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PREVALENCE OF RETINOPATHY IN NEWLY DIAGNOSED DIABETES MELLITUS: EXPERIENCE AT OUR TERTIARY CARE CENTER

Ophthalmology

Dr Erum Waris Khateeb — Senior Resident, Department of Ophthalmology, Sher-e-Kashmir Institute of Medical Sciences Medical College and Hospital Srinagar

Dr Sobia Fatima Tak — Ex-Senior Resident, Department of Ophthalmology, Sher-e-Kashmir Institute of Medical Sciences Medical College and Hospital Srinagar

Dr Wasim Rashid — Assistant Professor, Department of Ophthalmology, Sher-e-Kashmir Institute of Medical Sciences Medical College and Hospital Srinagar

Dr Ifrah Ahmad Qazi* — Senior Resident, Department of Urology, Narayana Medical College, Nellore *Corresponding Author

ABSTRACT

Diabetic retinopathy is leading cause of blindness in most of the diabetic population **Aim:** To detect prevalence of diabetic retinopathy at the time of diagnosis of diabetes mellitus and to study the relationship of development of retinopathy with various risk factors associated with type II diabetes mellitus like BMI and lipid profile. **Methodology:** It was a cross-sectional study conducted over a period of one year. Patients with newly diagnosed Type II Diabetes mellitus with age more than 20 years presenting to our department were included in the study. History of blurred vision, black spots, floaters and sudden visual loss taken. Fundus examination was done. Blood investigations included fasting glucose, Postprandial glucose, HbA1c levels and urea & serum creatinine levels were done. **Results:** A total of 100 patients were included. Most of patients were clustered between 31-50 years of age. 41% of the patients were overweight, 27% of the patients were obese. 96% of the patients had no significant clinical history pertaining to diabetic retinopathy. 56% of the patients had abnormal lipid profile, among the patients with abnormal lipid profile. 6% of patients had abnormal retinoscopy findings, of which 4 patients had mild NPDR. Out of 57 patients with HbA1C >7.5% , 6 patients had diabetic retinopathy. **Conclusion:** Diabetic retinopathy is associated with vision threatening complication. It can be made out even at the time of diagnosis of type II diabetes mellitus.

KEYWORDS

Retinopathy; Diabetes Mellitus; Glucose

INTRODUCTION:

Diabetes mellitus encompasses a group of metabolic disease where the person has hyperglycemia, either because of insufficient insulin production or because the body's cells do not respond properly to insulin or both. Annual prevalence of diabetes is approximately 8.2%, out of which 90% is Type II Diabetes Mellitus. There is usually an asymptomatic period between the actual onset of hyperglycemia and clinical diagnosis, which may last for 4-7 years[1]. This asymptomatic hyperglycemia is responsible for the increased prevalence of microvascular complications in newly diagnosed diabetes mellitus.

Diabetic retinopathy is common in newly detected diabetes mellitus[2] with incidence ranging from 39% in men and 35% in women. Severe retinopathy is present in 4% of women and 8% of men at the time of diagnosis of diabetes mellitus[3]. It remains the leading cause of blindness in most of the diabetic population. With appropriate medical care visual loss can be prevented.

Presence of microvascular complication in newly detected diabetes mellitus are showing increasing trends in India. Early detection of microvascular complications like diabetic retinopathy, diabetic nephropathy and its treatment prevent the progression of these complications and hence morbidity and mortality among patients.

Our study aimed to detect prevalence of diabetic retinopathy at the time of diagnosis of diabetes mellitus and to study the relationship of development of retinopathy with various risk factors associated with type II diabetes mellitus like BMI and lipid profile.

Methodology:

It was a cross-sectional study conducted over a period of one year from May 2021 to May 2022 in our tertiary care centre. Patients with newly diagnosed Diabetes mellitus with age more than 20 years presenting to our department were included in the study. The patients had consulted physician either for routine health checkup or were admitted for some other diseases and diabetes mellitus was detected by chance for first time. The known cases of diabetes mellitus under treatment were excluded from study. Patients who had congestive cardiac failure, known hypertensives, type I diabetes mellitus and pregnant females were excluded from the study. Detailed history regarding the symptoms of diabetes like polyuria, polydipsia, polyphagia and weight loss were taken. History of microvascular complications were taken in detail. History of blurred vision, black spots, floaters and sudden visual loss taken. Fundus examination was done and results were classified as Normal, Non-proliferative and proliferative retinopathy. Blood investigations included fasting glucose, Postprandial glucose, HbA1c levels and urea & serum creatinine levels were done.

RESULTS:

A total of 100 patients were included. 45% of the patients were within age of 41-50 years, 34% of them were within 31-40 years. So maximum number of patients were clustered between 31-50 years of age. Figure [1]

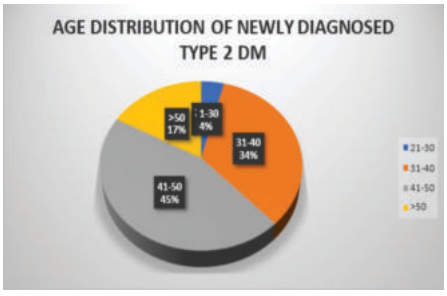

Figure [1]: Age distribution of newly diagnosed Type 2 DM

58% were males (58 males) and 42% were females (42 females). 82% reported from rural areas. Out of 100 newly diagnosed type II diabetes, 41% of the patients were overweight, 27% of the patients were obese. Table [1] Figure [2]

Table [1]: Distribution of body mass index in newly diagnosed Type II DM patients

BODY MASS INDEX	NO OF PATIENTS	PERCENTAGE
< 18.5	2	2%
18.5-24.9	22	22%
25-29.9	41	41%
30-34.9	27	27%
> 35	8	8%

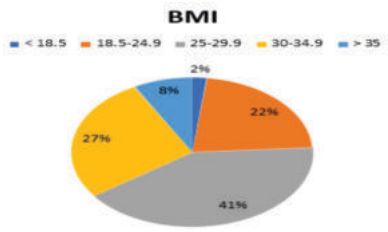

Figure [2]: Distribution of body mass index in newly diagnosed Type 2 DM patients

31% of the patients were smokers, 69% of the patients were nonsmokers . 75% of the patients had no family history of type2 diabetes mellitus. 96% of the patients had no significant clinical history pertaining to diabetic retinopathy. Table [2]

Table [2]: Clinical history of retinopathy in newly diagnosed Type II DM

CLINICAL HISTORY	NO OF PATIENTS	PERCENTAGE
BLURRING OF VISION	2	50%
WATERING FROM EYES	2	50%

56% of the patients had abnormal lipid profile, among the patients with abnormal lipid profile 38% had hypertriglyceridemia, 31% had hypercholesterolemia. Figure [3].

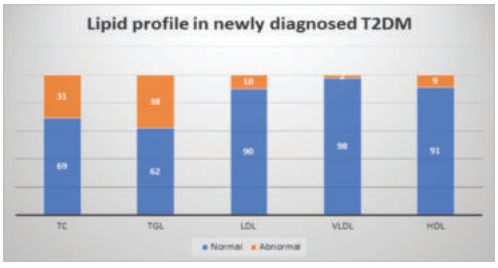

Figure [3] Lipid profile in newly diagnosed Type II DM

6% of patients had abnormal retinoscopy findings, of which 4 patients had mild NPDR. Table [3]

Table [3]: Retinoscopy findings in newly diagnosed Type II DM

FUNDUSCOPY FINDINGS	NO OF PATIENTS	PERCENTAGE
NORMAL	94	94%
MILD NPDR	4	4%
MODERATE NPDR	1	1%
PDR	1	1%

57 patients with HbA1C >7.5% , 6 patients had diabetic retinopathy. Table [4]. Out of 6% patients with retinopathy 5 patients had hyperuricemia. Table [5]

Table [4]: Relationship between HbA1c and Diabetic retinopathy

HBA1C	FUNDUSCOPY			
	NORMAL	MILD NPDR	MODERATE NPDR	PDR
6.5-7.4	43	0	0	0
>7.5	51	4	1	1
PDR		1	1%	

Table [5]: Relationship between serum uric acid and diabetic retinopathy

SERUM URIC ACID	FUNDUSCOPY			
	NORMAL	MILD NPDR	MODERATE NPDR	PDR
3 TO 5	3	0	0	0
5 TO 7	42	1	0	0
> 7	49	3	1	1

DISCUSSION:

Type II diabetes mellitus is an insidious illness with asymptomatic phase of many years during which body is exposed to ill effects of asymptomatic hyperglycemia. Diabetic retinopathy is a leading cause of blindness in diabetic population. Blindness usually due to non-resolving vitreous hemorrhage, tractional retinal detachment or diabetic macular oedema. Diabetic retinopathy is usually asymptomatic in its most treatable stages; so early detection through regularly scheduled ocular examination is important.

It is classified into two main types: Non proliferative diabetic retinopathy and Proliferative diabetic retinopathy. Non proliferative diabetic retinopathy is further classified into Mild, Moderate, Severe and Very severe. [Figure 4; Figure 5; Figure 6]

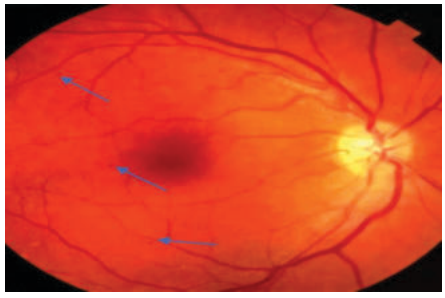

Figure 4: Background diabetic retinopathy

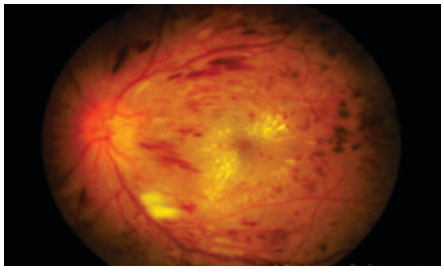

Figure 5: Severe Non-proliferative Diabetic Retinopathy

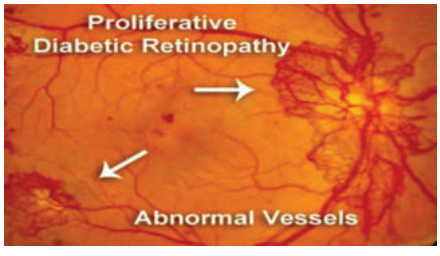

Figure 6 : Proliferative Diabetic Retinopathy

Our study has confirmed that a significant proportion of patients with type II diabetes mellitus has developed diabetic retinopathy even before the time of diagnosis. In our study mean age of our patient was 40 years, which confirms that in developing countries majority of patients with diabetes are in young, productive age group (31-50 years) as compared to developed countries who develop diabetes mellitus at a higher age (>65 years) as found in Wild S, Roglic G et al. and Ramachandran A et al. studies4,5. In our 100 patients evaluated for complication profile nephropathy was more common (24%) when compared to retinopathy (6%).

Most of the patients in our study had no visual symptoms. In our study we have found that lipid profile is abnormal in 56% of patients with newly diagnosed type II diabetes mellitus of the 56% of patients 38 patients had hypertriglyceridemia and 31 patients had hypercholesterolemia. In our study, we found that diabetic retinopathy as the least common microvascular complications (6%). This is in accordance with Sosale et al6 study which showed 6% patients had diabetic retinopathy.

Most of the patients in early diabetes mellitus have mild retinal changes. In our study 4 out of 6 patients having retinopathy only had mild non-proliferative disease and only 1 patient had Proliferative disease at the time of diagnosis of diabetes. There was a significant positive relationship between HbA1c levels and diabetic retinopathy in our study, in that none of the patients with levels of HbA1c levels <7.5 had any retinal changes. This is in agreement with the study done by Marcus Lind et al7, which showed that risk for severe complications mainly occurred at HbA1c levels >8.6%, but for milder complications was increased at HbA1c levels >7.0%

CONCLUSION:

In conclusion, diabetic retinopathy is associated with vision threatening complication. It can be made out even at the time of diagnosis of type II diabetes mellitus. So, vision loss due to diabetic retinopathy is preventable through strict glycemic control and routine fundoscopic examination by an ophthalmologist. Early treatment helps to stabilize the visual acuity and prevent further loss.

Conflict of interest: None

Support: None

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