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ORIGINAL ARTICLE

Frequency of Diabetic Retinopathy in already diagnosed cases of Diabetes Mellitus- A single center Experience

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ABSTRACT

Background: Patients with diabetes mellitus ends up in many complications and retinopathy is one of the microvascular complications of this metabolic disease.
Aim: To conclude the frequency of diabetic retinopathy in previously diagnosed patients of diabetes.
Methods: Cross Sectional study was conducted in General Medicine Department, Fatima Memorial Hospital, Lahore. This study was conducted from 16th January 2021 to 16th July 2021. A total of 171 patients in both male and female with diabetes mellitus were involved in the study. All patients undertook fundoscopy to look for diabetic retinopathy in department of medicine. Non-probability consecutive sampling technique was used.
Results: As per this study age series from 30 to 75 years with mean age of 51.099±6.19 years, mean duration of diabetes 9.304±3.60 years and mean weight was 87.713±7.63 Kg. Male patients were 64.9% and females were 35.1%. Diabetic retinopathy was seen in 36.8%.
Conclusion: There is increase in prevalence of diabetic retinopathy with rise in period of diabetes mellitus.
Keywords: Diabetes mellitus, Diabetic retinopathy, Duration of diabetes

INTRODUCTION

The prevalence of Diabetic retinopathy (DR) has increased drastically as regular eye examination has been stressed a lot and has gained the significance amongst general practioners too so it has been diagnosed earlier and it is as very common complication in patients with diabetes mellitus[1].

A rough estimate is around 486 million people are living with diabetes and one third of all these patients have evidence of diabetic retinopathy[2].

Currently, the worldwide prevalence rate of DR is 34.6%, and the prevalence rate of DR in developed countries is nearby to 40.3%; 3.6% of patients with type 1 DM. Patients with Diabetic retinopathy has very bad impact on quality of life and carries huge economic burden on the society and country[4].

DR symptoms vary among diabetic patients and from asymptomatic and can end up in permanent vision loss[5]

In a study by Bansal P, et al. has displayed that frequency of diabetic retinopathy was 32% in previously diagnosed cases of diabetes.[6]In different study by Nasir S, et al. has displayed that frequency of diabetic retinopathy was 15.9% in previously diagnosed cases of diabetes[7].

The objective of the study was to determine the frequency of diabetic retinopathy in already diagnosed cases of diabetes.

Operational Definitions:

Type II Diabetes Mellitus: Patients were considered to have Type II Diabetes mellitus if their fasting blood sugar was > 126 mg/dl on > 2 occasions. Patients using chronic use of antihyperglycemic drugs for > one year from history & medical record.

Diabetic retinopathy: It was defined as if any one of following condition present on fundoscopic examination.

Presence of at least 1 micro aneurysm (tiny blood vessel within the retina leak blood or fluid). Presence of hemorrhages, multiple micro aneurysms, and hard exudates

Presence of hemorrhages and micro aneurysms in 4 quadrants, with venous beading in at least 2 quadrants and intraretinal microvascular abnormalities (abnormal branching or dilation of existing blood vessels (capillaries) within the retina) in at least 1 quadrant.

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MATERIAL AND METHODS

This cross Sectional/prevalence study. In General Medicine department, Fatima Memorial Hospital, Lahore during six months after approval of synopsis By using WHO calculator of sample size, it was calculated, **(171)** with 95% confidence interval, 7% margin of error and using predictable frequency of diabetic retinopathy by 32% in previously diagnosed cases of diabetes[7]. Non-probability/purposive consecutive sampling technique was used.

Inclusion criteria: Age of 30 to 75 years of both male and female patients & patients with Diabetes mellitus as per operational definition for > one year

Exclusion criteria: Patients with history of ocular diseases other than diabetic retinopathy, Patients with history of retinal laser therapy. Patients with history of Type I diabetes mellitus**,** Gestational diabetes**,** Pancreatic diabetes mellitus.

Data collection procedure: Patients accomplishing the inclusion criteria from Department of General Medicine, Fatima Memorial Hospital, Lahore was enrolled. Baseline demographic information of patients (age, gender, duration of diabetes and weight in Kilograms (Kgs) on weighing scale) was recorded. Informed consent was obtained from patients

All patients experienced fundoscopy to look for diabetic retinopathy in department of Medicine. All patients were requested to lie in the couch and 2 eye drops, tropicamide 1% instilled in each eye. Pupillary dilatation was confirmed after 30 minutes, patients were requested to sit in the chair and lights were off in the examination room. Detailed fundoscopy of both eyes was executed using Ophthalmoscope. The results of Fundoscopy were noted on the result proforma as per operational definition. Our findings were confirmed by senior Faculty member of ophthalmology department to avoid any bias. In the end, the subject was advised to avoid driving for next few hours till the pupillary size became normal. Retinopathy was documented as per operational definition and recorded on especially designed proforma

Data analysis: Data was analyzed by the statistical program SPSS 25. All the quantitative variables like age, duration of diabetes and weight was analyzed for mean ± standard deviation. Frequencies and percentages were designed for qualitative variables like sex and diabetic retinopathy. Diabetic Retinopathy was stratified among age, sex, interval of diabetes and weight.

Chi-square test was done after stratification, p-value less than 0.05 was measured as significant.

RESULTS

The range of age in this study was from 30 to 75 years with mean age of 51.099±6.19 years, mean duration of diabetes 9.304±3.60 years and mean weight was 87.713±7.63 Kg as shown in Table-I. Male patients were 64.9% and females were 35.1% as shown in Table-I. Diabetic retinopathy was seen in 36.8% patients as shown in Segregation of diabetic retinopathy with respect to age, sex, interval of diabetes and weight are shown in following Table-I.

Table- I: Baseline characteristics & demographics of patients & presence/ absence of diabetic retinopathy according to age categories, gender & duration of diabetes

Demographics	**Mean ± SD**	
Age (years)	51.1±6.19	
Duration of Diabetes (years)	9.30±3.60	
Weight in Kgs	87.71±7.63	
Gender	**N (%)**	
Male	111(64.9)	
Female	60(35.1)	
Diabetic Retinopathy		
Present	63(36.8)	
Absent	108(63.2)	
Diabetic Retinopathy (Age categories)	**Present**	**Absent**
30-50 (Years)	24(32.4)	50(67.6)
51-75(Years)	39(40.2)	58(59.8)
Total	63(36.8)	108(63.2
p-Value 0.296		
Diabetic Retinopathy (Gender)		
Male	45(40.5)	66(59.5)
Female	18(30)	42(70)
Total	63(36.8)	108(63.2)
P-Value 0.173		
Duration of Diabetes (years)	**Present**	**Absent**
1-5 years	1(3.6%)	27(96.4%)
>5 years	62(43.4%)	81(56.6%)
Total	63(36.8%)	108(63.2%)
P-Value 0.000		

DISCUSSION

Diabetic retinopathy were seen in 36.8% patients. In a study by Bansal P et al. has shown that frequency of diabetic retinopathy was 32% in already diagnosed cases of diabetes[6]. In another study by Nasir S, et al. has shown that frequency of diabetic retinopathy was 15.9% in already diagnosed cases of diabetes[7].

One study revealed that insulin intake was indirectly proportional to the presence of DR, as revealed by the landmark studies as well.[8], which may point to a theory that good glycemic control is achieved with insulin which reduces the complication of DR. Our study has revealed strong association between levels of FBG and presence/absence of DR (p=0.003). Similar to other study in South Asia[9] revealed 8% DR cases, where FBG was <100mg/dl, may have resulted due to poor metabolic control before or because of longer duration of DM. 80% patients having FBG>150mg/dl, did not developed DR. This could be due to shorter duration of DM between most of these patients or absence of other associated risk factors.

Limitations: The limitation of the study was that it was conducted in one center only.

CONCLUSION

The Prevalence of DR is directly proportional with the duration of DM. Diabetes of more than 10 years causes' diabetic retinopathy in all patients. Increase incidence is seen with poor glycemic control.

Contribution of authors: AZKC: Conception of the study, Data collection, Review of literature, Review of manuscript, Development of Research Methodology Design, Study Design, Data analysis & Data Interpretation, Article writing, Review of Literature, Drafting article, final approval of manuscript, **KT:** Development of Research Methodology Design, **SA:** Article writing, drafting article, **HN:** Review of literature, drafting article, final approval of manuscript, **MAA:** Review of Literature, Drafting article, **MA:** Review of Literature, Drafting article

Conflict of interest: Nothing to declare

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