

Study of Prevalence of Diabetic Retinopathy in Known Cases of Type- 2 Diabetes Mellitus: Hospital Based Study

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ABSTRACT

Introduction: Diabetic retinopathy (DR) is emerging as one of the important causes of blindness in both developing and developed countries. The emerging scenario in the developing world suggests that diabetes and blindness secondary to diabetic retinopathy may soon be a major problem. Annual retinal examination and early detection of DR can considerably reduce the risk of visual loss in diabetic individuals. Our aim of study is to examine the prevalence of Diabetic Retinopathy in known case of type-2 Diabetes mellitus.

Materials and Methods: A total of 213 patients with Diabetes mellitus type- 2 were examined. Patients with other significant systemic diseases/conditions were excluded from the study. Patient's fundus was examined and classified as no retinopathy or diabetic retinopathy further classified on basis of severity of retinopathy and duration of diabetes.

Results: In our study out of 213 diabetics, 45.53% (97 patients) had no retinopathy compared to 54.47% (116 patients) had retinopathy. Retinopathy and maculopathy appeared to be prevalent more in males (sex ratio 3:2). In a study by Pradeepa et al (2008) revealed that male gender, duration of diabetes, glycated hemoglobin, macroalbuminuria

and insulin therapy were significantly associated with severity of DR. Severity of diabetic retinopathy was seen on rising side as the duration of diabetes increases.

Conclusion: It is recommended that to prevent Diabetic Retinopathy which is microvascular complication of diabetes; early diagnosis, early initiation of treatment, good control of diabetes and regular follow-up is a must.

Keywords: Diabetic Retinopathy, Prevalence.

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INTRODUCTION

Diabetic retinopathy is emerging as one of the important causes of blindness in both developing and developed countries. WHO has estimated that number of total diabetics in the world will increase to 300 million in 2025 and to be greatest in India nearly 195% increase to 54 million in 2025. Recent reports have shown the prevalence to be in the range of 12 to 14% in urban population, of these 20% are expected to be suffering from diabetic retinopathy.¹ CURES² study showed that major systemic risk factors for onset and progression of Diabetic retinopathy are duration of diabetes, degree of glycaemic control and hyperlipidaemia. There is evidence that DR begins to develop years before the clinical diagnosis of type 2 diabetes. DR is present in 7% of newly diagnosed subjects, hence routine retinal screening for DR even at the time of diagnosis of type-2 diabetes may help in optimized laser therapy.

Annual retinal examination and early detection of DR can considerably reduce the risk of visual loss in diabetic individuals.³ Unfortunately India has very few figures for diabetic retinopathy as a cause of blindness. Our aim of study is to examine the prevalence of Diabetic Retinopathy in known case of type-2 Diabetes mellitus.

MATERIALS AND METHODS

A total of 213 patients with Diabetes mellitus type- 2 were examined. Patients with other significant systemic diseases/ conditions eg. Hypertension, tuberculosis, pregnancy, other inflammatory conditions of retina was excluded from the study. Patient's fundus was examined and classified as no retinopathy or diabetic retinopathy, further classified on basis of severity of retinopathy as mild, moderate, severe nonproliferative diabetic retinopathy and proliferative diabetic retinopathy and advanced diabetic eye disease with or without clinically significant macular edema. Patients were divided into 5 groups on basis of duration of disease as 0-5 years, 5-10 years, 10-15 years, 15-20 years and 20 years or more.

RESULTS AND DISCUSSION

Diabetes mellitus is on increase and seems to be emerging as a major public health problem for our country. As per studies Diabetic retinopathy is the most common cause of preventable blindness between 0 to 65 years of age.⁴ In our study out of 213 diabetics, 45.53% (97 patients) had no retinopathy compared to 54.47% (116 patients) had retinopathy (Table 1). In relation to

gender out of 114 males, 71 had diabetic retinopathy and 31 had maculopathy but out of 99 females only 45 had retinopathy and 20 had maculopathy (Table 2). So retinopathy and maculopathy appeared to be prevalent more in males (sex ratio 3:2) in consonance with studies like CURES², Hyderabad study.⁵ In a study by Pradeepa et al⁶ revealed that male gender, duration of diabetes, glycosylated hemoglobin, macroalbuminuria and insulin therapy were significantly associated with severity of DR. Severity of diabetic retinopathy was seen on rising side as the duration of diabetes increases, only 36.84% of patients having diabetes for 0-5 years developed retinopathy compared with 100% of patients had retinopathy who have diabetes for 15years or more (Table 3) supported by study of McKay et al⁷ who reported retinopathy was positively associated with a longer duration of diabetes diagnosis and with higher fractions of glycosylated hemoglobin. Statistical analysis methods showed that patients not taking treatment for

diabetes were more likely to develop more severe forms of diabetic retinopathy (17.64% and 29.41% had proliferative DR and advanced diabetic eye disease respectively) than those taking treatment (5.61% and 5.10% had proliferative DR and advanced diabetic eye disease respectively) similar correlation was found out in Diabetes Control and Complications Trial (DCCT)⁸ in which intensive control therapy slowed the progression of retinopathy by 54% and reduced the development of severe nonproliferative retinopathy by 47%. No statistically significant difference was observed in various age groups (Table 4).

So age of patient is not a determinant of occurrence of diabetic retinopathy but duration of diabetes is a significant risk factor for retinopathy. The need of the hour is therefore to control diabetes with appropriate treatment as early as possible to prevent the occurrence of one of the important microvascular complication which is diabetic retinopathy.

Table 1: Severity of Diabetic Retinopathy

| Type of DR | No DR | Mild NPDR | Moderate NPDR | Severe NPDR | PDR | ADED | Total |
|-----------------|-------|-----------|---------------|-------------|-------|-------|-------|
| No. of patients | 97 | 46% | 22 | 27 | 11 | 10 | 213 |
| Percentage | 45.5% | 21.59% | 10.32% | 12.67% | 5.16% | 4.69% | 100% |

DR- Diabetic Retinopathy; NPDR- Non-Proliferative Diabetic Retinopathy; PDR- Proliferative Diabetic Retinopathy; ADED- Advanced Diabetic Eye Disease

Table 2: Effect of gender over occurrence of Diabetic Retinopathy

| Gender | Retinopathy Present(a) | Retinopathy Absent(b) | Maculopathy | Total (a+b) |
|--------|------------------------|-----------------------|-------------|-------------|
| Male | 71 | 43 | 31 | 114 |
| Female | 45 | 54 | 20 | 99 |
| Total | 116 | 97 | 51 | 213 |

Table 3: Diabetic Retinopathy in relation with duration

| Duration of Diabetes | Retinopathy Absent | Retinopathy Present(a) | Total(b) | % of patients developing DR ¹ (a/b×100) |
|----------------------|--------------------|------------------------|----------|--|
| 0-5 years | 72 | 42 | 114 | 36.84 |
| 5-10 years | 2 | 8 | 61 | 62.29 |
| 10-15 years | 02 | 22 | 24 | 91.66 |
| 15-20 years | 0 | 07 | 07 | 100 |
| 20 years or more | 0 | 07 | 07 | 100 |
| Total | 97 | 116 | 213 | |

DR- Diabetic Retinopathy

Table 4: Diabetic Retinopathy with age of patients

| Age (years) | Total | DR ¹ | Percentage (%) |
|-------------|-------|-----------------|----------------|
| <40 | 18 | 6 | 33.33% |
| 41-50 | 55 | 28 | 50.90% |
| 51-60 | 62 | 37 | 59.67% |
| 61-70 | 61 | 36 | 59.01% |
| >70 | 17 | 9 | 52.94% |

DR- Diabetic Retinopathy

CONCLUSION

In background of these findings, it is recommended that to prevent Diabetic Retinopathy which is microvascular complication of diabetes; early diagnosis, early initiation of treatment, good control of diabetes and regular follow-up is a must.

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