Clinical Paper

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Clinic based diabetic retinopathy screening in a quaternary referral centre in Southern India

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Introduction

Diabetic retinopathy (DR) is a major complication of diabetes mellitus (DM), and it is one of the common cause of blindness. Blood vessels that supply oxygen to the retina of the eye are damaged due to long-term high levels of blood sugar (hyperglycemia). Prolonged hyperglycemia causes irreversible pathological changes in the retina, leading to leaking or bleeding of the blood vessels or the growth of abnormal blood vessel and diabetic macular edema (DME). The international clinical classification of DR is based on the observation of micro vascular changes. The first recognizable vascular abnormalities are micro aneurysms and small haemorrhages, followed by more severe signs of vascular leakage, such as cotton wool spot; and more widespread haemorrhages and neovascularization. Macular edema is a major cause of central vision impairment in persons with diabetic retinopathy. Proliferative diabectic retinopathy is also a reason for severe vision loss in diabetic patients which is either due to Vitreous haemorrhage, tractional retinal detachment involving the macula or combined retinal detachment.

In Early treatment diabetic retinopathy study (ETDRS),[1] focal photocoagulation of eyes with clinically significant macular edema (CSME) reduced the risk of moderate visual acuity loss (defined as a loss of 15 or more letters) by approximately 50% (from 24% to 12%) three years after initiation of treatment. Intensive glycemic control, and blood pressure control has also been found to reduce vision loss from diabetes mellitus.[2,3] Diabetic retinopathy study (DRS) demonstrated that PRP reduces the risk of severe vision loss in patients with high risk PDR by 50-60%. Early diagnosis of CSME and PDR helps to start treatment early preventing visual loss in these patients. This can be done by screening diabetic patients.

The main aim of our study is to ascertain the prevalence of diabetic retinopathy (DR) who attended the endocrinology clinic at a quaternary referral centre in Southern India and to find the association of diabetic retinopathy with age, sex and duration of diabetic mellitus.

Materials and methods

We did a cross sectional study on 920 patients who attended the Endcrinology clinic at Amrita institute od medical Sciences, Kerala between November 2017 to April 2018. Diabetic retinopathy was graded after dilating the pupils with tropicamide and phenylephrine. Both type 1 and type 2 diabetes patients were included in this study.

Diabetic retinopathy grading was done by International classification of diabetic retinopathy (ICDR).The data was analyzed to know the prevalence of DR and relation with age, sex and duration of DM. Those patients who had proliferative diabetic retinopathy or clinically significant macular edema were referred to the retina clinic for further evaluation and management.

Statistical analysis was performed using IBM SSP version 20.0 software .Categorical variables are expressed using frequency and percentage .Numerical variables are presented using mean and standard deviation. To compare the statistical significance between more than two groups ANOVA test was used. The Bonferroni test was also used for multiple comparisons. P value less than 0.05 is considered to be statistically significant.

Results

We had 920 patients in our study grou during the 6month period (Tables 1–4) (Figure 1).

Table 1 Age distribution of diabetic retinopathy

Age	Frequency (n=920)	Percentage
<30	35	3.8
30-60	517	56.2
>60	368	40

The mean age of diabetic retinopathy was 56.43+/-12.62.

Table 2 Sex distribution of diabetic retinopathy

Gender	Frequency	Percentage
Male	537	57.9
Female	387	42.1

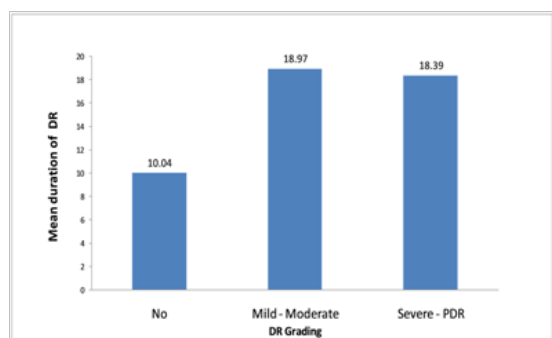**Table 3** Distribution of diabetic retinopathy

Grading	Frequency	Percentage
No	64.9	70.5
Mild	116	12.6
Moderate	104	11.3
Severe	28	3
PDR	18	2

Table 4 Comparison of duration of DM with DR Grading

DR grading	Number	Mean±SD	
No	649	10.04±7.785	
Mild-moderate	220	18.97±34.506	<0.001
Severe	46	18.39±7.839	

29.5 % of patients had diabetic retinopathy and 70.5 percentage of patient had no diabetic retinopathy. No significant association was found with age/ sex in DR.

Figure 1 Graphical representation of mean duration of DR verses DR grading.

Discussion

The prevalence of diabetic retinopathy in our study group was 29.5percentage. As the duration of diabetes increased, the prevalence of retinopathy increased. Similar study was done at SUT Academy of medical sciences, Vattappara, Trivandrum, Kerala and India[4] to estimate the prevalence of Retinopathy in patients attending a diabetic clinic and to evaluate the risk factors underlying its development. 750 diabetic patients who reported for executive check up in a preventive clinic were evaluated for absence or presence of retinopathy. DR was detected in 111 patients (14.8 %) with NPDR in 106 patients (14.1%) and PDR in 5 patients (0.7%). Factors related to the incidence of retinopathy were duration of diabetes, presence of hypertension, high blood sugar level and hyperlipidemia. It was found that duration of diabetes, level of glycemic control and high levels of cholesterol were statistically significant for the occurrence of retinopathy. In our study we found increasing prevalence with increasing duration of DM, but no association with age or sex.

A cross sectional study was conducted in the vicinity of Urban Heath and Training Centre (840-Bhopal) and they found 28 % prevalence of DR. Independent risk indicators for the occurrence of diabetes such as age, BMI, HbA1c, were found significant for the occurrence of retinopathy in the study population.

Another epidemiological study was conducted by Sankar nethralaya Chennai[5] to find the prevalence of DR. The prevalence of diabetic retinopathy in this study was 10.3%

Conclusion

Prevalence of DR in hospital setting at a quarternary referral centre in Southern India is 29.5%. We found that prevalence of DR is increasing with increasing duration of diabetes.

Acknowledgements

Conflict of interest

The author declares no conflict of interest.

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