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Prevalence and detailed study of Diabetic Retinopathy in patients visiting Narayana medical college, Nellore

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ABSTRACT

Objective: *To study the prevalence of diabetic retinopathy among patients visiting regular OPD of Narayana medical college Nellore, AP.*

Material and Method: *This is a cross-sectional hospital based study. 500 patients with established diabetes who came to eye OPD of Narayana medical college, Nellore were evaluated for the presence or absence of retinopathy. Relevant clinical examination was done and the findings were recorded at one point of time. No follow-up findings of the patients were included in this study. Indirect Ophthalmoscope, Direct Ophthalmoscope 90D Lens, slit lamp bio-microscope and Fundus Photography were used for examination. statistical analysis was done through Statistical package for Social Sciences (SPSS). $p<0.05$ was taken as significant.*

Observations: *Out of 500 patients 204(40.8%) were males and 296(59.2%) were females. Our study had 46(9.2%)*

Patients were below 40 years of age, 305(61%) patients were between 40-60 years of age and 149(29.8%) were above 60 years of age.

88 patients (63.77%) with DR were above 60 years of age and 47 patients (34.06%) were between 40-60 years of age. 3 patients (2.17%) were below 40 years of age. Above findings say that DR is a age related condition. 30 patients(21.74%) with diabetes of less than 5years duration had DR. Prevalence of DR was 16.67% (23 patients) in patients with duration 5-9 years , 44.2% (61 patients) in patients with 10-14 years duration and 17.4% (24 patients) with duration of diabetes more than or equal to 15 years.

Patients who were managed with insulin, either alone or with oral hypoglycemic drugs, had more prevalence of DR.

Conclusion: *Its concluded that Nellore district of and hrapradesh state has a high prevalence of Diabetic Retinopathy. It needs urgent and vigorous intervention in terms of treatment of Diabetic retinopathy and strict medical intervention to control diabetes. Its also concluded that number of years of uncontrolled diabetes and duration of diabetes is very important parameter to assess the progression of diabetic retinopathy.*

Keyword: *Diabetic Retinopathy, Mild to Moderate DR (NPDR), Proliferative DR (PDR), Diabetic Maculopathy.*

Introduction

Diabetes is a disease which affects almost one third of Indian population. Microvascular and macrovascular complications prevail in diabetic patients one among that is diabetic retinopathy.

Diabetic retinopathy is a common complication of diabetes mellitus and carries with it the high threat of blindness. Diabetic Retinopathy develops in more than 75% of diabetic patients within 15-20yrs from the onset of diabetes. Several epidemiological studies have provided valuable information on the prevalence of DR in western countries. Some were also conducted in India. Such studies are useful in assessing the individuals at risk and can help a long way in decreasing the visual impairment caused by this complication by proper understanding of the disease.

According to latest WHO report, India has 31.7 million diabetics and the number is expected to increase to a staggering 79.4 million by 2030. Andhra Pradesh state is no exception. A large number of cases of Diabetic Retinopathy are being evaluated in the Department of Ophthalmology, Narayana medical college, Nellore. Its very prevalent in this region of Andhra Pradesh and responsible for blindness in huge number of patients attending daily OPD. Especially this is evident in patients from urban area. Thus the need for the current study to assess the burden of this sight threatening complication of diabetes to understand and prevent the condition.

Materials and Methods

This cross sectional study was conducted in the Dept of Ophthalmology, Narayana medical college, Nellore under the guidance of Dr. G Chandrasekhar professor and HOD, Dept of Ophthalmology from May 1,2011 to 30 april 2012.

This institution is a tertiary level of the eye care centre and caters to all the referred patients of the district. Total of 1000 eyes of 500 consecutive patients with established Diabetes who attended eye OPD at NMC Nellore or referred from the Department of Medicine were subjected to detailed clinical study.

All the necessary informations were first gathered regarding the name, age, sex, occupation, Family history, residence, duration of symptoms, and history of drug intake.

Complete ocular examination was done. Visual acuity was recorded using Snellen Chart in Literate patients and E- chart for illiterate patients. Detailed torch lamp examination and slit lamp examination was done. Presence of diabetic retinopathy was assessed by direct ophthalmo-scopy under full mydriasis. Fundus was examined for retinal micro-aneurysms, haemorrhages like flame shaped or dot and blot, cotton wool spots, hard exudates, venous beading, proliferative diabetic retinopathy and diabetic maculopathy. Fundus photography were taken for all the patients with Diabetic Retinopathy. Diabetic retinopathy was graded according to the signs found in the eyes with the early treatment of diabetic retinopathy study research group grading system.

Data collected was subjected to differential statistical tests using statistical package for social sciences (SPSS). $P<0.05$ was taken as significant.

Results

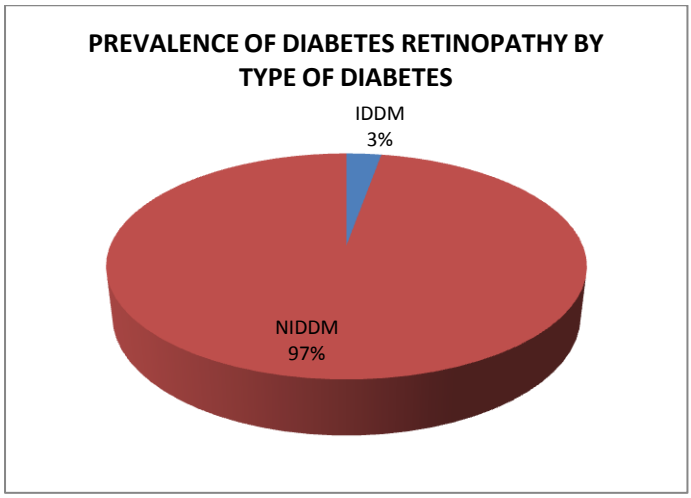
Out of 500 patients 204(40.8%) were males and 296(59.2%) were females. Our study had 46(9.2%)

Patientswere below 40 years of age, 305(61%) patients were between 40-60 years of age and 149(29.8%) were above 60 years of age.

Out of 500 patients 138(27.6%) showed features of Diabetic Retinopathy in the right eye. Among patients with Diabetic Retinopathy 45(32.6%) patients were males and 93(67.4%) were females. Male female ratio was around 1:2 which is statistically significant. ($p<0.05$)

Table-1: Prevalence of Diabetes Mellitus by type

Types of Diabetes mellitus	Number	%
IDDM	14	2.8%
NIDDM	486	97.2%
Total	500	100



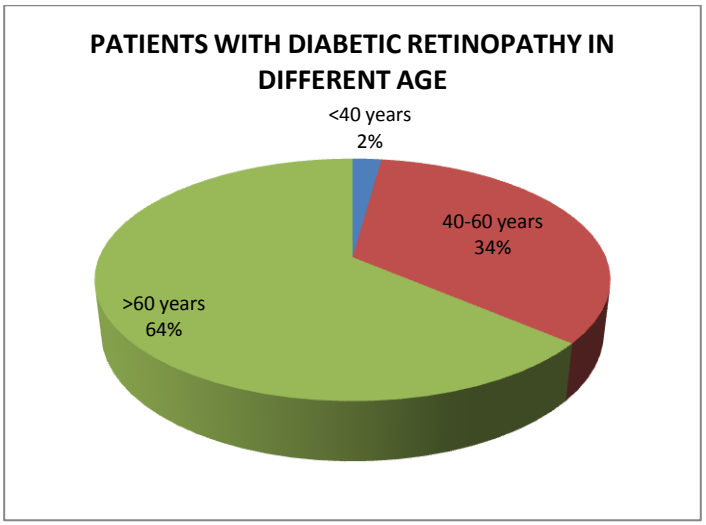
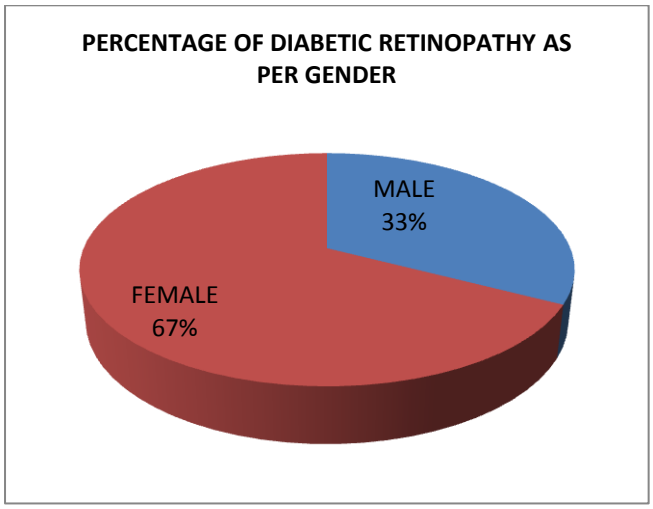


Table-2: Distribution of Diabetic Retinopathy patients by gender

Gender	Patients with DR		Patients without DR		Results
Male	45	32.6%	159	43.9%	P<0.05 Significant
Female	93	67.4%	203	56.1%	
Total	138	100	362	100	



Tabl-3: Distribution of patients with diabetic retinopathy by age

Age (years)	Patients with DR		Patients without DR		Results
	number	%	number	%	
<40	3	2.17%	43	11.9%	P<0.05 Significant
40-60	47	34.06%	258	71.3%	
>=60	88	63.77%	61	16.8%	
Total	138	100	362	100	

88 patients (63.77%) with DR were above 60 years of age and 47 patients (34.06%) were between 40-60 years of age. 3 patients (2.17%) were below 40 years of age. Above findings say that DR is a age related condition.

Table-4: Visual acuity of the patients with established Diabetic Retinopathy at presentation

Visual acuity		Number	%
Right eye	6/6 – 6/18	75	54.35%
	6/18 – 6/36	35	25.36%
	6/36 – 6/60	22	15.94%
	<= 6/60	6	4.35%
	Total	138	100%
Left eye	6/6 – 6/18	77	54.6%
	6/18 – 6/36	30	21.28%
	6/36 – 6/60	23	16.31%
	<= 6/60	11	7.81%
	Total	141	100%

Table-5: Fundus picture of patients with established Diabetes mellitus

Eye	Fundus	Number	%
Right eye	Normal	365	73%
	Mild DR	71	13.8%
	Mod to severe DR	46	9%
	Proliferative DR	6	1%
	Diab.Maculopathy	15	3.2%
	Any DR	138	27%
	Total	500	100
Left eye	normal	359	71.8%
	Mild DR	55	11%
	Mod to severe DR	48	9.6%
	Proliferative DR	12	2.4%
	Diab.Maculopathy	26	5.2%
	Any DR	141	28.2%
	Total	500	100

Table-6: Treatment modality and DR of established Diabetic Patients

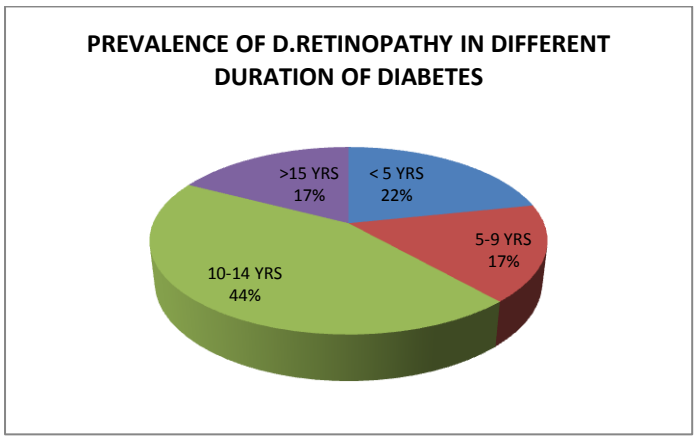
Treatment	Total	Retinopathy	
		Number	%
Diet + E	32	3	9.4%
Diet + E + OHA	349	68	19.5%
Diet + E + Insulin	76	36	47.4%
Diet + E + I + OHA	43	28	65.1%

E = Exercise, I=Insulin, OHA = Oral Hypoglycaemic Drugs

Patients who were managed with insulin either alone or with OHA had more prevalence of DR than those managed without insulin.

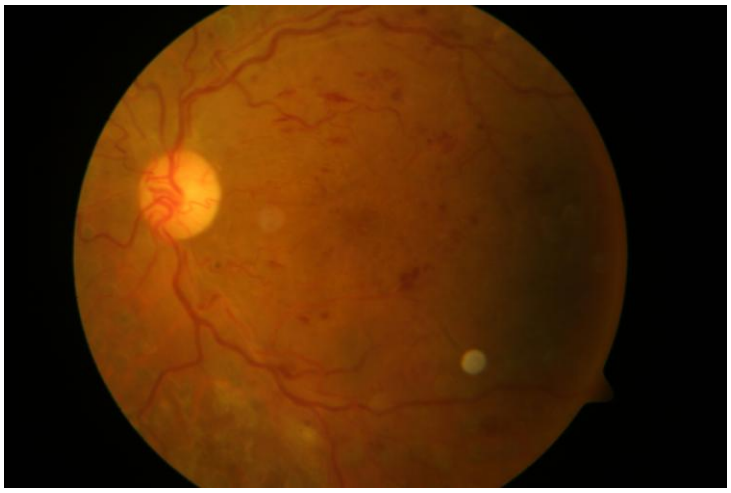
Table-7: Prevalence of DR by duration of diabetes

Duration of Diabetes (yrs)	Total	Retinopathy	
		Number	%
< 5	235	30	21.74%
5 - 9	108	23	16.67%
10 - 14	127	61	44.2%
>= 15	30	24	17.4%
Total	500	138	



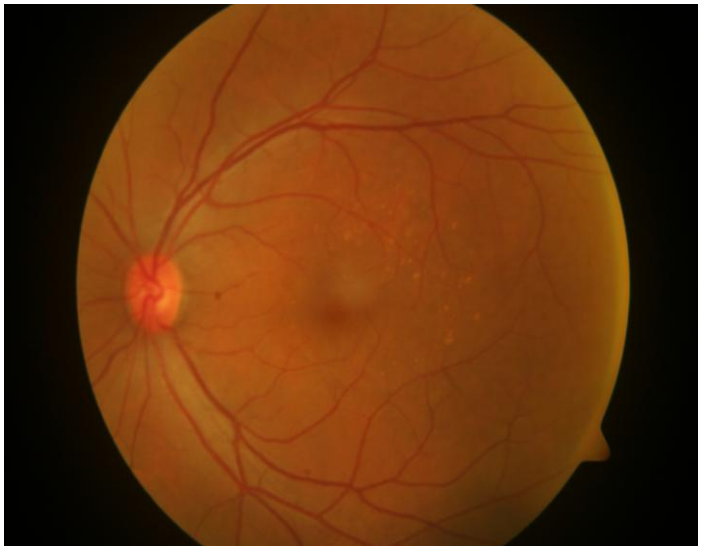
30 patients(21.74%) with diabetes of less than 5years duration had DR. Prevalence of DR was 16.67% (23 patients) in patients with duration 5-9 years , 44.2% (61 patients) in patients with 10-14 years duration and 17.4% (24 patients) with duration of diabetes more than or equal to 15 years.

Both Eye Severe Non Proliferative Diabetic Retinopathy



Both Eye Severe Proliferative Diabetic Retinopathy

Right Eye Moderate NPDR, Left Eye Mild NPDR



Discussion

This cross sectional study showed the prevalence of any DR among known diabetics as 27.6%. Our results are consistent with those of pooled analysis using indivisual participant data from 34 population based studies (2012) whose study observed a prevalence of DR as 34.6%[1]. Foulds et al (1983) showed almost a similar prevalence[2].

The most prevalent type of DR in our study was NPDR which is consistent with those of Fatima AlKharaj et al (1998)[3]who observed NPDR in 11.3%. supapluksakul S et al (2008)[4] showed similar results .Moderate to severe NPDR, in our study, showed prevalence of 9%(45/135). Our results are in agreement with Al-adsani, et al (2007)[5]

This study revealed low prevalence of PDR comprising of 1%. Our observation is in agreement with Seyoun et al[6] whose study was conducted in Ethopia. and Tapp et al[7] also showed similar prevalence. Prevalence of diabetic maculopathy was found to be 4.8 % .This is in accordance with other studies by Khandekar et al [8] and Wong et al[9].

In other studies, prevalence of retinopathy at diagnosis varies from 20-60%. The observed geographic/ population variations in the prevalence of DR could be due to real ethnic differences in the susceptibility to DR (genetic) or due to poor control of diabetes and influence of socio-economic and cultural factors (environmental).

Mean age of patients with DR in this study was 57.4 yrs with the highest number of patients in the age group between 40-60 yrs consistent with the study conducted by Shrestha et al in Nepal[10].

The above observation suggested that DR is an age related condition. 67.4% of cases with DR in the present study were females. Similar observation was made by Jamaludin et al in their study conducted at Karachi Pakistan. Contrary to this, Mohan Rema et al (2005)[11], Dandona et al (1999)[12] showed increased susceptibility of males to DR. The reason for the sex preditection appears to be lack of awareness of diabetes and regular treatment as compared to male population.

There was strong correlation between duration of diabetes and prevalence of DR. 61.6% of patients with diabetes of more than 10 yrs had DR. Ossame A W et al (1998)[13] and Robyn J Tapp et al (2002)[7] observed similar association of DR with prolonged duration of diabetes. In our study, prevalence of retinopathy was higher in those on insulin treatment (either alone or with OHA) which is perhaps explained by the fact that subjects with retinopathy may have been preferentially treated with insulin. Similar observations were made by R P Agarwal et al (2003) India.

Conclusion

- Diabetic retinopathy is an age related condition because DR was found mostly in patients above 40 yrs of age.
- DR is strongly associated with duration of Diabetes. Its mainly seen in uncontrolled diabetics being directly proportionate to the years of uncontrolled diabetes. Its also seen in controlled diabetics after certain years which tells there are also other reasons to be evaluated for onset of diabetic retinopathy other than uncontrolled diabetes.
- Prevalence of diabetic retinopathy was more in patients on insulin treatment.
- Visual acuity of the patients with diabetic maculopathy was found to be more affected than the patients without diabetic maculopathy.
- Prevalence of DR was higher among females due to lower education among women than men

The study concluded that the prevalence of DR in our OPD based cross sectional study was found to be 27.6%. But our study being hospital based rather than population based survey with a low sample size, the actual prevalence may be different. Even it will vary from rural to urban population. So, DR poses an enormous public health and economic burden for the state and the district since number of diabetic patients are constantly increasing and future projections about the same are indicative of a further increase in the number of diabetics. In conclusion, there is a immediate need to consider disease seriously and to go for preventive rather than curative approach in controlling this disease which is causing blindness in very high number of population.

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