ERECTILE DYSFUNCTION IN DIABETIC MEN

K V Kumar*, A P Radhakrishnan**, V Nair***, H Kumar***

ABSTRACT

Erectile dysfunction (ED) in diabetic men is under reported and under diagnosed due to reluctance among patients and physicians to discuss this problem. We aimed to assess prevalence of ED among diabetic men, who attended our clinic. We assessed its association with glycemic control and the psychological impact on the patient. We also explored whether this problem was dealt with at primary care level. A survey questionnaire was designed to investigate the above objectives. We interviewed 147 consecutive male diabetic subjects.

The prevalence of ED was 58%. 94% of subjects with ED had unsatisfactory control (HbA1c > 7%) (p = 0.019). Increasing age over 45 years, significantly increased the prevalence of ED (p = 0.003). 79 % subjects with ED reported decreased self-esteem and 99% reported that their primary care physician had never discussed this issue with them.

KEY WORDS: Diabetes, Erectile dysfunction, Prevalence, Psychological effects.

INTRODUCTION

Erectile dysfunction (ED) is a common condition among men with diabetes (1-7) and it is associated with reduced quality of life among those affected (8). ED is defined as the inability of a male to attain and maintain erection of the penis sufficient to permit satisfactory sexual intercourse (8). ED has reported to increase with age, increasing from 5% at 40 years to > 50 % at 75 years of age (9, 10). In diabetic men, the prevalence of impotence has been estimated to be between 35-50% (11). The cause of ED in diabetic men is multi-factorial with neuropathy, atherosclerosis of penile blood vessels and psychological factors being the main underlying contributors. Erection is a neurological event and any dysfunction or disease affecting the brain, spinal cord, cavernosal, pudendal nerves or their terminal branches can cause ED. Somatic and autonomic nerve dysfunction can be demonstrated in diabetic men who have longer latency somatosensory-evoked potentials of the pudendal nerves and of bulbocavernous and urethroanal reflexes (13). Since diabetics have accelerated atherosclerosis, arteriogenic causes may also result in ED in diabetics. Studies in animal as well as in humans have revealed penile arterial narrowing and arteriolar closure leading to "penile hypotension" and cavernous arterial insufficiency. A primary vasculogenic etiology based on microvascular changes in smooth muscle integrity is thought to be the most likely end point of the pathophysiology of ED in the diabetic male patient (14). In 10-30% of the men the cause of ED has been found to be psychological.

Psychogenic stimuli can not only stimulate erection, but also completely block the process. Two possible mechanisms have been proposed – direct inhibition of the brain on spinal centers and excessive sympathetic outflow or increased peripheral catecholamine levels that decrease cavernous smooth muscle relaxation.

ED was until recently treated by invasive and inconvenient modalities. Some of the treatment modalities are venous and arterial bypass surgery, surgical implantation of penile prosthesis, intracavernous injections, intraurethral suppository, vacuum constriction devices, Testosterone replacement and supplementation etc. The phosphodiesterase V (PDE5) inhibitors have revolutionized medical management of ED. Oral therapy permits discreet administration and is non invasive. The recent availability of sildenafil citrate has dramatically altered the treatment of ED, as it is an oral preparation, which is fairly successful and convenient. Sildenafil is a potent inhibitor of cGMP specific PDE5. It is effective in a broad range of patients with coronary artery disease, peripheral vascular disease, hypertension, depression and drugs like antidepressants, antipsychotics and antihypertensives (15). Improved erections were reported in 83% non-diabetic and 59-63% of diabetic patients in one series (16) and the safety and tolerability of this agent is established (17). Some other oral agents are also available to improve erection like apomorphine (18), yohimbine and trazodone. Several other compounds being researched include two new PDE5 inhibitors vardenafil (19) and IC351; and the combination of yohimbine and L-arginine are in phase 3 trials. Cloning of penile inducible nitric oxide synthase (NOS) heralds the potential use of gene therapy for ED. Early clinical and preclinical studies are

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*Research Assistant, ** Senior Resident, *** Consultant Endocrinologist, Department of Endocrinology and Diabetes, Amrita Institute of Medical Sciences and Research Centre, Amrita Lane, Elamakkara. P.O, Kochi – 26, E-mail: diabetesresearch@aimshospital.org*

investigating new PDE inhibitors, cyclic amp activators, alpha-adrenergic antagonists, dopamine agonists, melanocyte-stimulating hormone, potassium channel modulators, endothelin antagonists, and nitric acid donors (14).

There is very little high quality epidemiological data on the prevalence of ED in diabetes in India and no previous data from Kerala are available. There is lot of reluctance on the part of physician to probe a history of ED and for greater inhibition and reluctance from the patient to express their concern about ED.

The primary aim of the study was to assess the prevalence of ED among diabetic men, who came to our clinic. We also looked at the association of ED and glycemic control and the psychological impact of this problem on the patient suffering from ED. We also aimed to explore whether this problem had been dealt with at the primary health level.

MATERIALS AND METHODS

We surveyed 147 consecutive male diabetic subjects who visited out patient clinic in Amrita Institute of Medical Sciences and Research Centre from 1st June 2000 to 24th October 2000.

The survey questionnaire was designed with the help of a diabetologist, urologist and psychologist (who jointly run our ED clinic), to assess the pattern of ED in each patient. The survey questionnaire contained two parts. Part one described the demographic profile, past medical history, medication history, diabetes, age, marital status and alcohol smoking habits. Diabetes status including type of diabetes, duration of diabetes, control of diabetes assessed by HbA_{1c} used for treatment of diabetes, associated comorbidities like peripheral vascular disease (PVD), hypertension, dyslipidemia were asked and documented. The first part ended with the question, whether the patient had ED. All those who reported to have inability to attain and maintain erection of the penis sufficient to permit satisfactory sexual intercourse were documented as suffering from ED. Those who had ED, had to respond to the second part of the form, which described the severity of ED and whether it affected the psychosocial relationship of the patient. It also assessed how the problem had been tackled in the primary care setting. Each patient was individually interviewed.

Statistical Analysis: Data were entered and analyzed using SPSS computer program. The groups with and without ED were analyzed separately. Pearson correlation analysis was done to look at linear correlation between variables. Differences with probability values < 0.05 were considered significant.

RESULTS

We surveyed a total of 147 male diabetic subjects between the ages of 30–70 years who had presented to our department for the first time. The mean age of the subjects was 51+10 years, among the married men, the mean duration was 21+9 years. The number of children per patient was a mean of 2+1 children. 34% (50/147) of the subjects had history of smoking and 36% (53/147) reported history of alcohol consumption. 4% (6/147) of the subjects had history of PVD, 31% (46/147) of the subjects had history of dyslipidemia and 23% (34/147) of the subjects had history of hypertension. 98% (144/147) had type 2 diabetes and 3 were with type 1 diabetes and the mean duration of diabetes was 10+4 years. 70% (103/147) of the subjects were on oral hypoglycemic agents, 18% (26/147) of the subjects were on insulin therapy, 11% (16/147) were on diet and exercise regime and 2 of the subjects were on Ayurvedic medicines for diabetes. 123 subjects had HbA1c test done to evaluate the overall control of diabetes and the results ranged from 5.4% - 16.1% with a mean value of 9.4%. 58% (85/147) subjects reported a history of ED. The analysis of parameters was performed separately in both groups (Table 1).

ED Positive group

The 58% (85/147) subjects, who reported to have history of ED, were between 30 – 70 years with a mean 52 + 8. 89% (76/85) of them were above the age of 45 years.

Table 1: Glycemic Control and Age with Respect to Erectile Dysfunction

Parameters	ED positive (n = 85)	No ED (n = 52)	p value
HbA1c > 7%	94%	80%	0.019
Age >45 years	86%	65%	0.003

All the 85 subjects in the positive ED group were married. Among the positive ED, 35.3% (30/85) of the subjects had history of smoking and 42.3% (36/85) of the subjects reported to have history of alcohol consumption. 6% (5/85) of the subjects had history of PVD, 28% (24/85) of the subjects had history of dyslipidemia and 26% (22/85) of the subjects had history of hypertension. 83 of them had

type 2 diabetes and 2 had type 1 diabetes with a mean duration of 10 + 7 years. 68/85 subjects had performed HbA1c test for diabetes. 94% subjects with positive ED had HbA1c values above 7%.

The second part of the form collected from those with positive ED was analyzed to evaluate the severity of ED. 14% (12/85) of the diabetic men with positive history of ED had lack of libido. 45% (38/85) had no erection at all and 55% (47/85) had inability to sustain an erection.

We analyzed the effect of ED on subject's marital relationship. 13% (11/85) subjects felt the issue had affected their marital relationship, whereas 87% (74/85) reported that it had not adversely affected their marriage. In 78 % (66/85) of the subjects, ED had caused a lowering of their self-esteem. The duration of ED ranged from 2 months to 10 years among the positive ED subjects. The time before seeking medical attention for this problem ranged from 2 months to 8 years with mean of 1.5+1.8 years. Only 19% (16/85) of the subjects with dysfunction had sought medical attention for ED previously. Among those who had discussed the matter with medical professionals, only 13% (2/16) were satisfied with the physician's response and the treatment for ED. 18% (15/85) had tried alternate methods of treatment for ED, of these 5 subjects tried Ayurvedic treatment and other 10 subjects had tried various types of herbal treatments.

We asked whether medical personnel at the primary level had sought to ask the patient about the history of ED. 98% (83/85) of the subjects reported that no medical personnel had asked them about this problem previously or spontaneously discussed any issues related to the patient's sexual health and well being.

No ED Group

The (62/147) 42% of subjects who reported to have no history of ED were aged between 30–76 years with a mean 49+10. 65% (40/62) were above the age of 45 years. 97% (60/62) subjects in the negative ED group were married. Among the negative ED group, 32% (20/62) of the subjects were smokers and 36% (22/62) of the subjects had history of alcohol abuse. None of the subjects had history of PVD, 52% (32/62) of the subjects had history of dyslipidemia, 20% (12/62) of the subjects had history of hypertension. 99% (61/62) of the total were with type 2 diabetes and 1% (1/62) had type1 diabetes, with a mean duration of 9+6 (range: 1 month – 30 years). 55/62 subjects had done HbA1c

test for diabetes and 80% subjects with negative ED had HbA1c values of more than 7.1%.

In the positive ED group the 94% of the subjects had poor glycemic control (HbA1c > 7%) p = 0.019. As the age increases from 45 years the incidence of ED increases, p = 0.003. In the positive ED group, 78 % of the subjects ED had an effect of decreasing self-esteem. 98% of them reported that none of their treating physicians had enquired about this.

DISCUSSION

Prevalence of ED among our male diabetic population is 58%, which is very high. Our hospital is a tertiary referral centre and more advanced and complicated cases of diabetes tend be referred and this may be reason for high prevalence in our patient population. But in other centers, especially in western countries the prevalence of ED has been reported in various studies as ranging from 20% to greater than 70% [21, 22, 23]. In the present study the duration of diabetes has not showed any significant increase in the incidence of ED. We found that as the age goes over 45 years there is significant increase in the prevalence of ED. Similar trends have been shown in earlier studies also [20].

In those with ED, the overall glycemic control was significantly worse than in the non-ED group, which reveals the relationship of poor glycemic control to ED. In our study, alcohol and smoking habits in diabetic patients had not shown significant contribution to ED, but this may be due the relatively small number of patients studied. Fedele and associates [20] have shown that smoking habit of the patient acts as a risk factor for ED. Also comorbidities like hypertension, PVD and dyslipidemia were not statistically significant in those with ED and those without ED in our study.

In this survey, we have explored the psychological aspects of this complication. Most of the patients had normal libido and 79% of the patients reported that ED had lowered their self-esteem. But it had no effect on their marriage or relationship, which is in contrast to data from the western countries. The main fact to be highlighted is that nearly 100% of the subjects reported that the issue was not discussed by any of the physicians who had seen them previously, which shows that primary and secondary care physicians tend to ignore this complication. This may be due to the unawareness of the seriousness of the problem or the reluctance on the part of the doctors to raise this issue or due to low success rate in solving the problem.

A small percentage of the patients have tried other treatment modalities for the treatment of ED like Ayurvedic, herbal treatments etc. But none of them were satisfied with the treatment. ED is very common in our diabetic male population and is more frequent in patients with longer duration of diabetes and poorer glycemic control. ED causes loss of self-esteem in our male patients but does not appear to affect their marital relationships in most cases. There is a lot of reluctance on the part of physician to probe a history of ED and far greater inhibition and reluctance from the patient to express their concern about ED, which makes this common entity a more serious issue.

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