

Original Research Article

Prevalence of Diabetic Retinopathy in Patients of Age Group 30 Years and Above

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ABSTRACT

Purpose: To estimate the frequency of diabetic retinopathy by age, sex and type of diabetes (Type I & II) and to identify possible risk factors.

Method: It is a descriptive cross - sectional study, conducted from February 2013 to April 2013. During the study 269 diabetic subjects of age 30 years and above underwent ocular examination including visual acuity, slit lamp examination and fundus examination was done.

Results: The diabetic retinopathy of any grade was detected 54.65 % (147 subjects out of 269). The commonest presentation of diabetic retinopathy was mild NPDR followed by, moderate NPDR, NPDR with CSME, severe NPDR, PDR, PDR with CSME and ADR.

Conclusions: People with diabetes mellitus should be encouraged to maintain good glycemic control and should undergo regular fundus examination to delay or prevent the development of diabetic retinopathy.

Keywords: Diabetic retinopathy, NPDR (Non-proliferative diabetic retinopathy), CSME (Clinically significant macular edema), PDR (Proliferative diabetic retinopathy), ADR (Advanced diabetic retinopathy).

INTRODUCTION

Diabetes is a major public health problem in the world. Diabetes poses the most important threat to public health in the 21st century consuming a disproportionate share of health care resources owing to its deleterious effects on the micro and macro vasculature with effects on every organ in the body.^[1] Diabetic retinopathy is a chronic progressive, potentially sight-threatening disease of the retinal

microvasculature associated with the prolonged hyperglycaemia and other conditions linked to diabetes mellitus such as hypertension.

The incidence of type 2 diabetes in particular has risen dramatically^[2] driven by longevity combined with sedentary lifestyles and increasing levels of obesity. In 2004, Wild^[3] suggested that the most important demographic change to diabetes prevalence

across the world appears to be the increase in the proportion of people >65 years of age.

With the advent of anti-diabetic drugs, the average life of diabetic patients has increased, but at the same time the incidence of diabetic retinopathy has unfortunately increased many folds.^[4]

MATERIALS AND METHODS

The study was a descriptive cross-sectional study, conducted between February to May 2013. Diabetic patients of both gender, aged 30 years and above were included in the study. Critically ill patients, those with opaque media or subjects having bilateral pthysical eye or an empty socket were excluded from the study.

As a first step patients were screened and assessment of diabetic subjects for diabetic retinopathy was done. Written permissions and informed individual consent was taken from all diabetic patients at the examination site. Snellen's visual acuity, as recorded by an ophthalmic technician and demographic data and blood sugar, information about occupation, duration of diabetes, pregnancy, smoking and hypertension were also recorded. Patients were examined on slit lamp for anterior and posterior segment examination by an ophthalmologist. All the patients were dilated with Tropicamide 1% eye drops and examined with direct ophthalmoscope, indirect ophthalmoscope and 90 D lens. If needed fundus photographs were taken with fundus camera. Descriptive statistics of the diabetes was analyzed, age was recorded, male to female gender ratio was recorded.

Frequency of diabetic retinopathy was calculated and relative frequency of different presentations of diabetic retinopathy was calculated.

RESULTS

We screened a total of 269 consecutive diabetic patients between February to May 2013. In 269 patients, 4 (1.49%) were of type 1 diabetes mellitus and 265 (98.51%) were of type 2 diabetes mellitus. (Table no. 1) Out of 269 diabetic patients, 147 (54.65 %) had diabetic retinopathy. Out of 269, 162 were males and 107 were females. (Table no. 2)

Table No. 1: Distribution of study subjects according to type of diabetes mellitus (n=269).

TYPE OF DM	Frequency	Percent
Type 1	4	1.49%
Type 2	265	98.51%
Total	269	100.00%

Table No. 2: Distribution of subjects in sex according to type of Diabetes Mellitus (n=269).

Sex	Type of DM		Total
	Type 1	Type 2	
Females	1	106	107
Males	3	159	162
Total	4 (1.49%)	265 (98.51%)	269 (100.00%)

Chi-Squared df Probability
0.0088 1 > 0.05

Highest distribution 45 (30.61%) of diabetic retinopathy belonged to the age group 60-69 years, 25.17% in age group 50-59 years, 20.41% in age group ≥70 years, 12.93% in age group 40-49 years and in the age group 30-39 years was 10.88% and this whole percentage belonged to both type 1 and 2 diabetes mellitus. (Table no. 3)

Table No. 3: Distribution of subjects in different age groups according to type of Diabetes Mellitus (n=269).

Age group	Type of DM		Diabetic Retinopathy	Total
	Type 1	Type 2		
30 - 39 years	0	38	16 (10.88%)	38
40 - 49 years	1	50	19 (12.93%)	51
50 - 59 years	2	76	37 (25.17%)	78
60 - 69 years	0	67	45 (30.61%)	67
≥ 70 years	1	34	30 (20.41%)	35
Total	4	265	147 (100.00%)	269

Distribution of subjects according to presence of Diabetic Retinopathy in either eye with respect to duration of diabetes Mellitus showed that maximum patients 46 (31.29%) were with duration of 5 to 10 years followed by 41 (27.89%) with <5 years of duration, 35 (23.81%) with >15 years of duration and 25 (17.01%) with 11 to 15 years of duration. (Table no. 4)

Table No. 4: Distribution of subjects according to presence of Diabetic Retinopathy in either eye with respect to their history of duration of suffering from Diabetes Mellitus (n=269).

Duration of diabetes mellitus	Total with Diabetic Retinopathy	Total Diabetic Patients
< 5 years	41 (27.89%)	111
5 - 10 years	46 (31.29%)	38
11 - 15 years	25 (17.01%)	32
> 15 years	35 (23.81%)	88
Total	147 (100.00%)	269

The commonest presentation of diabetic retinopathy seen in left eye was mild NPDR 56 (42.74%) followed by, moderate NPDR 31 (23.66%), NPDR with CSME 15 (11.45%), severe NPDR 14 (10.69%), PDR 9 (6.87%), PDR with CSME 3 (2.29%) and ADR 3 (2.29%). Same pattern was seen in right eye with mild NPDR 51 (38.35%) followed by, moderate NPDR 31 (23.31%), NPDR with CSME 19 (14.29%), severe NPDR 17 (12.78%), PDR 7 (5.26%), PDR with CSME 4 (3.01%) and ADR 4 (3.01%). (Table no. 5)

Table no. 5: Distribution of type of Diabetic Retinopathy according to type of eye involved (n=147).

Types of diabetic retinopathy	LEFT FUNDUS		RIGHT FUNDUS	
	Frequency	Percent	Frequency	Percent
MILD NPDR	56	42.74%	51	38.35%
MODERATE NPDR	31	23.66%	31	23.31%
SEVERE NPDR	14	10.69%	17	12.78%
NPDR WITH CSME	15	11.45%	19	14.29%
PDR	9	6.87%	7	5.26%
PDR WITH CSME	3	2.29%	4	3.01%
ADR	3	2.29%	4	3.01%
TOTAL	131	100.00%	133	100.00%

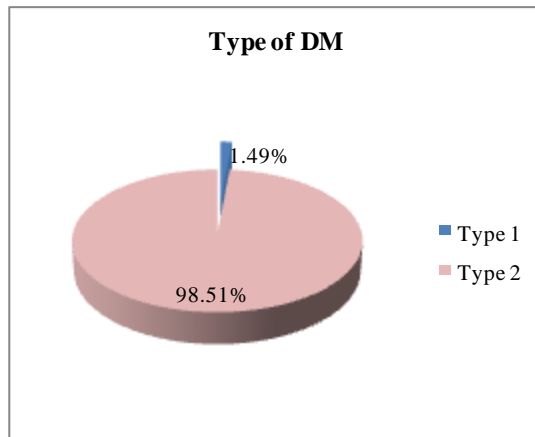


Figure no. 1: Distribution of study subjects according to type of diabetes mellitus (n=269).

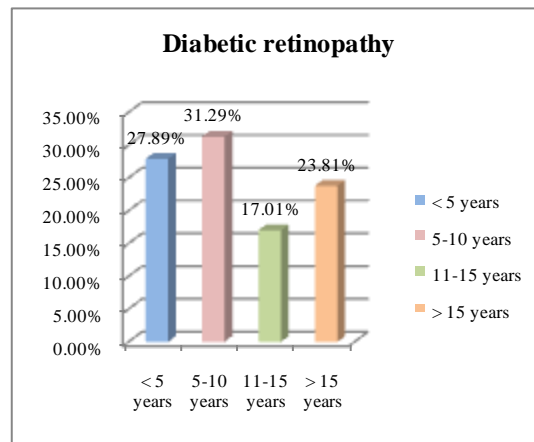


Figure no. 2: Distribution of subjects according to presence of Diabetic Retinopathy in either eye with respect to their history of duration of suffering from Diabetes Mellitus (n=269).

DISCUSSION

Diabetes mellitus affects nearly all tissues of the eye. Although some effects are mild or temporary with little visual disability, a significant loss of vision can

occur when patients develop more serious ocular complications such as diabetic retinopathy and macular oedema.^[5]

A diabetic patient is 25 times more likely to become blind than non-diabetic.^[6]

And indeed diabetic retinopathy is the most common cause of blindness in the working age group.^[7]

In the present study, Out of 269 diabetic patients, prevalence of diabetic retinopathy found 147 (54.65%). Highest distribution 45 (30.61%) of diabetic retinopathy belonged to the age group 60-69 years, 25.17% in age group 50-59 years, 20.41% in age group ≥ 70 years, 12.93% in age group 40-49 years and in the age group 30-39 years was 10.88%.

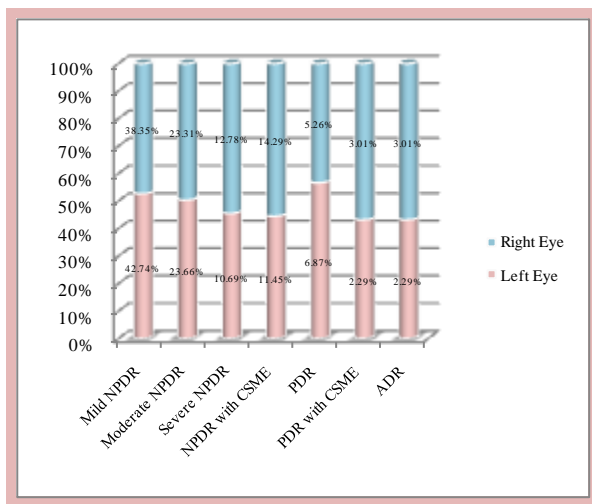


Figure no. 3: Distribution of type of Diabetic Retinopathy according to type of eye involved (n=147).

In a population based study in southern Wisconsin,^[8] 1370 patients of diabetes at age of 30 years or older were examined. Prevalence of diabetic retinopathy varied from 28.8% in persons who had diabetes for less than 5 years to 77.8% who had diabetes for 15 or more years.

In a study done by Paul M,^[9] prevalence was 1.7% in persons younger than 60 years of age, 2.4% in persons 60-69 years of age, 2.7% in 70-79 years of age and 2.3% in 80 years or older.

The National Urban Diabetes Study (2000)^[10] showed the prevalence of diabetes in a population older than 40 years to be

23.8% in 6 cities in India including Chennai, and more recently, the Chennai Urban Rural Epidemiology Study (2003–2004)^[11] estimated the prevalence in those older than 40 years to be 30.1%.

In other countries such as the United States, the United Kingdom, Australia, and the West Indies, the prevalence of DR was estimated to range from 28.5% to 50.3%;^[12-15] in countries that are somewhat closer to India such as Singapore or Mauritius, it was 21.8% and 30%, respectively.^[16,17]

Although the exact reasons for these ethnic differences are not known, the likely reasons may be interaction of genetic susceptibility and protective factors in the population.^[18-20]

CONCLUSION

Commonest presentation of diabetic retinopathy was mild NPDR followed by, moderate NPDR, NPDR with CSME, severe NPDR, PDR, PDR with CSME and ADR. Most patients of diabetic retinopathy belonged to 60 to 69 years of age group. There was a lack of tendency among the patients to acquire treatment of Diabetes mellitus.

People with diabetes mellitus should be encouraged to maintain good glycemic control and should undergo regular fundus examination to delay or prevent the development of diabetic retinopathy.

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