary open angle glaucoma; Diabetes Mellitus; Prevalence

INTRODUCTION

Diabetes Mellitus occurs more often in patients with primary open angle glaucoma than in non-glaucomatous populations. Similarly, Glaucoma is more prevalent in diabetic than in non-diabetic population. Diabetes Mellitus has been suggested as one of the risk factors of POAG along with other risk factors.

Armstrong et al have reported a prevalence of POAG of 4.1% in the diabetic patients. The prevalence of diabetes in POAG was 1.7%. Many studies have shown a higher prevalence of elevated mean IOP and POAG among persons with diabetes compared to those without, and a higher prevalence of individuals with abnormal glucose metabolism among glaucoma patients than among the general population. Case-control studies have supported an association between diabetes and POAG. Diabetes is a disease of microangiopathy, and compromise of microcirculation of the optic disc is a possible contributing mechanism in the pathogenesis of glaucoma.

Population based prevalence data on association of glaucoma and diabetes among Asians are limited in number and of variable quality. Hence, the aim of this study is to evaluate the correlation between the two in our region.

OBJECTIVES

- To study the hospital based prevalence of POAG among the diabetic patients attending SMC, Vijayawada.
- To screen all diabetics for glaucoma.

METHODOLOGY

One hundred diabetic patients, both insulin dependent and non insulin dependent, above forty years of age, attending Siddhartha Medical college, Government general hospital, who came directly to Department of Ophthalmology or who were referred here for evaluation, between Nov 2015 and July 2016, were screened for the detection of Primary Open Angle Glaucoma.

Patients who satisfied any one of the inclusion criteria were selected.

Inclusion criteria

- IOP > 21 mmHg (by Schiotz tonometry) with visual field defects.
- IOP > 21 mmHg (by Schiotz tonometry) with optic nerve head changes.
- Optic nerve head changes with visual field defects.
- Normal IOP with no visual field defects or optic nerve head changes, with asymmetry of IOP in both eyes of > 5 mmHg.

Exclusion criteria

- Closed angle on gonioscopy
- Drug induced (corticosteroids)

The diabetic patients above 40 years of age were briefly explained about the study and the tests they would have to undergo. These patients were subjected to detailed eye examination including, Visual acuity, Slit lamp examination, Tonometry with Schiotz tonometer, diurnal testing, Ophthalmoscopy, Gonioscopy, Visual field testing using Automated perimeter (Humphrey).

Patients with significant disc cupping (and other signs of glaucomatous disc changes), with field defects, regardless of IOP were suspected as having POAG. IOP was recorded to allow distinction between POAG with elevated pressure and Normal Tension Glaucoma.

RESULTS

Table 1: Age and sex distribution of diabetics in the study group

Age group	Sex		Total
	Female	Male	
40-49	10 (33.3)	20 (66.7)	30
50-59	15 (31.9)	32 (68.1)	47
60-69	5 (25.0)	15(75.0)	20
>=70	2 (66.7)	1 (33.3)	03
Total	32	68	100

Table 2: Sex-wise distribution of patients with POAG

Sex	Total No. of patients	Diagnosed			
		POAG	NTG	OH	Normal
Males	68	3 (4.4)	2 (2.9)	0	63 (92.7)

Females	32	1 (3.1)	0	1 (3.1)	30 (93.8)
Total	100	4 (4.00)	2 (2.0)	1 (1.0)	93 (93.0)

Table 3: Age-wise distribution of POAG among the diabetic population studied

Age group	Male	Female	Total
40-49	-	-	-
50-59	2	1	3
60-69	1	-	1
>=70	-	-	-
Total	3	1	4

Table 4: Mean IOP among patients with POAG

Age	Sex	IOP (mmHg)	
		RE	LE
55	Male	31.8	25.1
50	Female	23.8	22.4
52	Male	25.1	22.4
61	Male	23.1	25.1

Table 5: Distribution of POAG cases according to duration of DM

Duration of DM	No. of Patients	POAG	Percentage
<5 yrs	50	01	2
	46	03	6.52
>10 yrs	04	-	-
Total	100	04	4.00

Table 6: Age distribution of patients diagnosed

Age group	Diagnosis				Total
	POAG	NTG	OH	N	
40-49	0	0	0	30 (100.0)	30
50-59	3 (6.4)	2 (4.3)	0	42 (89.4)	47
60-69	1 (5.0)	0	1 (5.0)	18 (90.0)	20
>=70	0	0	0	3 (100.0)	03
Total	4	2	1	93	100

Table 7: Distribution of proportion of Diabetic Retinopathy among diabetic patients

Sex	No of pts	DR	Percentage
Male	68	17	25.0
Female	32	10	31.3
Total	100	27	27.0

Table 8: Proportion of POAG among Diabetic patients with retinopathy

Sex	DR	POAG	Percentage
Male	17	2	11.8
Female	10	0	0
Total	**27**	**2**	**7.4**

DISCUSSION:

- The study population consists of 68 (68.0%) males and 32(32.0%) females in the age range from 40-73 years with mean age of 53.1±8.28 years. The total number of diabetic patients observed in 40 to 49 years is 30 (30.0%), 50 to 59 years 47 (47.0%), 60-69 years 20 (20.0%) and >70 years 3 (3.0%). The majority of the diabetics are above 50 years age.

- The age specific diabetics in males was 66.7% (20 out of 30) in the age group of 40 to 49 years followed by 68.1% (15 out of 47) in the age group 50 to 59 years, 25.0% (5 out of 20) in 60-69 years and 66.7% (2 out of 3) in >70 years.

- The age specific diabetics in females was 33.3% (10 out of 30) in the age group of 40 to 49 years followed by 31.9% (32 out of 47) in the age group 50 to 59 years, 75.0% (15 out of 20) in 60-69 years and 33.3%(1 out of 3) in >70 years.

- Overall proportion of POAG cases observed was 4.0% (4 out 100), NTG observed 2.0% (2 out of 100) and 1.0% OH cases were observed remaining 93% were normal. Among the males 4.41% (3 out of 68) and females 3.12% (1 out 32) POAG cases were diagnosed.

- The proportion of POAG among diabetic patients in the study population was 4.0% (4 out 100). Among the males 4.41% (3 out of 68) and females 3.12% (1 out 32) cases were diagnosed.

- The age distribution among POAG patients (4 out of 100). The mean age of the patients was 54.5±4.80 ranging from 50 yrs to 61 yrs. The mean age of male patients was 56.0± 4.58 ranging from 52 yrs to 61 yrs. The mean age of female patients was 50.0 years.

- The proportion of Diabetic retinopathy among diabetic patients in the study population was 27.0% (27 out 100).

- The proportion of POAG among those having diabetic retinopathy was 7.4% (2 out 27). Among males it was observed that 11.8% (2 out of 17) were diagnosed as POAG, and among females no patients were diagnosed as POAG. It was observed that proportion was more in male diabetics than in females.

- Our study shows a clear evidence of an excess of POAG in diabetic population, which is 7.53 % .The prevalence among males, is slightly more (4.41 %) as compared to females (3.12%).

CONCLUSION

Primary Open Angle glaucoma is typically asymptomatic until significant visual field loss has occurred. Patients usually present with significant visual field loss in one eye and advanced disease in the other. It is associated with irreversible blindness. Thus, the public health importance of detecting undiagnosed and treatable glaucoma is important, as blindness has economic and societal consequences for the rest of an individual's life.

To conclude, there is an excess of POAG in diabetic population, which is 7.53% (as compared to 2.1% in normal population), thereby showing an association between primary open angle glaucoma and diabetes and the need for screening all the diabetic patients for glaucoma.

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