

Relationship between Erectile Dysfunction and HbA1C Percentage in Diabetic Patients at Sanglah Hospital, Bali, Indonesia

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Abstract: *This research is conducted to study relationship between erectile dysfunction and HbA1C percentage among diabetic patient. This was a cross-sectional study conducted at Sanglah Hospital, Denpasar, Bali, Indonesia, from June 14th until July 11th 2010, involving married males with diabetes, whose age below 70 years old and had HbA1C laboratory result in last 3 month on their medical records. Diagnosis of erectile dysfunction by using International Index of Erectile Function-5 (IIEF-5). Age has strong association with erectile dysfunction and higher value of HbA1C increasing risk for developing erectile dysfunction.*

Keywords: erectile dysfunction, HbA1C, diabetes mellitus

1. Introduction

Diabetes mellitus (DM) is a chronic metabolic disease which influent almost all normal metabolic process. In recent years, there was an increasing in diabetes incidence. Indonesia is the 4th highest country with incidence of diabetes mellitus, with the number of cases was up to 8,4 million (in 2000) and keep rising approximately 21.3 million cases of diabetes mellitus in 2030 [1].

One of the most fearless diabetic complication for men is impotency. Impotency is a short of condition consisted with disability of achieving or keeping erection of penis adequately in last 6 month as precondition for success sexual intercourse [1,2]. Sexual dysfunction in diabetic patient is not only a disturbance in the system of erectile function but also impaired the function of other sexual response in the form of reduced motivation and libido/sexual desire, ejaculation disorders, and also decreases the intensity of orgasm [1].

The process of erectile dysfunction (ED) in patients with DM is interference with the nervous system (peripheral neuropathy), impaired vascular system and hypogonadism (hormonal system disorder) [1,2]. Several factors are also suspected as the predictors are: age, duration of diabetes, abdominal circumference, systolic and diastolic blood pressure, blood sugar, glycosylated hemoglobin (HbA1C), total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides [1,2,3]. Aim of this study is to determine the relationship between ED with HbA1c and other factors (age and disease duration) in diabetes mellitus patients.

2. Methodology

This study was a cross-sectional study, conducted at Endocrinology Clinic, Sanglah Hospital Denpasar, Bali. Data taken starting on June 14th to July 11st 2010 with the involvement of men with diabetes mellitus under 70 years with married status and already had HbA1C results last 3

months from the medical records and willing to fill out questionnaires. The definition of ED based on the International Index of Erectile Function-5 (IIEF-5), which assessed the results by filling the questionnaire. The possibility of scoring for the IIEF-5 is between 5-25. ED are classified into five categories on the basis of scoring: severe (5-7), moderate (8-11), mild moderate (12-16), mild (17-21) and without DE (22-25) [4,5]. Furthermore, the data were analyzed by using descriptive statistic and logistic regression to look for relationships with HbA1C and other factors (age and duration of DM).

3. Results & Discussions

On this study, from 55 male subjects with diabetes mellitus, the mean of age is 54.78 ± 9.37 years, with a duration of illness is 9.32 ± 7.29 years. There is 67.3% of cases with erectile dysfunction where 27.3% of cases with HbA1c above 7. The average HbA1c in the study subjects is 6.07 ± 1.62

Based on the severity of ED, as much as 37.83% is the severe ED with the highest age in the age group 60-69 years. All data are the results of this study are presented in the following tabels.

Table 1: Characteristics of study subjects

	Mean	Median	SD	Min	Max
Age (years)	54.78	56.00	9.37	27	68
Duration (years)	9.32	7.00	7.29	1	30
A1C	6.07	5.80	1.62	3	11

Table 2: Degrees of ED from each category ED

ED condition (IIEF -5)	N	%
Normal	18	32,7
ED	37	67,3
Mild	3	8.1
Mild-moderate	10	27.02
Medium	10	27.02
Severe	14	37.83

Table 3: The prevalence of ED based on the duration of DM

Duration	ED	Number of subjects	%
1-4 years	8	18	44.44
5-9 years	7	12	58.33
10-14 years	10	12	83.33
15- 19 years	4	5	80
20-24 years	5	5	100
Above 25 years	3	3	100
Total	37	55	

Table 4: The prevalence of ED based on HbA1C

	HbA1C <7	%	HbA1C ≥ 7	%
ED	22	59.46	15	83.33
Without ED	15	40.54	3	16.67
Total	37	100	18	100

Table 5: Logistic regression result

Variable	B	Wald	P
Age	0.170	9.301	0.002
Duration	0.035	0.263	0.608
AIC	0.632	4.056	0.044
Constant	-12.280	10.669	0.001

Erectile dysfunction is one of the complications of diabetes mellitus which is sometimes undiagnosed. The prevalence of ED among diabetic patients varies, it is estimated between 35-85 % [6,7,8]. In this study, we found that 67.3% patient with DM had erectile dysfunction (table 2).

A longer duration of DM was found to increase the risk of ED (table 3). It is commonly known that many of the microvascular and macrovascular complications of DM increase with a longer duration of DM. It is therefore not surprising that the prevalence of diabetes-related ED which is mostly neurogenic and vasculogenic in etiology increases with a longer duration of DM. Other risk factors for ED such as poor glycemic control and testosterone deficiency have also been shown to be worse with increasing duration of DM [9].

The logistic regression results shows that age and HbA1C have significant relationship with ED. Increasing age has consistently been shown to be a significant risk factor for ED both in the general population and in diabetic cohorts [10,11]. Aging is associated with a decline in several organ functions including cognitive, cardiac, hepatic, and renal functions and erectile function may not be an exception. Several of the well known risk factors for ED such as hypertension, hypogonadism, and atherosclerosis are also commoner with increasing age, and diabetes on its own increases the risk of developing many of these risk factors [9].

Erectile dysfunction in patients with DM is a sign of microvascular disorders which correlate with poor blood sugar control conditions. Our study found that poor glycemic control (HbA1C > 7) related with increase possibility of ED (table 4 and 5). Some study found that glycemic control was the most efficient independent predictor of ED. Study by Ugwu, *et al.* revealed that patients with poor diabetes control (HbA1c ≥ 7%) were at least seven times more likely to suffer from ED compared to those who have good glycemic control [9].

4. Conclusion

Incidence of ED in patients with diabetes mellitus is high enough. From factors related to ED, age and HbA1C have significant relationship with ED. While on HbA1C in general, the higher HbA1C value (HbA1C > 7) means the greater possibility of suffering from ED.

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