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Correlation of Duration of Diabetes Mellitus with Incidence of Diabetic Retinopathy

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1. Introduction

Diabetes mellitus is a major systemic cause of blindness in the major part of the world. It is a metabolic disease in which not only carbohydrate metabolism but metabolism of lipid and proteins are also deranged. The associated metabolic deregulation causes secondary pathophysiological changes in multiple organ systems.

Diabetic retinopathy (DR) refers to the retinal changes that occur in patients with diabetes mellitus. It is the leading cause of blindness particularly in the affluent society . The newer evolving techniques and technology have improved the diagnostic accuracy of screening methods and access of the diabetic patients to specialist care. In spite of this progress, DR remains a significant cause of acquired visual loss in working-age adults worldwide.

More number of diabetics is encountered in the elderly age group. It is expected that the demographic shift toward a larger ageing population in India will have an effect on the pattern of chronic diseases and their complications.

2. Aims and Objectives

To evaluate the correlation between DR and duration of diabetes mellitus.

Inclusion criteria
All diabetic patients in general medicine ward.

Exclusion criteria
Patients with any other ocular abnormality like hypertensive retinopathy, age related macular degeneration, glaucoma, retinal detachment.

3. Methodology

This study was conducted at Saveetha Medical College between February 2019 and April 2019. Ethical committee approval was obtained. A cross-sectional institutional study was carried out on 500 patients who were reported diabetics or newly diagnosed diabetics referred for screening for DR.

Complete history was taken including age of onset of DM, duration of DM, any treatment for DM, any ocular treatment, and any other systemic illness/co-morbid disease.

A detailed ophthalmological examination was done which included measurement of visual acuity using Snellen′s distant vision chart and Jaeger′s near vision chart. A detailed examination of the anterior segment, cornea, AC, iris (for neo-vascularization) and lens by a slit lamp bio-microscope was done. Fundus examination was doneusing a direct ophthalmoscope, indirect ophthalmoscope and slit lamp microscopy after dilating the pupil using tropicamide with phenylephrine.

Fundus examination was done to see vitreous hemorrhage, retinal hemorrhage, retina for micro-aneurysms, hemorrhage, hard and soft exudates, venous beading, retinal detachment and clinically significant macular edema (CSME). Severity of maculopathy and severity of retinopathy was noted.

Any features that were suggestive of hypertensive retinopathy, branch retinal vein occlusion, central retinal vein occlusion, age-related macular degeneration was noted.

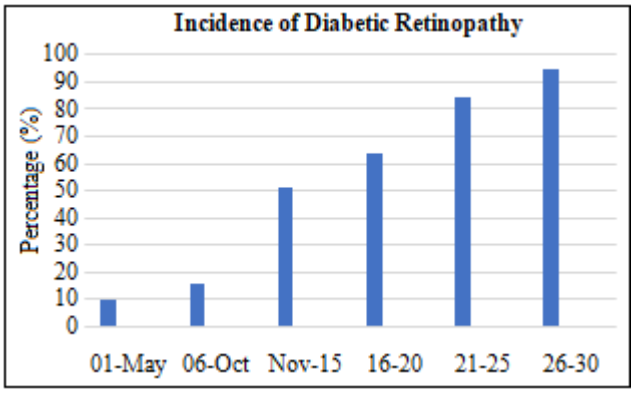
After complete evaluation, the patient was counselled and appropriate treatment was advised.Classification was done based on ETDRS.

4. Results

All the 500 patients studied had duration of diabetes mellitus ranging from 1 to 30 years. Their age ranged from 36 to 78 years. The mean age of the patients without DR was 54 years while the mean age of the patients having DR was found to be 57 years.

This study has revealed the following:

Duration of diabetes was directly associated with Diabetic Retinopathy [Figure - 1] and [Table - 1]. Out of the 500 diabetics, 49% (246/500) had diabetic retinopathy.



Duration of Diabetes Mellitus	Total	Present	Percentage
1-5	101	10	9.9
6-10	82	13	15.8
11-15	93	48	51.6
16-20	93	60	64.5
21-25	91	77	84.6
26-30	40	38	95
Grand Total	**500**	**246**	49.2

5. Discussion

500 cases of DM were studied to measure the prevalence of DR and it was correlated with the duration of DM
Prevalence of DR:

Two clinic-based studies showed prevalence rates of DR in DM type II patients in South India 34.1% and 37%, respectively. [11],[12]

Agarwal et al showed the prevalence rate of 28.9%. [13]

Ourstudy has revealed the total prevalence of DR to be 49% which shows an increase in the prevalence of DR with the previous studies. This may be due to the reason that patients with longer duration of diabetes are more in our study.

The Z values for duration of diabetes 0-5 years is -10.2995 and for 5-10 years is 0.37391 which are found to be insignificant. Z values have been found to be 4.136691 for duration of 10-15 years, 4.9113 for 15-20 years, 6.90929 for 20-25 years which are found to be significant. Hence, in all the patients having DM of 10 years or longer duration should be screened for DR. Z values in patients having diabetes more than 25 years is found to be infinity hence there is high likelihood of all patients of more than 25 years of diabetes to have DR.

Agarwal et al study has shown the maximum prevalence of DR in patients of >15 years of diabetes to be 52%. [13]

This study shows an increasing prevalence of DR with increasing duration of diabetes. In our study also we have a 64.5% prevalence of DR with duration of DM of 16-20 years, but higher prevalence of 84.6% in 21-25years duration of DM and retinopathy was found to be maximum in patients with diabetes of more than 25 years with a prevalence of 95%. More number of cases were reported with poor glycemic control but that is not statistically significant.

The limitation of the study was that it was an institutional-based study.

6. Conclusion

The presence of diabetic retinopathy is found to be minimal (9.9%) in less than 5 years of diabetes age. It is more in patients having diabetes of duration 20-25 years (84.61%) and in 95% of patients with duration of diabetes more than 25 years.

All the patients having diabetes mellitus of 10 years or longer duration should be screened for diabetic retinopathy.

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