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ORIGINAL RESEARCH

Study to Know the prevalence of Diabetic Retinopathy In Patients With Type 2 Diabetes Mellitus

[1]Dr. Sandeep Kumar Jain, [2]Dr. Shiping Jain, [3]Dr. Kriti Nema, [4]Dr. Balwant Singh Patle

[1]Assistant Professor, [4]Senior Resident, Department of Medicine, Chhindwara Institute of Medical Sciences, Chhindwara, M.P., India
[2]Associate Professor, Department of Radio Diagnosis, Chhindwara Institute of Medical Sciences, Chhindwara, M.P., India
[3]Assistant Professor, Department of Ophthalmology, Sukh Sagar Medical College & Hospital, Jabalpur, M.P., India

Correspondence:
Dr. Shiping Jain
Associate Professor, Department of Radio Diagnosis, Chhindwara Institute of Medical Sciences, Chhindwara, M.P., India
Email: shipingjain01@gmail.com

Abstract

Introduction: Diabetes Mellitus is the commonest of all metabolic diseases worldwide. Type 2 Diabetes mellitus is insidious in onset and has many patterns of presentation which commonly militate against early detection and diagnosis. Thus most patients present late with the exacerbation of symptoms and complications, in the form of metabolic abnormalities and angiopathies. Microvascular complications include retinopathy, nephropathy, and neuropathy.

Aims: To Determine Prevalence of Diabetic Retinopathy in patients with Type 2 Diabetes Mellitus.

Material and methods: The study was an observational crosssectional study of 320 Type 2 Diabetics Mellitus who matched the inclusion criteria, attending the Department of Medicine (outpatient/inpatient), Sukh –Sagar Medical College and Hospital, Jabalpur,(Madhya Pradesh) from August 2015 to July 2016. Cases were screened for Retinopathy complication by fundoscopy as per ADA criteria, data tabulated and analysed.

Results: In this study The mean age was 52 years ± 12. The maximum incidence of diabetics was seen between 48-64years.The patients presenting with diabetic complication of retinopathy, was 26.25%. Fundus examination revealed that 23.12% of Total (74/320) cases had non-proliferative diabetic retinopathy and 3.12% (10/320) cases had proliferative retinopathy and it was statistically significant.

Conclusion: There was high prevalence of Retinopathy in central Indian population specially in patients having high level of blood sugar and poor adherence towards his/her treatment. can be due to lack of awareness among the people regarding Diabetes Mellitus, especially its vision threatening affects. The screening for complications in all cases of Diabetes Mellitus is highly recommended, specially fundoscopy to all diabetic patients at the time of Diagnosis. its early detection and timely treatment capable of reducing the risk of complete visual loss.

Keywords: Type 2 Diabetes Mellitus, Microvascular complications, Retinopathy, fundoscopy.

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Introduction

Somehow 465 million people worldwide had diabetes in 2019. This number is expected to increase to 578 million in 2030. it is one of the most common non-communicable disease globally[1]. An estimated 80- 85% of the global population with diabetes lives in developing countries[2]. The onset of T2DM is often Insidious and Silent , so that The asymptomatic phase of hyperglycaemia accounts for the relatively high prevalence of complications at initial presentation.[3] Diabetes is a systemic disorder characterized by metabolic abnormalities and angiopathies.[4-7] Microvascular complications include Retinopathy, Nephropathy, and Neuropathy. Diabetic Retinopathy can be defined as damage to microvascular system in the retina due to prolonged hyperglycaemia.[8]However, global data support the assumption that Diabetic retinopathy (DR) will be one of the most important cause of blindness in the future.[3-8] DR is a major cause of blindness in around 5% of patients suffering from type-I Diabetes, and 2.2% of those suffering from type-II Diabetes.[9] Diabetic retinopathy (DR), the more frequent diabetic microvascular complication, affects 30%–50% of all diabetic patients and represents the main cause of legal blindness in 20–74-year-old people in the developed countries (Klein, 2007). The high prevalence and severity of DR suggest the need for screening program able to recognize it as early as possible; this recommendation becomes even more important since DR may be asymptomatic even in its more advanced stages. Current guidelines suggest that patients with type 2 diabetes should have a comprehensive eye examination shortly after the diagnosis because DR is often already present at that time.use of early screening measures for prevention and management of Diabetes Mellitus and its vision threatening complications.

Method

320 cases of Type 2 DM attending the Department of Medicine, SukhSagar Medical College and Hospital, Jabalpur Madhya- Pradesh in between August 2015to July 2016 contributed a sample of this study, by the random sampling and after taking informed consent. Subjects were put to detailed clinical workup, Laboratory diagnosis of Diabetes Mellitus was confirmed by criteria laid by the American Diabetes Association (ADA).[3] Blood glucose was estimated by the ortho-toluidine, while glycosylated haemoglobin by the modified chemical method of Flickinger and Winterhalter. Dilated pupil fundoscopy was carried out in all patients by an ophthalmologist and retinopathy was defined and graded. Lipid profile and serum creatinine were determined in all the patients. Ethical clearance was obtained from the ethical clearance board of the college.

Exclusion Criteria

1. Type 1 Diabetes Mellitus
2. Any other severe illness(eg. Hypertension)
3. Refusal to be a part of the study
4. Pregnancy

Results

In this study, 208 (65%) were males and 112 (35%) were females. The mean age was 52 years ± 12. The maximum incidence of diabetics was seen between 48-64 years. Table-1 shows various metabolic parameters in the study population. The patients presenting with diabetic complication of retinopathy,was 26.25%. Fundus examination revealed that 23.12% of Total (74/320) cases had non-proliferative diabetic retinopathy and 3.12% (10/320) cases had proliferative retinopathy and it was statistically significant.Table-2 shows correlation of HbA1C with Diabetic Retinopathy. The high incidence of Retinopathy occur in patients having >9 HbA1C.

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Table-1: Mean and Standard Deviation of the Metabolic Parameters of Diabetic patients

Parameters	Patient's	Diabetic Retinopathy
Age	52 ± 12	57
BMI	27 ± 12	29
PPBS	280 ± 90	342
FBS	200± 60	198
Waist circumference	89± 10	93

Table-2: HbA1C in Correlation with Diabetic Retinopathy Complication

Parameters	Patients	Diabetic Retinopathy
Hba1dc <7	10	02
Hba1dc 7-8	116	26
Hba1dc 8-9	54	12
Hba1dc >9	140	44
Average Hba1c 8.2± 2	**Total** =320	**Total**=84 (26.25%)
Non-Proliferative Retinopathy	**Total**=74/320 (23.12%)	**Total**=74/84 (88.1%)
Proliferative Retinopathy	**Total**=10/320 (3.12%)	**Total**=10/84 (11.9%)

Table-3: Comparison of Prevalence of Retinopathy Complication with Other Studies

Percentage of Retinopathy in various studies	
Drivsholm et al[10]	9.4 %
Weerasuriya et al[11]	15.2 %
Hoorn study[12]	10.9 %
Our study	26.25 %

Discussion

This study has been done over a period of 12 months, in cases of T2DM attending the outpatient and inpatient Department of Medicine, Sukh- Sagar Medical College and Hospital Jabalpur. Chronic complications are responsible for most of morbidities and mortalities associated with diabetes and these usually occurred after many years of uncorrected elevated blood sugars level. Since patients with type 2 diabetes mellitus may have elevated blood sugars level for several years prior to diagnosis, these patients may have high chances of complications specially Microvascular at the time of diagnosis. The overall prevalence of Diabetic Retinopathy was 26.25%, only 3.125% of patients had proliferative retinal changes that is similar to 2.6% and 2.8% reported by Abera Ejigu[13] and Mengistu.[14]Asian patients had more evidence of Retinopathyat the time diagnosis of diabetes, compared to European patients.eg.- Drivsholm et al[10] and Weerasuriya et al.[11] It can be due to lack of awareness among the people regarding Diabetes Mellitus, especially its vision threatening affects. Table-3 shows prevalence of complications of T2DM in the various studies. The most common type of DR in this study was NPDR which was prevalent in 88.1% of the Diabetic population. These findings are similar to the results of other Asia-based studies.[15-17]

Conclusion

Large proportion of T2DM patients presented with various microvascular complications because of insidious and silent onset of T2DM and hence this disease acts as a silent killer. There is high prevalence of Retinopathy (26.25%) in cases of T2DM which is statistically significant.HbA1C levels predict the prevalence of complications and there is moderate correlation between HbA1C and blood glucose levels. Thus the screening for the

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complications of Diabetic patients is very useful in the preventive management of disease& its complications. Screening with simple tests such as Fundoscopyat the time of diagnosis for all cases of diabetics, is essential to identify the complications at an early reversible stage.Souse of early screening measures for prevention and management of DM and its vision threatening complications.

Conflict of interest

The authors declare that they have no conflict of interest.

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