Section: Medicine

Original Research Article

PREVALENCE OF ERECTILE DYSFUNCTION IN TYPE II DIABETES PATIENTS AND ITS ASSOCIATION WITH GLYCEMIC INDEX: A CROSS-SECTIONAL STUDY FROM KARJAT, MAHARASHTRA

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ABSTRACT

Background: Diabetes mellitus (DM) is a chronic metabolic disorder associated with significant morbidity and mortality. Various forms of sexual dysfunction occur in men with DM, including disorders of libido, ejaculatory problems, and erectile dysfunction (ED). Erectile dysfunction is defined as the persistent inability to achieve or maintain penile erection sufficient for satisfactory sexual performance. With a reported prevalence of 35 to 85%, ED is one of the most common complications of DM. Poor glycaemic control is associated with both microvascular and macrovascular complications in both type 1 and type 2 diabetes, thereby making ED a major issue requiring serious attention in the diabetic population. **Objective:** to assess the prevalence of erectile dysfunction and its association with glycaemic status.

Materials and Methods: The present descriptive observational study involving 100 male type 2 diabetics was carried out in the Medical outpatient department at Dr. N Y Tasgaonkar Institute of Medical Science, Karjat, Dist. Raigad during the study period from January to December 2024 by simple random sampling method.

Results: Prevalence of erectile dysfunction in our study was 48%. We observed statistically significant association between erectile dysfunction and duration of diabetes in years ($p<0.05$). Mean HBA1c level in erectile dysfunction cases was 8.6±2.4% and in non-ED cases was 5.4±1.6%. We observed statistically significant difference in the mean values between two groups ($p<0.05$). It means HBA1c was significantly higher in erectile dysfunction cases as compared to non-ED cases.

Conclusion: Prevalence of erectile dysfunction in our study was 48%. Majority were from 46-50 years age group i.e. 31.3% followed by 25% from 41-45 years. Hba1c was significantly higher in erectile dysfunction cases as compared to non-ED cases.

Keywords: erectile dysfunction, glycaemic status, Type 2 diabetes.

INTRODUCTION

Erectile dysfunction is defined as persistent inability to achieve or maintain erection of the penis firm enough to have satisfactory sexual intercourse.[1] Prevalence of ED in diabetic men ranges from 35 to 90%. Erectile dysfunction is two to threefold higher in men with DM compared to men without DM.[2] ED might present in the early stages of diabetes mellitus or sometimes as a chief complaint of diabetic patients.[3]

Sexual function is one of the important indices of quality of life. The development of ED is negatively associated with men's relationship, social interactions, emotional and particularly psychological well-being.[4] Erectile dysfunction is a preventable diabetic complication. Around 95% of patients with erectile dysfunction related to DM can be treated successfully.[5]

Hyperglycemia is the main determinant of vascular diabetes related complications. But the role of hyperglycaemia in the pathogenesis of sexual dysfunction is still not clearly elucidated.[6] Also, ED occurs 10–15 years earlier in men with diabetes than non-diabetics.[7] Increased age and duration of diabetes have been associated with an increased risk of ED.[8] There are number of factors contributing to erectile dysfunction in diabetic men such as hypertension, obesity, dyslipidaemia, smoking and autonomic neuropathy.[9]

Diabetes mellitus (DM) is a chronic metabolic disorder associated with significant morbidity and mortality. Various forms of sexual dysfunction occur in men with DM, including disorders of libido, ejaculatory problems, and erectile dysfunction (ED). Erectile dysfunction is defined as the persistent inability to achieve or maintain penile erection sufficient for satisfactory sexual performance.[10] With a reported prevalence of 35 to 85%,[11,12] ED is one of the most common complications of DM.

In addition to its higher frequency, ED also occurs at an earlier age in the diabetic population as compared with the general population.[13,14] Erectile dysfunction is associated with grave psychosocial and clinical consequences including depression and poor quality of life. In fact, there is a vicious cycle between ED, depression, and glycaemic control.[15,16]

Poor glycaemic control is associated with both microvascular and macrovascular complications in both type 1 diabetes and type 2 diabetes, thereby making ED a major issue requiring serious attention in the diabetic population. Besides, there is evidence that ED is a risk factor for cardiovascular diseases and an early marker for coronary artery disease which is the leading cause of mortality in patients with DM.[16]

Hence the present study was carried out with the objective to assess the prevalence of erectile dysfunction in urban area of Karjat city.

Objective: to assess the prevalence of erectile dysfunction and its association with glycaemic status.

MATERIALS AND METHODS

The present descriptive observational study was carried out at Medicine OPD at Dr. N Y Tasgaonkar Institute of Medical Science, Karjat, Dist. Raigad involving 100 male type 2 diabetes patients fulfilling the eligibility criteria during the study period from January to December 2024 by simple random sampling method.

Inclusion Criteria

- Males aged 30 years to 60 years with TYPE 2 Diabetes Mellitus

Exclusion criteria:

- Female with DM TYPE 2
- History of pelvic trauma
- History of pelvic surgery
- History of psychiatric disease
- Men with debilitating disease
- Men with unfavorable penile anatomy for sexual act
- History of Valvular heart disease
- History of stroke
- History of heart surgeries
- Congenital heart diseases

Methods of data collection:

All the participants were subjected to detailed history and complete physical examination. History regarding age, personal and family history of diabetes, history of smoking and use of drugs for any ailment for example, anti-hypertensive drugs, (β blockers) occupational history, history of usual physical activity, duration of diabetes, treatment history of diabetes (i.e. diet and exercise, insulin therapy, oral hypoglycaemic agent only, oral hypoglycaemic agent in combination with insulin. was taken. Patients were also asked about complaints with their duration. Patients were thoroughly investigated by routine investigations, HbA1c lipid profile, ECG etc.

Diagnostic criteria by the American Diabetes Association (ADA) include the following

1. A fasting plasma glucose (FPG) level of 126 mg/dL (7.0 mmol/L) or higher, or
2. A 2-hour plasma glucose level of 200 mg/dL (11.1 mmol/L) or higher during a 75-g oral glucose tolerance test (OGTT) or
3. A random plasma glucose of 200 mg/dL (11.1 mmol/L) or higher in a patient with classic symptoms of hyperglycemia or hyperglycaemic crisis
4. An HbA1C of => 6.5% (using a NGSP standardised assay)

Erectile dysfunction was screened by using International Index of Erectile Function (IIEF-5) questionnaire.[17]

Statistical Analysis

Data was collected using a structured proforma, entered in MS excel sheet and analysed by using SPSS 24.0 version IBM USA. Qualitative data was expressed in terms of proportions. Quantitative data was expressed in terms of Mean and Standard deviation. Association between two qualitative variables was tested using the Chi square/ Fischer's exact test. Comparison of mean and SD between two groups was done by using unpaired t test to assess whether the mean difference between groups was significant or not. Descriptive statistics of each variable was presented in terms of Mean, standard deviation, standard error of mean. A p value of <0.05 was considered as statistically significant whereas a p value <0.01 was considered as highly significant.

RESULTS

Table 1: revalence of erectile dysfunction in type 2 diabetes

		Frequency	Percent
Erectile dysfunction	Present	48	48.0
	Absent	52	52.0
	Total	100	100.0

We screened 100 patients of type 2 diabetes mellitus using International Index of Erectile Function (IIEF-5) questionnaire and observed that 48 patients were having erectile dysfunction. Hence the prevalence of erectile dysfunction in our study was 48%.

Table 2: Age wise distribution of erectile dysfunction patients

		ED Present		ED Absent		Total
		Frequency	Percent	Frequency	Percent	
Age group in years	30-35	4	8.3	10	19.2	14
	36-40	6	12.5	10	19.2	16
	41-45	12	25.0	13	25.0	25
	46-50	15	31.3	4	7.7	19
	51-55	9	18.8	5	9.6	14
	56-60	2	4.2	10	19.2	12
	Total	48	100.0	52	100.0	100

Age wise distribution of erectile dysfunction cases showed that out of 48 cases of ED, majority were from 46-50 years age group i.e. 31.3% followed by 25% from 41-45 years, 18.8% from 51-55 years, 12.5% from 36-40 years, 8.3% from 30-35 years and remaining 4.2% from 56-60 years age group. Out of 52 cases of non-ED, majority were from 41-45 years age group i.e. 25% followed by 19.2% from 30-35 years, 36-40 years and 56-60 years age groups each, 9.6% from 51-55 years and remaining 7.7% from 46-50 years age group.

Table 3: Association of erectile dysfunction with duration of diabetes

		ED Present		ED Absent		Total	p
		Frequency	Percent	Frequency	Percent		
Duration of diabetes in years	<5	2	4.2	14	26.9	16	0.045, Significant
	6 to 10	4	8.3	14	26.9	18	
	11 to 15	11	22.9	14	26.9	25	
	15 to 20	13	27.1	6	11.5	19	
	> 20	18	37.5	4	7.7	22	
	Total	48	100.0	52	100.0	100	

Association of erectile dysfunction with duration of diabetes revealed that out of 48 cases of ED, majority had diabetes of duration more than 20 years i.e. 37.5% followed by 27.1% with 15-20 years duration, 22.9% with 11-15 years, 8.3% with 6-10 years and 4.2% had duration of less than 5 years. Out of 52 non-ED cases, majority i.e. 26.9% each were having duration of diabetes less than 5 years, 6-10 years and 11-15 years. 11.5% had the duration of 15-20 years and 7.7% had more than 20 years. We observed statistically significant association between erectile dysfunction and duration of diabetes in years ($p<0.05$).

Table 4: Association of erectile dysfunction with HBA1c level

	Mean	Standard deviation	t	p	Inference
ED present	8.6	2.4	8.39	0.0001	Highly significant
ED absent	5.4	1.6		(<0.01)	

Mean HBA1c level in erectile dysfunction cases was 8.6±2.4% and in non-ED cases was 5.4±1.6%. We observed statistically significant difference in the mean values between two groups ($p<0.05$). It means HBA1c was significantly higher in erectile dysfunction cases as compared to non-ED cases.

DISCUSSION

We screened 100 male patients of type 2 diabetes mellitus using International Index of Erectile Function (IIEF-5) questionnaire and observed that 48 patients were having erectile dysfunction. Hence the prevalence of erectile dysfunction in our study was 48%. (Table 1)

Nisahan B et al,[18] reported that erectile dysfunction (ED) was identified in 62.9% (CI 57.5–68.0%), while 22% (CI 17.8– 26.8%) were found to have severe ED. Sundaram et al,[19] reported that in diabetic patients, the prevalence of ED was 66%. Ledda et al,[20] reported that ED was very common among diabetic patients. They had ED at an earlier age and

prevalence was 75%. Sassayamet al,[21] studied 6112 Japanese male patients from 447 outpatient clinics and found that 81% had some degree of ED.

In our study, age wise distribution of erectile dysfunction cases showed that out of 48 cases of ED, majority were from 46-50 years age group i.e. 31.3% followed by 25% from 41-45 years, 18.8% from 51-55 years, 12.5% from 36-40 years, 8.3% from 30-35 years and remaining 4.2% from 56-60 years age group. Out of 52 cases of non-ED, majority were from 41-45 years age group i.e. 25% followed by 19.2% from 30-35 years, 36-40 years and 56-60 years age groups each, 9.6% from 51-55 years and remaining 7.7% from 46-50 years age group. (Table 2)

Meena BL et al,[22] observed that prevalence of erectile dysfunction increased with the increase in age. Prevalence increased from 20% in age group of <40 to 100% in age group of >60 years.

Increasing age is a common risk factor for ED. In our study even though analysis was done in patients aged 30 to 60-years, prevalence of ED significantly increased with age as in par with some other studies.75 There are equivocal results in some studies where increasing age has not been shown to be an independent risk factor for ED in diabetes.[23]

In our study, association of erectile dysfunction with duration of diabetes revealed that out of 48 cases of ED, majority had diabetes of duration more than 20 years i.e. 37.5% followed by 27.1% with 15-20 years duration, 22.9% with 11-15 years, 8.3% with 6-10 years and 4.2% had duration of less than 5 years. Out of 52 non-ED cases, majority i.e. 26.9% each were having duration of diabetes less than 5 years, 6-10 years and 11-15 years. 11.5% had the duration of 15-20 years and 7.7% had more than 20 years. We observed statistically significant association between erectile dysfunction and duration of diabetes in years ($p<0.05$). (Table 3)

In our study, mean HBA1c level in erectile dysfunction cases was 8.6±2.4% and in non-ED cases was 5.4±1.6%. We observed statistically significant difference in the mean values between two groups ($p<0.05$). It means HBA1c was significantly higher in erectile dysfunction cases as compared to non-ED cases. (Table 4)

Widyaningsih et al,[24] in their study showed that the majority of the DM patients had poor control of DM conditions (>6.5% HbA1c levels). In a study, poor control of blood glucose levels was dominant in patients experiencing DM for >4 years (70.5%).[25] HbA1c levels can be used to determine the average glucose levels of DM patients in the preceding 1-3 months. HbA1c of 6% is equal to 126 mg/dl glucose concentration. Each 1% increase in HbA1c level equals 29 mg/dl glucose level. A number of studies have indicated a significant correlation between HbA1c levels and blood glucose levels. Exacerbated glycaemic levels lead to a corresponding increase in HbA1c levels. Therefore, high levels of HbA1c in DM patients can become an indicator of complications, such as ED.

CONCLUSION

1. Prevalence of erectile dysfunction in our study was 48%.
2. Majority were from 46-50 years age group i.e. 31.3% followed by 25% from 41-45 years.
3. Hba1c was significantly higher in erectile dysfunction cases as compared to non-ED cases.

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