

Frequency of Retinopathy in Newly Diagnosed Type 2 Diabetes Mellitus

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ABSTRACT

Objective: The purpose of this study is to find out how common retinopathy is in newly diagnosed patients with type 2 diabetes.

Methods: This cross-sectional research included 100 newly diagnosed patients with type 2 diabetes patients who attended the diabetic health center at Federal Govt. Polyclinic, postgraduate medical institute, Islamabad from 1st March 2022 to 31st July 2022. The research precluded those who had type-1 diabetes, high blood pressure, retinal artery obstruction, retinal venous obstruction, renal glomerulonephritis, or hemoglobinopathies retinopathy. Following pupillary dilation with Mydriacyl, a comprehensive fundoscopic examination had been performed, and retinopathy was classified as Mild to Moderate non proliferative (mild to moderate NPDR), severe non proliferative (severe NPDR), or proliferative (PDR).

Results: The respondents' average age had been 47 years, with 65% men and 35% women. At the onset of the disease, 9% of patients had been diagnosed to have retinopathy. The demographic and clinical characteristics of newly diagnosed diabetes mellitus patients are shown in Table. In the univariate analysis, there was a statistically significant difference between the characteristics of patients who had retinopathy compared to those who did not have it. Patients with retinopathy were older in age, had a higher prevalence of smoking and alcohol consumption, and had much higher levels of fasting blood sugar, HbA1c, cholesterol, triglycerides, LDL, BMI and serum creatinine, compared to patients with no retinopathy (Table). The prevalence of retinopathy was much higher in the categories of patients with higher levels of HbA1c and BMI, compared to those with lower levels.

Practical implication: The prevalence of retinopathy in newly diagnosed type 2 diabetes mellitus patients was found to be relatively high in this study. This underlines the importance of detailed ophthalmic examination of all patients at the time of diagnosis

Conclusion: The said research reveals a greater incidence of retinopathy in recently diagnosed people with type 2 diabetes. This highlights the significance of performing a thorough ophthalmic examination on all diabetic individuals at the time of assessment.

Keywords: Diabetes Mellitus, Retinopathy, And Retinal Hemorrhages, Fundoscopic, Prevalent,

INTRODUCTION

Globally, the prevalence of diabetes is a serious human healthcare issue that is almost epidemic in scope. Globally, an estimated 462 million individuals are affected by type 2 diabetes, corresponding to 6.28% of the world's population. ¹ One of the most prevalent and harmful effects of diabetes mellitus is diabetic retinopathy. ² In Pakistan as well as the rest of the world, it is one of the main causes of blindness. It is usual to observe type 2 diabetes mellitus' micro vascular problems at the time of identification because the condition may already exist even before definitive diagnosis is obtained. ³ At the time of type 2 diabetes identification, the total incidence of diabetic retinopathy range from 5 to 35%. ⁴ The onset of diabetic retinopathy-related blindness can be postponed with prompt diagnosis and effective treatment. As early identification and treatment might reduce its severity, recently diagnosed diabetes individuals should be checked for retinopathy. ⁶ The goal of this research was to ascertain the prevalence of retinopathy in patients with type-2 diabetes who had just received a diagnosis in a secondary healthcare setting.

PATIENTS AND METHODS

From 1st March 2022 to 31st July 2022, the research was carried out at Federal Govt. Polyclinic, postgraduate medical institute, Islamabad. A total 100 type 2 diabetes mellitus patients who regularly visited the Federal Govt. Polyclinic diabetic clinic made up the study group. The research would include all individuals who had just received a type 2 diabetes mellitus diagnosis. The study excluded patients who had hypertension, retinal artery obstruction, retinal vein obstruction, retinal vasculitis, or sickle cell retinopathy. A thorough clinical examination was conducted, which included computing body mass index. The WHO research subject on diabetes' diagnostic criteria had been used to identify type 2 diabetes mellitus.

Mydriacyl was instilled into each eye one drop at a time until pupillary dilation, and slit lamp biomicroscopy was used to do a thorough fundoscopic examination. Mild to Moderate non proliferative (mild-moderate NPDR), severe non proliferative (Severe NPDR), and proliferative diabetic retinopathy (PDR) were the three classifications for retinopathy (see below). Monofilaments

were used to test for neuropathy. Proteinuria was checked in the urine for either presence or absence. The SPSS version 23 was used for the statistical analysis.

Mild to Moderate non proliferative diabetic retinopathy (mild-moderate NPDR) had been classified as having microaneurysm, dot/blot haemorrhages, hard exudates, cotton wool patches and retinal edoema. Venous loops/beading, black blot haemorrhages, and intra-retinal micro vascular anomalies were all seen in severe non proliferative diabetic retinopathy (severe NPDR). Neovascularization, vitreous haemorrhages, and ocular and retinal rupture were all symptoms of proliferative diabetic retinopathy (PDR).

RESULTS

One hundred patients participated in the trial over a six-month timeframe. Ages ranged from 35 to 65, with the bulk falling into the fifth decade (Table 1). There were 35 female individuals and 65 male participants. At the time of assessment, the average patient was 47 years old (men 46.17, women 48.36). Males had a mean BMI of 25.2kg/m² ± 0.663 while females had a mean BMI of 26.1kg/m² ± 0.515.

Table 1: Age allocation of patients

Age in years	No of Patients	Percentage (%)
16-40 Years	07	7%
41-60 years	57	57%
61-80 years	36	36%

Ultimately, diabetic retinopathy was discovered in 9 persons. Of these, three have been female and six have been male (Table 2). Six out of nine individuals had preexisting mild to moderate non proliferative retinopathy, with two having severe non proliferative and one having proliferative diabetic retinopathy (Fig 1).

Table 2: Gender Percentage of Diabetic Retinopathy in Study Group

	No. of patients	Percentage (%)
Male	06	66.6%
Female	03	33.3%

There were 4 men and 2 women among the 6 cases with mild to moderate non proliferative retinopathy. In the two having severe non proliferative diabetic retinopathy one was male and the other was female, while the only patient with proliferative diabetic retinopathy was male.

DISCUSSION

This study's finding that 9% of recently identified type 2 diabetic individuals had diabetic retinopathy is comparable to research from South India⁷ and Australia (8). 15% of recently identified diabetics in Pakistan, according to a related research, had retinopathy at the time of their identification.¹ Ethnic difference is likely the reason of this discrepancy. At the time of type 2 diabetes identification, retinopathy is more common in some Europeans than others⁸. In the United Kingdom Prospective Diabetes Study (UKPDS), 35% of participants with type 2 diabetes had been found to experience retinopathy. This is a lot higher than what our analysis found. Hence, it would seem that our individuals' incidence of retinopathy at the time of type 2 diabetes identification is smaller than that documented in the UK¹⁰ and USA¹¹ but comparable to that described from Australia⁷ and India.⁶

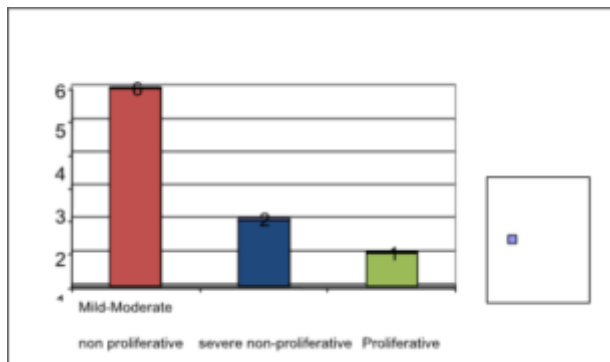


Fig 1: Types of Retinopathy

One theory is that type 2 diabetes may have gone untreated for a greater amount of time in the UK. In our analysis, the mean age of the individuals at assessment had been significantly lower than in the UKPDS study. Another possibility would be that because Pakistan and the UK have various healthcare administrations, patients in Pakistan and patients in the UK may pursue healthcare help at various times. Even though it can be challenging to pinpoint the causes of such disparities in occurrence percentages across human demographics, other influencing factors such as race, age, the method used to diagnose diabetic retinopathy, access to medical care, and other variables may also have had a role. The fact that this research was clinic-based and had a limited sample size had been its constraints. This study's advantage is that it is founded on a thorough fundoscopic examination. This study revealed that diabetic patients with retinopathy were older in age, had higher levels of fasting plasma glucose, HbA1c, cholesterol, triglycerides, LDL, BMI and serum creatinine as compared to diabetics with no retinopathy. Moreover,

smoking and alcohol consumption were also noted in individuals suffering from retinopathy. In the international literature Nathan has reported that HbA1c and systolic blood pressure were higher at baseline in diabetic participants who had retinopathy. Abdollahi et al in a study done in Iran has shown that age, duration of the disease, fasting plasma glucose, HbA1c and systolic blood pressure were significantly higher in patients with retinopathy. Agarwal et al in a study done in India, have reported only systolic blood pressure related to diabetic retinopathy. Rema and associates have observed an association of age, high levels of fasting plasma glucose and HbA1c with retinopathy in a population-based study conducted in urban India. Studies from the western world, as United Kingdom Prospective Diabetes Study and United States Beaver Dam Eye Study have shown high levels of systolic blood pressure, fasting plasma glucose and HbA1c to be important variables in the development of retinopathy.

CONCLUSION

In this study, there was a very high incidence of retinopathy in people with recently established type 2 diabetes mellitus. This underlines how crucial it is for all diabetic individuals to undergo a thorough eye evaluation at the time of identification.

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