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Vision Threatening in Diabetes Mellitus: A Clinico - Social Study

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Abstract: ***Background: With the alarming rise of Diabetes in the world Retinopathy has appeared a common vascular complication of diabetes. Aims & objectives: The present study aims to document the incidence of retinopathy in diabetics and its relationship with age, sex, duration of the disease and hypertension. Materials & methods: One hundred and ten consecutive patients of diabetes mellitus attending the Ophthalmologic Clinic of Hi-Tech Medical College and Hospital from June to December, 2014 were studied with pre tested and pre designed questionnaire form. The duration of diabetes was reckoned from the onset of significant symptoms. The retinal changes were graded according to ETDRS (Early Treatment of Diabetic Retinopathy Scale) classification with International Clinical Diabetic Retinopathy (DR) Disease Severity Scale into various grades viz.: Grade I, Grade II, Grade III, Grade IV & Grade V. Observations: Amongst the hundred and ten patients studied, 86 (78.3%) were males and 24 (21.7%) were females with peak age incidence between 41-50 years. Grade I and II retinal changes were present in 41 per cent each, Grade III changes in 1.5 per cent and Grade V changes in 16.5 per cent. None of the patients had grade IV changes. The incidence of diabetic retinopathy increased with the increase in the age of the patients. Hypertension (systolic B.P.≥ 150mm of Hg and/or diastolic B P. ≥ 90mm of Hg) was detected in 35 (31.8%) patients. Of these, 11 (31.4%) had retinopathy which was of Grade V severity. Grade I and II retinal changes were seen in three patients each. Conclusion: The alarming rise in diabetes prevalence is a global public health and economic problem. Diabetic retinopathy is the most common complication of diabetes and the leading cause of blindness among working-age populations in India as well as in the Western World. Screening and prompt treatment of diabetic retinopathy should be the top priorities because the impacts of other causes of preventable blindness remain an issue.***

Keywords: Diabetes Retinopathy, Hypertension

1. Introduction

Diabetic retinopathy is a complication of diabetes and a leading cause of blindness. It occurs when diabetes damages the tiny blood vessels inside the retina, the light-sensitive layer at the back of the eye. The most common cause of visual impairment retinopathy is macular edema which occurs due to accumulation of fluid at the center of retina. It can occur in any stage of Diabetic retinopathy. [1]

Diabetic retinopathy is leading cause of blindness in whole of the world. The blindness is preventable. Timely diagnosis, investigations and treatment are hallmarks of the disease, but primary control of blood sugar, hypertension and renal failure are more important.[4]

Retinopathy is a common vascular complication of diabetes. In its pathogenesis, various factors viz. aberrations of plasma lipid level, adrenal cortical hyper function [2, 3] , Duration of diabetes increase in the serum concentration of protein bound carbohydrates, uncontrolled diabetic state [5] hypertension, mental strain etc.[6], have been incriminated. However, the significance of these factors have been variable in different series.

Study was done to assess the stages of diabetic retinopathy to which the patient presents, duration of diabetes, mode of laser treatment to be applied and visual outcome after laser and to assess post laser complications.[7]

2. Aims and Objectives

The present study aims to document the incidence of retinopathy in diabetes, its relationship with age, sex, duration of the disease and hypertension.

3. Material and Methods

This hospital based study was conducted in the Postgraduate Department of Ophthalmology, Hi-Tech Hospital, Bhubaneswar. Total 110 consecutive patients of diabetes mellitus attending the Ophthalmologic Clinic of a private hospital from 1st June 2014 to 30th December 2014 were studied with pre tested and pre designed questionnaire form. The duration of diabetes was reckoned from the onset of significant symptoms. The retinal changes were graded according to ETDRS (Early Treatment of Diabetic Retinopathy Scale) classification with International Clinical Diabetic Retinopathy (DR) Disease Severity Scale into various grades viz.: Grade I, Grade II, Grade III, Grade IV & Grade V.

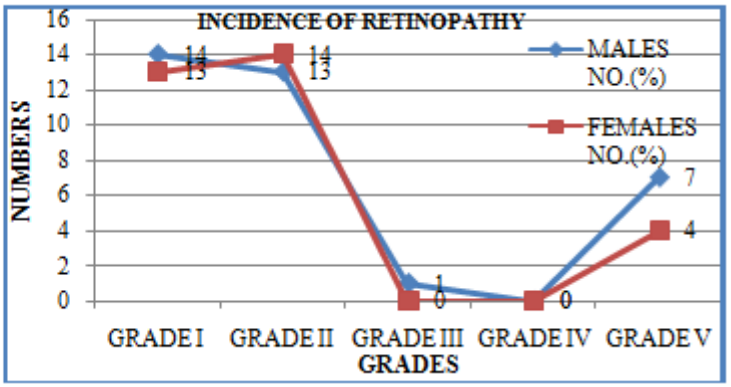
DIABETIC	Diabetic Retinopathy Severity Level	FINDINGS IN OPHTHALMOSCOPY
GRADE-I	No Apparent Diabetic Retinopathy	No abnormalities except mild vision disturbances
GRADE-II	Mild nonproliferative diabetic retinopathy	Micro aneurysms only
GRADE-III	Moderate nonproliferative diabetic retinopathy	More than mild but less than severe
GRADE-IV	Severe Nonproliferative Diabetic Retinopathy	Any of the following: 20 or more intraretinal haemorrhages in 4 quadrants Definite venous beading in 2 or more quadrants Prominent Intra retinal micro aneurysm in 1 or more quadrants and no neovascularisation
GRADE-V	Proliferative Diabetic Retinopathy	1 or more of the following: Definite neovascularisation Preretinal or vitreous haemorrhage

4. Observation

Amongst the hundred and ten patients studied, 86 (78.3%) were males and 24 (21.7%) were females. Majority of the patients were seen after the 3rd decade with a peak age incidence between 41-50 years.

Table 1: Incidence of Retinopathy

Grades of Retinopathy	*Males No. (%)*	*Females No. (%)*	*Total No. (%)*
GRADE I	14(51.8)	13(48.2)	27(41)
GRADE II	13(48.2)	14(51.8)	27(41)
GRADE III	1(100)	0	1(1.5)
GRADE IV	0	0	0
GRADE V	7(63.64)	4(36.36)	11(16.5)
TOTAL	35 53.04)	31(46.96)	66 (100)



Incidence and severity of diabetic retinopathy in relation to duration of diabetes

Incidence and Grades of Retinopathy: Various grades of retinal changes were associated in 66 (60%) patients. Grade I and II changes were present in 41 % each, Grade III changes in 1.5 % and Grade V changes in 16.5 %. None of the patients had grade IV changes. [Tab-1]

Table 2: Incidence & Severity of Retinopathy in Relation to Duration of Diabates

Duration of DM in Years	Total No of Cases	Grade-I No.(%)	Grade-II No.(%)	Grade-III No.(%)	Grade-IV No.(%)	Grade-V No.(%)	Total Cases of Retinopathy No.(%)
<1	20	2(50)	0	0	0	2(50)	4(20)
1-6	48	18(66.7)	7(25.9)	0	0	2(7.4)	27(56)
6-10	20	5(27.8)	12(66.7)	0	0	1(5.5)	18(90)
11-15	16	2(18.2)	6(54.5)	0	0	3(27.3)	11(68.7)
16 & ABOVE	6	0	2(33.3)	1(16.7)	0	3(50)	6(100)
TOTAL	110	27(40.9)	27(40.9)	1(1.5)	0	11(16.7)	66(60)

It was observed that the incidence of retinopathy increased with the increase in the duration of diabetes mellitus, from 20%, in less than one year duration to 100% where the duration of diabetes was above 16 years. [Tab-2]

Table 3: Incidence of Retinopathy in Relation to Age

Age	*Total No of Cases*	*Cases With Retinopathy No. (%)*
10-20	1	-
21-30	7	2(28.5)
31-40	18	7(30.8)
41-50	35	18(51.4)
51-60	32	25(78.1)
61 & Above	17	14(82.3)
Total	110	66(60)

The incidence of diabetic retinopathy increased with the increase in the age of the patients. However, the males and the females were almost equally affected. The incidence of retinal changes being 53.04% in males and 46.96 % in females respectively [Tab-3]

Table 4: Retinopathy and Hypertension

Total No of Cases (%)	Cases With Hypertension No. (%)	Cases with HTN with Retinopathy No (%)	Grade I No. (%)	Grade II No.(%)	Grade III No.(%)	Grade IV No.(%)	Grade V No.(%)
110	35 (31.8)	17 (15.45)	3 (8.6)	3 (8.6)	0	0	11 (31.43)

Hypertension (systolic B.P.≥ 150mm of Hg and/or diastolic B P. ≥ 90mm of Hg) was detected in 35 (31.8%) patients. Of these, 11 (31.4%) had retinopathy which was of Grade V severity. Grade I and II retinal changes were seen in three patients each.Tab-4.

5. Summary & Conclusion

Hundred and ten patients of diabetes mellitus were studied during a period of one and a half year. Sixty percent of the patients had evidence of retinopathy. The incidence of retinal changes increased with the increase in the age of the patients and the duration of diabetes. The severity of retinopathy was also found to have a linear correlation with the duration of the disease. Males and females were equally affected. Diabetics with hypertension had severe changes.

Majority of the patients with retinopathy were seen after the age of 40 years, with peak incidence in the age group of 61 years and above. Moreover, the incidences of retinopathy increased with the increase in the age of the patients, which have been the observations of other workers also.

Retinal involvement in diabetics is fairly common. Its incidence, in Indian series has varied from 7.3 to 40.0 percent and in the western series, from 4.8 to 45.3 percent. The relatively higher (60.0%) incidence of retinopathy in our patients is perhaps due to the hospital based study where a natural selection is unavoidable particularly in a hospital like ours, which is mainly a referral centre. Most of our patients had grade I and II retinopathy, Grade III retinopathy was seen in 1.5 per cent and none had grade 1V changes. Nearly sixteen percent of the patients had grade V changes, and all of them had hypertension as well. The incidence of retinopathy increased with the increase in the duration of disease. It was found in 16.7 percent of the patients with diabetes of less than one year duration, while it was seen in all the patients who had diabetes of sixteen years or more.

The severity of the diabetic retinopathy was also found to have significant relationship with duration of diabetes. Fifty one percent of diabetics with less than ten years of duration of the disease, had grade I changes; while only 11.7 percent had grade I changes with diabetes of more than 10 years duration.

Hypertension was found to be associated in 31.4 percent of the cases with retinopathy. We concluded that hypertension predisposes a diabetic individual with more severe retinal changes.

6. Acknowledgement

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