ORIGINAL ARTICLE

STUDY OF DIABETIC RETINOPATHY IN PATIENTS ADMITTED TO A TERTIARY CARE HOSPITAL FOR NON-OPHTHALMOLOGICAL REASONS

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ABSTRACT

Background: Diabetic retinopathy is one of the many ocular complications of diabetes mellitus and is the leading cause of blindness. We conducted this study to find out the incidence of diabetic retinopathy in patients admitted in tertiary care hospital in Peshawar.

Material & Methods: This descriptive study was conducted in the Department of Ophthalmology, Khyber Teaching Hospital, Peshawar from 1st March, 2012 to 30th October, 2012. A total of 462 individuals were included in the study. Using HbA_1C levels, stratification of individuals in three groups was done. Group 1 included individuals with HBA_1C levels <7%, Group 2 with levels between 7-10% and Group 3 individuals had levels >10%. Based on the slit lamp examination, individuals were further divided into four groups (No DR, Background DR, Preproliferative DR, and Proliferative DR).

Results: The age range was 22-76 years with male to female ratio of 315 (68.18%) and 147(31.81%). In patients with DM duration less than 10 years, no case of Proliferative DR was found while in those with DM duration more than 30 years, the incidence rose to 27.45%. Preproliferative DR changes increased from 12.67% in <10 years to 34.94% in 11-30 years and 60.78% in individuals with >30 years duration. In individuals with HbA_1C levels less than 7% over 5-10 years, 44.94% had no DR changes while 62.92% had Background DR, 3.3% had Preproliferative DR while none had Proliferative DR. Individuals with HbA_1C levels between 7-10% had 33.33%, 50.40% and 12.19% while those with HBA_{1C}>10% had an alarming prevalence of 39.37%, 35.43% and 25.19% in Background, Preproliferative and Proliferative DR categories respectively.

Conclusion: The prevalence and severity of diabetic retinopathy increases with poor control and increasing duration of disease.

Key Words: Diabetes mellitus, Diabetic retinopathy, Blindness.

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INTRODUCTION

The prevalence of Diabetes Mellitus (DM) worldwide continues to increase due to increased tendency to obesity, physical inactivity and other risk factors.[1] According to the International Diabetes Federation (IDF) if the prevailing trend continues, Pakistan is expected to occupy fifth position in 2025 among the diabetic populated countries.[2]

Diabetic Retinopathy (DR) is one of the many ocular complications of DM and is the leading cause of blindness.[3] Besides prompt early diagnosis and tight glycaemic control, the long-term sequelae from DM can be prevented by regular screening and appropriate treatment.[4-6] In Pakistan as the incidence of DM is increasing, so is the incidence of DR.[7] The incidence of DR has been shown to increase with increasing duration of DM from 27% in individuals with disease duration from 5-10 years, 71% in more than 10 years and up to 90-95% in individuals with disease duration beyond 30 years.[8]

We conducted this study to find out the frequency of DR in diabetics.

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MATERIAL AND METHODS

This descriptive study was conducted in the Department of Ophthalmology, Eye A unit, Outpatients Department, Khyber Teaching Hospital, Peshawar from 1st March, 2012 to 30th Oct, 2012. All

the admitted patients in the Obstetrics & Gynaecology Ward and Medical Ward who were known to be suffering from DM for more than five years and referred to Ophthalmology OPD for DR screening were included in the study. A total of 462 individuals were included in the study. The study was approved by the ethics review committee of Khyber Teaching Hospital, Peshawar. Written informed consent was taken from all the individuals. Individuals having any associated ocular pathologies obscuring detailed fundal examination e.g. dense cataracts, vitreous haemorrhages and corneal opacities were excluded from the study. A special proforma was devised to record the details of present age, sex, age of the individuals at the time of DM diagnosis, duration of DM, ongoing treatment at the time of presentation, associated hypertension and Glycosylated Haemoglobin (HBA_1C) levels.

Five ml of blood was taken from all the patients and analyzed for HbA_1C using High Performance Liquid Chromatography (HPLC). Group 1 included individuals with HbA_1C levels <7%, Group 2 with levels between 7-10% and Group 3 between levels > 10%.

Both the eyes were dilated with 1% tropicamide and 10% phenylephrine for detailed fundus examination using 90D with the help of binocular slit lamp. Individuals were further divided into four groups (No DR, Background DR, Preproliferative DR, and Proliferative DR). Data was analyzed using SPSS version 13.

Table 1: DM duration in the studied individuals (n=462).

DM duration	Number of participating individuals
5-10 Years	71 (15.36%)
11-30 Years	289 (62.55%)
>30 Years	102 (22.07%)

RESULTS

A total of 462 individuals between age range of 22 to 76 years (Average 48 years) with male to female ratio of 315 (68.18%) and 147 (31.81%) respectively participated in the study. Duration of DM is categorized in Table-1.

In patients with DM duration less than 10 years, no case of Proliferative DR was found while in those with DM duration more than 30 years, the incidence rose to 27.45%. Preproliferative DR changes increased from 12.67% in <10 years to 34.94% in 11-30 years and 60.78% in individuals with >30 years duration. (Table-2)

In individuals with HbA_1C levels less than 7%, 44.94% had no DR changes while 62.92% had Background DR, 3.3% had Preproliferative DR while none had Proliferative DR. Individuals with HbA_1C levels between 7-10% had 33.33%, 50.40% and 12.19% while those with HbA_1C>10% had an alarming prevalence of 39.37%, 35.43% and 25.19% in Background, Preproliferative and Proliferative DR categories respectively. (Table 3)

DISCUSSION

DM is continuing to increase in Pakistan.[9,10] Increased urbanization, sedentary lifestyles, higher energy containing diets and lack of exercise are few of the many factors responsible for the increasing prevalence.[11] A diabetic patient has been found to be 25 times more likely to become blind due to long-term sequelae of uncontrolled DM as compared to non diabetics. [12]

Our study included diabetic patients who had disease duration of more than five years and varied from good glycaemic control with HBA_1C levels less than 7% to poor control with HBA_1C levels more than 10%. The study results showed increase prevalence and severity of DR with increased duration and poor control of DM. In patients with DM duration less than 10 years we did not find any case of Proliferative

Table 2: Duration of DM vs. Grades of DR.

Duration of DM	No DR	Background DR	Preproliferative DR	Proliferative DR
5-10 Yearsn = 71	25 (35.21%)	37 (52.11%)	9 (12.67%)	0
11-30 Yearsn = 289	15 (5.19%)	139 (48.09%)	101 (34.94%)	34 (11.76%)
> 30 Yearsn = 102	0	12 (11.76%)	62 (60.78%)	28 (27.45%)

Table 3: HbA_1C vs. grades of DR.

HBA_1C	No DR	Background DR	Preproliferative DR	Proliferative DR
< 7% n = 89	40 (44.94%)	56 (62.92%)	03 (3.37%)	0
07-10 % n = 246	0	82 (33.33%)	124 (50.40%)	30 (12.19%)
> 10 % n = 127	0	50 (39.37%)	45 (35.43%)	32 (25.19%)

DR while in those with DM duration more than 30 years, the incidence rose to 27.45%. Similarly the Preproliferative DR changes increased from 12.6% in <10 years to 34.9% in 11-30 years and 60.78% in individuals with >30 years DM duration. Poor glycaemic control as evident by HBA_1C levels was found to be associated with higher grades of DR. Individuals who were able to maintain good glycaemic control with their HBA_1C less than 7% over 5-10 years, 44.94% had no DR changes on slit lamp examination while 62.92% had Background DR, 3.37% had Preproliferative DR while none had Proliferative DR changes. In contrast, individuals with poor glycaemic control with HBA_1C >10% had an alarming prevalence of 39.37%, 35.43% and 25.19% in Background, Preproliferative and Proliferative categories respectively.

The much higher prevalence of different grades of DR in our study can be explained by the fact that all of the individuals who were enrolled in the study had disease duration more than 5 years and were poorly controlled.

Abdollahi et al did a study in Iran and reported similar observation of increased prevalence of higher grades of DR with increasing age, duration of DM, HbA_1C levels and blood pressure measurements.[13] United Kingdom Prospective Diabetes Study (UKPDS) reported prevalence of 34% prevalence of DR in males and 35% in females in type 2 DM patients.[5]

Rema et al in Chennai Urban Rural Epidemiology Study (CURES) reported 1.89 fold increase in incidence of DR for every five years increase in the duration of DM.[14]

Amir et al conducted a study on admitted DM patients in various units of Hayatabad Medical Complex, Peshawar and evaluated 202 patients for the evidence of microvascular complications due to longstanding DM including DR. They reported a staggering figure of 58% incidence of DR in admitted patients.[15] Pakistan National Blindness and Visual Impairment Survey data was analyzed by Sheikh et al and found DR in 15.3% subjects recruited in the survey from the general population across Pakistan.[16]

CONCLUSION

The prevalence and severity of diabetic retinopathy increases with poor control and increasing duration of disease.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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None declared.