

Diabetic Retinopathy & Its Associated Risk Factors among Patients Attending a Tertiary Care Hospital In Visakhapatnam, Andhrapradesh.

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Abstract:

Background: Type 2 diabetes, currently affecting 5% to 10% of most populations, has become the most frequently encountered metabolic disorder in the world. Diabetes is a common cause of acquired blindness in developed and developing countries. In fact it is second only to cataract as a cause of blindness in India.

Aim of the study: To study the proportion of Diabetic Retinopathy and the associated risk factors.

Methodology: 100 Diabetic patients admitted in Medicine ward of a tertiary care hospital were included in the study. A pretested questionnaire was administered and a complete ophthalmic evaluation was done. Study variables include age, gender, BMI, Microalbuminuria, retinopathy etc.

Results: Diabetic Retinopathy was detected in 41% of Diabetics; Microalbuminuria was 36%; Hypertension was 28%; HbA1C levels >6.5% was reported statistically higher among the diabetics with retinopathy (90%) as compared to Diabetics without Retinopathy (59.9%). All the risk factors like obesity, hypertension, presence of Microalbuminuria were significantly higher among diabetics with retinopathy than diabetics without retinopathy **Conclusion:** Our study confirms that poor glycemic control, increase in duration of the diabetes, hypertension and presence of Microalbuminuria were significantly associated with diabetic retinopathy. Hence there is a need for screening of risk factors & control of these risk factors to prevent diabetic retinopathy.

Keywords: Diabetes, Diabetic Retinopathy, risk factors, HbA1C

I. Introduction

Type 2 diabetes, currently affecting 5% to 10% of most populations, has become the most frequently encountered metabolic disorder in the world; its prevalence is growing more rapidly among developing nations, primarily due to the rapid demographic and epidemiological transitions occurring in these countries as a consequence of urbanization, industrialization, and globalization.¹

Diabetes being a major health problem, it is one of the top five leading causes of deaths in the world. Its prevalence is estimated to increase from 4% in 1995 to 5.4% by 2025.¹ In the prevalence of diabetes, there is 42% increase in developed countries and 170% increase in the developing countries. Now there are approximately 33 million adults of Diabetics in India.²

Diabetes is a common cause of acquired blindness in developed and developing countries. In fact it is second only to cataract as a cause of blindness in India.³ Among the micro vascular complication of Diabetes mellitus, Retinopathy is the main reason for the morbidity of the patients as it is a having serious threat to vision. Diabetic Retinopathy is a dreadful complication & every part of the eye is susceptible to the harmful effects of Diabetes. Blindness is 25 times more common in diabetics than non-diabetics. Diabetic Retinopathy ranks the 6th common cause of blindness in India. The incidence of vision loss increases with increasing age, severity of Retinopathy, duration of Diabetes, presence of proteinuria and higher levels of glycosylated hemoglobin.²

Hence an attempt was made to identify Retinopathy among Diabetics and to study the risk factors associated with Diabetes Retinopathy.

II. Methodology

A Hospital based cross sectional study was conducted among type-II diabetes patient admitted in medicine ward of King George Hospital, Visakhapatnam, Andhra Pradesh.

A total number of hundred patients were included in our study. Informed consent was taken from all the patients and those who were willing to participate in the study were included. A pre tested questionnaire was administered. Anthropometric measurements like height, weight and Blood Pressure were recorded. A complete

ophthalmic evaluation was performed (anterior segment evaluation done by slit lamp biomicroscopy and fundus evaluation done by indirect ophthalmoscopy using +90 D). The study variables include: Age, Gender, BMI, BP, Microalbuminuria etc. The data was analyzed manually and relevant statistical tests were applied. P value of < 0.05 was considered as statistically significant.

III. Results:

A total of 100 diabetic patients were included in this study, of which 59 patients were males and 41 were females. The age group of the study population ranged from 41-80 years. Majority (40%) of the diabetic patients were in the age group of 41-50 years; 29% were in 51-60 years age group; 22% were between 61-70 years and the remaining 9% were in the age group of 71 and 80 years. It was observed that there was slight male preponderance in all the age groups.

Diabetic Retinopathy was detected in 41% of our Diabetic population. Microalbuminuria was detected in 36% and Hypertension (BP>140/90mmHg) was seen in 28% of the study participants. Around 42% of our diabetics stated that they were having diabetes since 5 years. Majority of the (78%) study group are having HbA1c level of more than 6.5% and among whom nearly half of them had (42%) more than 7.5% of HbA1c level.

Table-1 HbA1c levels of the study population with diabetic retinopathy and without Diabetic retinopathy

HbA1c %	study population without diabetic retinopathy	With diabetic retinopathy	Total
<6.5%	4	18	22
6.5-7.0%	5	15	20
7-7.5%	7	9	16
>7.5	25	17	42
Total	41	59	100

Table-2: Distribution of t risk factors among study population with diabetic retinopathy and without diabetic retinopathy

Risk factors	Without diabetic retinopathy(N=59) n%	With diabetic Retinopathy (N=41) n%	Z value	P value
BMI>25	8(13.5)	16(39)	2.89	P<0.05
Hypertension (BP>140/90mmHg)	5(8.4)	23(56)	5.56	P<0.05
Duration of the diabetes> 5 years	13(22%)	29(70.7%)	5.45	P<0.05
Microalbuminuria	6(10.1)	30(73.1%)	7.92	P<0.0
HbA1c > 6.5%	33(55.9)	37(90%)	4.31	P<0.05

When risk factors like obesity, hypertension, presence of Microalbuminuria were compared among diabetics with and without retinopathy, it was observed that all the risk factors were significantly higher among patients with diabetic retinopathy. Poor glycemic control i.e.HbA1c level of more than 6.5% was seen among 90% (37/41) of diabetic retinopathy patients as compared to 59.9% of the diabetics without retinopathy and this difference was found to be statistically significant. (Z value 4.31; P <0.05) Microalbuminuria was seen among 73.1% of diabetic retinopathy patients as compared to 10% of patients without retinopathy.

IV. Discussion:

In our study there is slight male preponderance in all the age groups and majority were seen in the age group of 41 and 50 years. Diabetic retinopathy was found in 41% and this finding was in concurrence with a similar study done by FadiaTshaya et al.⁴

Poor glycemic control alters many biochemical reactions contributing to thickening of basement membrane, loss of function of pericytes and endothelial cells and also the loss of patency of the retinal vessels. In our study, poor glycemic control was reported high among diabetics with retinopathy and this finding was comparable to similar studies^{5, 6} Hypertension is said to contribute to the progression of non proliferative and proliferative diabetic retinopathy altered blood viscosity and loss of elasticity results in shear stress to the blood vessel wall which culminate in the loss of regulated blood flow to retina. Hypertension was significantly more (56%) among the diabetic retinopathy patients than diabetics without retinopathy and this finding was in

concurrency with study done by Muawyah et al.⁵

Microalbuminuria was reported to be 73% among diabetic retinopathy patients which was comparable Jordanian diabetics where it was reported to be 70 %⁵

V. Conclusion:

Our study confirms that poor glycemic control, increase in duration of the diabetes, hypertension and presence of Microalbuminuria were significantly associated with diabetic retinopathy. Hence there is a need for screening of risk factors & control of these risk factors to prevent diabetic retinopathy

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