



Original Research Article

A CROSS-SECTIONAL STUDY ON CLINICAL PROFILE OF PATIENTS WITH DIABETIC RETINOPATHY VISITING OPHTHALMOLOGY OPD AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Early diagnosis and prompt treatment of sight-threatening diabetic retinopathy (STDR) should be done. This will play a vital role in the prevention of blindness. This kind of blindness can be avoided. And hence it is known as avoidable blindness. This can be achieved through education of the patients, early identification, referral etc. With this, the present study was carried out to study the clinical profile of patients with diabetic retinopathy.

Materials and Methods: Hospital-based, cross-sectional, study was carried out over 2 months among 63 cases with diabetic retinopathy. Snellen's presenting and best corrected visual-acuity, intraocular pressure, and slit-lamp examination of anterior segment of eye, Fundus examination/photography were performed and retinal diagnosis and optic disc evaluation of each eye was done. Grading of DR was performed using International Clinical Diabetic Retinopathy severity scale. STDR was defined by presence of severe non-proliferative diabetic retinopathy, proliferative diabetic retinopathy, and/or diabetic macular edema/clinically significant macular edema (CSME).

Results: Mean age was 57.5 years. Majority (44.4%) were newly diagnosed diabetes within last five years. 84.1% were taking Oral hypoglycemic drugs (OHG). 50.8% had bilateral DR. STDR was seen in 5.8%. Non-STDR was observed in 31.7%. Cataract was most common ocular comorbidity (27%). Incidence of STDR was 7.9% in those with diabetes-duration<5years compared to 8.3% among those with diabetes-duration>5years but difference was significant. Incidence of STDR was 6.8% in those with Diet & Lifestyle+OHG compared to 33.3% among those with Other (OHG + Insulin) but difference was significant.

Conclusion: Prevalence of STDR is high. Early diagnosis and treatment by regular screening of diabetics for DR should be carried out and if detected, proper treatment should be given.

Keywords: Diabetic retinopathy, blindness, prevalence.

INTRODUCTION

Diabetes mellitus (DM) is a part of metabolic disorders. There is chronically increased levels of blood sugar. This persists for longer periods of time.

It has been estimated that in India approximately about 77 million persons are suffering from diabetes.^[1] It has also been estimated that probably around 43.9 million population is having diabetes but they are not diagnosed with it. There are several

complications of diabetes. One of the most prominent complication is diabetic retinopathy (DR). The persons with DR if not taken care of or if this condition is neglected, then over a period of time, it can cause loss of vision. Both types of diabetes can affect the vision. There is a direct relation between DR and risk factors. As the control of blood sugar improves, the chances of DR decreases. As the duration of diabetes increases, the chances of DR increases.^[2]

In addition to duration of diabetes and control of blood sugar other important risk factors of DR are dyslipidemia, hypertension, nephropathy etc.^[3,4] The risk of diabetes for patients with type 1 diabetes is almost 90% and the risk of diabetes for patients with type 2 diabetes is around 50-60%.^[5]

There are different stages of retinopathy. It starts with mild stage where it is not proliferative in nature. If neglected and not taken care of then it can progress to moderate and later on to severe stages. In case of proliferative stage, there can be damage to the blood vessels and they become abnormal. Because of the presence of abnormal blood vessels, there can be bleeding in the vitreous or there can be detachment of retina. These changes or damage can lead to impairment of vision which can be very severe in nature.^[6] Updated research focuses on increasing prevalence of diabetic macular edema (DME). It has been shown that its prevalence may be double that of DR. In cases with type 2 diabetes, it may affect the vision.^[7]

It is important that early diagnosis and prompt treatment of sight-threatening diabetic retinopathy (STDR) should be done. This will play a vital role in the prevention of blindness. This kind of blindness can be avoided. And hence it is known as avoidable blindness. This can be achieved through education of the patients, early identification, referral etc. With this, the present study was carried out to study the clinical profile of patients with diabetic retinopathy.

MATERIALS AND METHODS

Study Design: A hospital-based, cross-sectional, observational study.

Study population: The Outpatient Department patients at Ophthalmology of Malla Reddy Institute of Medical Sciences, Hyderabad, Telangana.

Setting: Outpatient Department (OPD) of Ophthalmology, Malla Reddy Institute of Medical Sciences, Hyderabad, Telangana.

Duration: 2 months

Inclusion Criteria

- Patients of either gender aged more than 18 years attending the OPD.
- Patients who provide written informed consent.

Exclusion Criteria

- Patients without diabetic retinopathy
- Patients with severe degree of illness that does not permit eye examination/data collection

Sample size: A total of 63 cases with diabetic retinopathy were included in the present study

Sampling technique: Simple random sampling technique was used.

Ethical considerations: The protocol was submitted to the Scientific Committee. After approval from the Committee, the protocol was submitted to the Institutional Ethics Committee. After approval from IEC, MRIMS, data collection was started. Written Informed consent was taken from all the participants. The data was maintained meticulously and confidentially.

Data Collection Tools: Data was collected using a structured questionnaire:

Data Collection Procedure

The Investigator approached the patient, explained the study in the local language (Telugu/Urdu/Hindi), and provided a Participant Information Sheet (PIS). Written informed consent was obtained. The questionnaire was administered via a face-to-face interview.

Ocular history details and ocular examination findings were entered into the proforma. The recorded ocular examination included Snellen's presenting and best corrected visual acuity, intraocular pressure, and slit lamp examination of the anterior segment of the eye. Fundus examination/photography were performed and the retinal diagnosis and the optic disc evaluation of each eye was entered separately in the proforma. The grading of DR was performed by ophthalmologists using the International Clinical Diabetic Retinopathy (ICDR) severity scale. 8 Sight threatening DR (STDR) was defined by the presence of severe non-proliferative diabetic retinopathy (NPDR), proliferative diabetic retinopathy (PDR), and/or diabetic macular edema (DME)/clinically significant macular edema (CSME). 9 Each eye was assigned a retinopathy level.

Statistical Analysis: The data was entered in the statistical software. The data was expressed in terms of proportions for categorical variables and mean/median for continuous variables. P value < 0.05 was considered as statistically significant.

RESULTS

Table 1: Distribution of study subjects as per socio-demographic characteristics

Variable	Category	Count (n=63)	Percentage (%)
Age (Years): Mean $\pm$ Standard Deviation = 57.5 $\pm$ 12.9 (Range: 31 - 80, n=62)			
Gender	Male	33	52.4%
	Female	30	47.6%
Residence	Rural	40	63.5%
	Urban	23	36.5%

Educational Status	Primary	22	34.9%
	Illiterate	21	33.3%
	Secondary	14	22.2%
	Inter	4	6.3%
	Degree/Diploma	1	1.6%
	Higher	1	1.6%
Occupational Status	Daily wage worker	28	44.4%
	Skilled worker	12	19.0%
	Semi-skilled worker	11	17.5%
	Not working	7	11.1%
	Housewife	4	6.3%
	Business	1	1.6%

The mean age was 57.5 years. Males and females were not much different in total numbers. Majority (63.5%) came from the rural areas. 34.9% of the

study subjects had education up to primary level. 44.4% of the cases were daily wage workers. [Table 1]

Table 2: Diabetes Clinical Profile

Variable	Category	Count (n=63)	Percentage (%)
Duration of Diabetes	1 to 5 years	28	44.4%
	5 to 10 years	17	27.0%
	< 1 year	11	17.5%
	> 10 years	7	11.1%
Treatment Modality	Oral hypoglycemic drugs (OHG)	53	84.1%
	Diet and lifestyle	7	11.1%
	OHG + Insulin	3	4.8%

Majority (44.4%) were newly diagnosed diabetes within last five years. 84.1% were taking Oral hypoglycemic drugs (OHG). [Table 2]

Table 3: Ocular Findings and Diabetic Retinopathy (DR) Status

Variable	Category	Count (n=63)	Percentage (%)
Laterality of DR	Bilateral	32	50.8%
	Unilateral	31	49.2%
Sight-Threatening DR	No	58	92.1%
	Yes	5	7.9%
Non-Sight-Threatening DR	No	43	68.3%
	Yes	20	31.7%
Ocular Comorbidities	None / Not Recorded	39	61.9%
	Cataract	17	27.0%
	Cataract Surgery	4	6.3%
	Glaucoma	2	3.2%
	Age-Related Macular Degeneration	1	1.6%
Best Corrected Visual Acuity	6/18 - 6/36	24	38.1%
	6/6 - 6/12	20	31.7%
	6/60 - 3/60	14	22.2%
	< 3/60	2	3.2%
	Not Recorded	3	4.8%

50.8% had bilateral DR. STDR was seen in 5.8% of the cases. Non-STDR was observed in 31.7% of the total cases. Cataract was the most common ocular

comorbidity in 27% of the cases. Best Corrected Visual Acuity of 6/18 - 6/36 was seen in 38.1% of the cases. [Table 3]

Table 4: Association between Duration of Diabetes Mellitus and Sight-Threatening DR (STDR)

Duration of DM	STDR: No	STDR: Yes	Total
< 5 years	35 (92.1%)	3 (7.9%)	38 (100%)
>= 5 years	22 (91.7%)	2 (8.3%)	24 (100%)
Total	57 (91.9%)	5 (8.1%)	62 (100%)

p-value (Chi-square) = 0.951

The incidence of STDR was 7.9% in those with duration of diabetes of less than five years compared to 8.3% among those with duration of diabetes of more than five years. It was slightly more in those

with duration of diabetes of more than five years but the difference was not found out to be statistically significant [Table 4]

Table 5: Association between Treatment Modality and Sight-Threatening DR

Treatment Modality	STDR: No	STDR: Yes	Total
Diet & Lifestyle + OHG	55 (93.2%)	4 (6.8%)	59 (100%)
Other (OHG + Insulin)	2 (66.7%)	1 (33.3%)	3 (100%)

Total	57 (91.9%)	5 (8.1%)	62 (100%)
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p-value (Chi-square) = 0.099

The incidence of STDR was 6.8% in those with Diet & Lifestyle + OHG compared to 33.3% among those with Other (OHG + Insulin). It was more in those with Other (OHG + Insulin) but the difference was not found out to be statistically significant [Table 5].

DISCUSSION

The mean age was 57.5 years. Males and females were not much different in total numbers. Majority (63.5%) came from the rural areas. 34.9% of the study subjects had education up to primary level. 44.4% of the cases were daily wage workers. Majority (44.4%) were newly diagnosed diabetes within last five years. 84.1% were taking Oral hypoglycemic drugs (OHG). 50.8% had bilateral DR. STDR was seen in 5.8% of the cases. Non-STDR was observed in 31.7% of the total cases. Cataract was the most common ocular comorbidity in 27% of the cases. Best Corrected Visual Acuity of 6/18 - 6/36 was seen in 38.1% of the cases. The incidence of STDR was 7.9% in those with duration of diabetes of less than five years compared to 8.3% among those with duration of diabetes of more than five years. It was slightly more in those with duration of diabetes of more than five years but the difference was not found out to be statistically significant. The incidence of STDR was 6.8% in those with Diet & Lifestyle + OHG compared to 33.3% among those with Other (OHG + Insulin). It was more in those with Other (OHG + Insulin) but the difference was not found out to be statistically significant.

Das AV et al,^[10] carried out a hospital based cross sectional study. Their study had 263,419 participants with diabetes. It was a nine year study. Final analysis had those cases with DR in any one eye. During study period the incidence of DR was 25%. In that 70% were males. Mean age was 57 years which is comparable to the present study. The odds of developing DR was 2.42 times more in elderly compared to younger age group. The odds of developing DR was 6.52 times more in those with diabetes duration of more than ten years. The odds of developing DR was 1.36 times more in males compared to females. Author concluded that every fourth diabetic had DR. The proportion of STDR in those with DR was 50%.

Kaushik M et al,^[11] recruited 625 patients who were known cases of diabetes. These cases were examined for the presence or absence of STDR. They observed that the average age was 56.36 years which is similar to the findings of the present study. Male to female proportion was also similar like the present study. The incidence of STDR was 33.28% which is very high compared to the present study of about 7%. While the prevalence of Non STDR was being comparable with this study. They noted a significant association of diabetes duration with STDR but we failed the same in this study. Other factors associated

with STDR in their study were lack of control over the blood sugar, age, gender, literacy etc.

Rajalakshmi R et al,^[12] included 11182 cases with diabetes in their analysis. Mean age was comparable with that of present study which was given as 58.2 years. On an average the diabetes duration was 9.1 years and there were about 59.2% of males which are also comparable to this study observations. The prevalence of DME was 9.1% in their study which is not documented in this study. They performed multivariable logistic regression analysis in which factors like being male, lack of control over blood glucose, taking insulin and diabetes duration of more than fifteen years were identified as significant risk factors of DR.

Venugopal R et al,^[13] included 2,834,616 cases in their study. Those with PFT were observed and the prevalence of PFT was 0.081% giving absolute number of 2310 PFT cases. Females predominated. Almost 85% had bilateral affliction. Elderly were commonly affected. It was more in those with higher socioeconomic status people. Being from metro area was common risk factor. It was an important risk factor for STDR. They concluded that PFT is more in females, it is affecting both the eyes, common in upper classes.

Mohapatra A et al,^[14] evaluated 66 cases from electronic medical records. DR was seen in all 132 eyes. Uveitis was unilateral in 35 cases and bilateral in 31 cases. Mean age was slightly lower compared to the present study which was reported as 53.4 years. The average diabetes duration was 10.5 years. The average uveitis duration was 61.3 years. Proliferative DR was seen in 49.5% of the cases. They concluded that neovascular and uveitis complications were higher in DR with uveitis.

CONCLUSION

Prevalence of STDR is high. Early diagnosis and treatment by regular screening of diabetics for DR should be carried out and if detected, proper treatment should be given.

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