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Sexual dysfunction among men with diabetes: A review

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Abstract

Male sexual dysfunction (SD) includes erectile dysfunction (ED), ejaculatory disorders and hypoactive sexual desire disorder (HSDD).

Erectile dysfunction is extremely common in diabetes and has a psychosocial and relationship impact on the individual, yet remains neglected in clinical practice. Factors that cause erectile dysfunction include, vasculopathy, neuropathy, insulin resistance, visceral adiposity, hypogonadism, endothelial dysfunction, and mental health issues. Erectile dysfunction is considered a predictor of underlying silent cardiovascular disease, thus providing a window of opportunity for risk reduction. Treating individuals with ED starts with patient and partner education, aggressive risk factor modification, lifestyle interventions, medication adjustment and psychosexual counselling. Phosphodiesterase-5 inhibitors (PDE5i) are effective in a significant proportion of men though the response is less attractive compared to those without diabetes. Vacuum erection devices, intraurethral/ topical alprostadil are alternatives for men with contraindications or poor response to PDE5i. Intracavernosal vasoactive agents and Low-intensity shockwave therapy may be attempted in some men. Among men with diabetes, refractory ED is frequent and would benefit from penile prostheses.

Out of the common ejaculatory disorders among men, premature ejaculation, delayed ejaculation/ anejaculation and retrograde ejaculation have been shown to be associated with diabetes. Indeed, there is a robust organic link between autonomic neuropathy and retrograde ejaculation. While premature ejaculation has several treatment options that include pharmacotherapy (selective serotonin reuptake inhibitors and local anaesthetics) and psychosexual counselling, options for delayed ejaculation/ anejaculation and retrograde ejaculation are limited except for medication adjustment. Among men with diabetes who have HSDD, attempts should be made to unravel treatable underlying causes such as hypogonadism and depression; optimising medical management, psychosexual counselling and medication adjustment would also be beneficial.

Keywords: Diabetes, Sexual dysfunction, Erectile dysfunction, Ejaculatory disorders, Libido

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Introduction

Male sexual dysfunction (SD) encompasses erectile dysfunction (ED), ejaculatory dysfunction and hypoactive sexual desire disorder (HSDD), which can prevent or impair the individual or the couple from enjoying sexual activity [1]. Diabetes that results in a chronic inflammatory state is known to be closely linked to SD in both men and women.

Sexual dysfunction can result in complex psychological and relationship issues that can significantly distress the individual [2]. It has also been shown that ED is associated with loss of masculinity, reduced intimacy and partner mistrust, resulting in poor self-esteem and quality of life (QoL) [3, 4].

According to a Sri Lankan study, ED was associated with poor generic and disease-specific QoL among men with diabetes [5].

Despite these well documented effects of ED, it remains poorly explored in clinical consultations. It has been observed that clinicians do not screen for this critical complication, further limiting the opportunity to detect and treat affected men [2, 4, 6]. There are many reasons for the lack of detection of SD: embarrassment and stigma associated with matters of sexual health, poor self-esteem and lack of conducive clinic setting, being the leading factors [3, 7]. Open-ended, non-judgmental questions would facilitate the expression of sexual health concerns by men with diabetes to their regular health care providers. Improved awareness of the association of SD and its impact on men with diabetes will create an atmosphere conducive to exploring sexual health by medical professionals.

This review focuses on the prevalence, mechanisms, and associations of SD among men with diabetes and discusses evaluation and management of the different domains.

Erectile dysfunction

Erectile dysfunction (ED), one of the commonest types of sexual dysfunction among men, is defined as 'the persistent inability to attain and/or maintain penile erection sufficient for satisfactory sexual performance' [8]. This has been studied extensively among men with diabetes.

Prevalence and associations

Diabetes has been recognised as the most important chronic disease associated with ED from large population-based studies [9]. According to a meta-analysis of worldwide data from 145 studies representing 88577 men, the overall estimated prevalence of ED was 52.5% [10]. This was much higher in men with diabetes than healthy men, with an odds ratio of 3.62 (95% CI, 2.53 to 5.16). A higher prevalence of 82.2% was reported in studies using the International Index of Erectile Function-5 (IIEF-5) scale. Other factors associated with increased prevalence were age > 60 years and type 2 diabetes (T2D). Most studies have also showed that the prevalence of ED is higher in those with longer duration of diabetes, poor glycaemic control, complications of diabetes, higher BMI and co-morbidities [11]. Lower urinary tract symptoms have been shown to be associated with the prevalence and severity of ED [12, 13].

The prevalence in Asia is reported to be about 67%, higher than most other parts of the world. Hospital-based studies in Sri Lanka report a prevalence ranging from 62.9% to 79.2% [2, 5, 6, 14]. One community-based study from Sri Lanka reported a much lower rate of 16.8% [15], which could be due to reporting bias and representation of men with fewer complications.

Pathogenesis

In men with diabetes, ED is usually multifactorial, with the contribution of each mechanism varying from individual to individual (Figure 1). The main contributors include vasculopathy, neuropathy, insulin resistance, visceral adiposity, hypogonadism, psychological factors and endothelial dysfunction due to hyperglycaemia.

There is accumulating evidence on the association of visceral adiposity, metabolic syndrome and diabetes with chronic low-grade inflammation [16]. This pro-inflammatory state and hyperglycaemia-induced oxidative stress result in endothelial dysfunction causing impaired nitric oxide (NO) synthesis and bioavailability. This ultimately leads to an imbalance of vasorelaxant and vasoconstrictor pathways, favouring impaired response in the penile vasculature. Atherosclerotic occlusion of the penile arteries impairs adequate arterial flow required to achieve and maintain erections [17]. Urogenital autonomic neuropathy results in impaired NO release from non-adrenergic and non-cholinergic neurones and impaired smooth muscle relaxation of the corpus cavernosum [18]. Somatic sensory neuropathy can also contribute through the impaired sensation of the glans. Low testosterone is known to be associated with T2D among men even after correcting for lowered sex hormone-binding globulin (SHBG) [19, 20]. This could be a contributory factor for ED among some men with diabetes. Mental health co-morbidities, including depression, anxiety, stress and diabetes distress, are prevalent among people with diabetes [21, 22]. Peyronie's disease, which is a chronic fibrotic disease of the penis with plaques in the tunica albuginea, is also present among men with diabetes [23, 24]. A subset of patients with advanced complications such as chronic kidney disease, heart failure, cirrhosis and disabling stroke experience ED associated with their overall poor health.

Cardiovascular association

The risk of cardiovascular disease (CVD) including coronary artery disease, stroke and cardiovascular mortality are higher among men with ED; being highest in those with severe ED (25). It has been observed that ED may precede the clinical

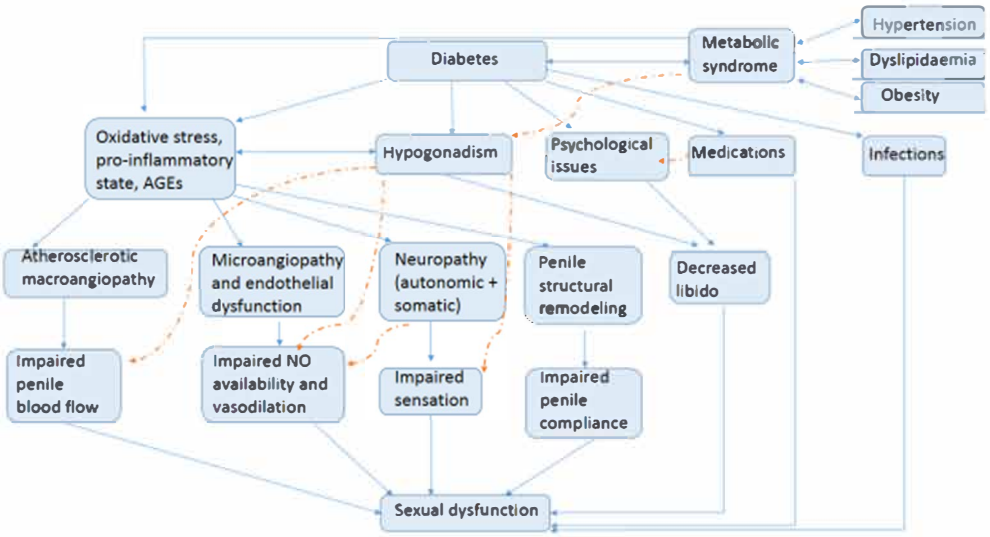

Figure 1: Complex interplay of multiple mechanisms in the pathophysiology of erectile dysfunction in diabetes.
*AGEs- advanced glycosylated end products, NO- nitric oxide

manifestations of cardiovascular disease by three to five years. Erectile dysfunction is, therefore, considered an early manifestation of subclinical cardiovascular disease in men with diabetes [17, 26]. This observation is likely explained through the artery size hypothesis. Cavernosal arteries supplying corpora cavernosa are 1-1.5 mm in diameter, whereas coronary arteries are 2.7-4 mm on average. Therefore, generalised atherosclerotic occlusion tends to produce clinically significant flow limitation in penile arteries earlier than coronary or cerebral arteries.

This period of pre-clinical CVD is a window of opportunity to optimise risk factors and establish lifestyle modifications to improve cardiovascular outcomes in patients with diabetes.

Evaluation

Detailed medical history and sexual history should be obtained in assessing men with diabetes having ED. During the clinical interview, details about sexual encounters, libido, ejaculatory dysfunction, morning erection, features of hypogonadism, mental health issues, lifestyle including substance use, the status of diabetes, co-morbidities, complications and drug history should be assessed. Objective assessment of ED using a validated questionnaire such as IIEF-5 is recommended [27]. This helps to grade the severity and monitor the response to treatment. When available, interviewing the partner will help to gather more information and develop therapeutic plans.

Physical examination should include a genital examination to identify local genital abnormalities, including Peyronie's disease, balanitis, phimosis and prostatic enlargement. Evidence of hypogonadism, including small testes, and hair loss in androgen-dependent areas, should be examined. Body mass index and waist circumference are crucial to assess since obesity is a common co-morbidity that needs correction in these men. Particular attention should be paid to any evidence of complications of diabetes, including peripheral and autonomic neuropathy and vascular disease. Blood pressure assessment should be combined with testing for postural hypotension. Ankle-brachial pressure index can complement the vascular assessment.

If HbA1C, lipid profile, serum creatinine, liver enzymes and electrocardiogram have not been performed as a part of the comprehensive assessment for diabetes within one year, they should be arranged. It is recommended to test morning fasting total testosterone (TT) [28]. If the initial value is low, confirm with calculated free testosterone since low TT could be partly due to low sex hormone-binding globulin in men with diabetes/ obesity. In men with confirmed hypogonadism, evaluation for aetiology with luteinising hormone and prolactin level should be performed. Cardiovascular autonomic reflex tests (CART) can be used to diagnose cardiovascular autonomic neuropathy (CAN), which is a surrogate of pelvic autonomic neuropathy [18].

Cardiovascular disease (CVD) and risk assessment are

essential components in assessing men with diabetes having ED. Detailed guidance on evaluation and management of cardiovascular risk in men with ED is available in 'The Princeton III recommendations for the management of erectile dysfunction and cardiovascular disease'[29]. In men with established CVD, it is vital to determine the state of the CVD since there is a risk of cardiac events during or shortly after sexual activity among men with diabetes having high CVD risks such as recent myocardial infarction, unstable angina, symptomatic heart failure and uncontrolled hypertension. In such patients, optimisation of CVD should take priority over treating ED. In men without clinical CVD, cardiovascular risk prediction charts (e.g., WHO risk prediction chart for South Asians) can be used to assess the individual's cardiovascular risk. There is no consensus on the value of investigations to detect subclinical cardiovascular disease in men with diabetes. Further cardiac evaluation is recommended if there is an abnormal resting electrocardiogram or any features suggestive of underlying cardiovascular disease in the clinical assessment. In other men, referral for exercise ECG/ femoral or carotid vascular imaging or CT-coronary angiogram may be considered since ED is a possible marker of subclinical CVD in these men [29]. However, it is unclear whether detecting pre-clinical CVD and treating them provide additional benefits beyond aggressive risk factors modifications.

Since sexual activity is equivalent to briskly climbing two flights of stairs in 10 seconds or walking 1.6 km on the flat in 20 minutes or four minutes of the Bruce treadmill protocol, exercise ability should be inquired in all patients irrespective of CVD risk [30]. Further additional testing is performed based on the clinical picture.

In selected patients, nocturnal penile tumescence and rigidity test could be utilised if there is difficulty differentiating organic and psychogenic ED. Penile colour Doppler ultrasonography following intracavernosal injection of vasoactive agents is helpful in diagnosing vasculogenic ED, which is a common aetiology among men with diabetes [31]. Further vascular evaluation, including angiography and CT angiography should be performed only in men considered for penile revascularisation. This is of limited value in men with diabetes since they are usually not candidates for revascularisation due to generalised atherosclerotic disease.

Management

The management approach for men with diabetes and ED is outlined in figure 2. Patient and partner education is essential from the beginning and allows them to overcome the secondary performance anxiety, which can aggravate even organic ED in diabetes.

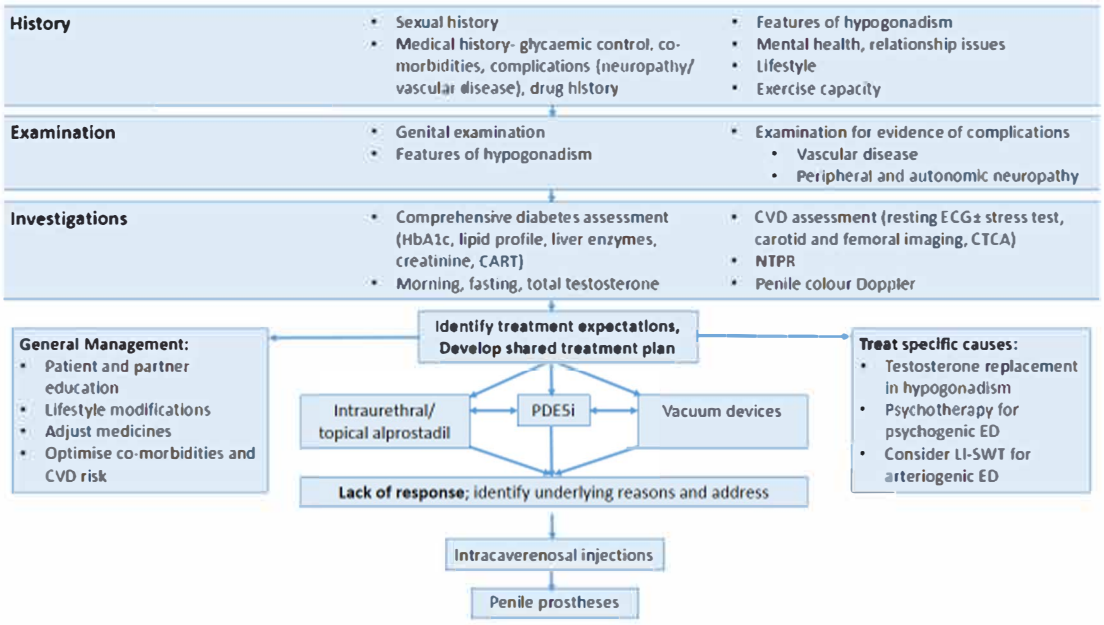

Figure 2 : Approach to men with diabetes having erectile dysfunction
*CART- cardiovascular autonomic reflex tests, CVD- cardiovascular disease, CTCA- CT coronary angiogram, ECG- electrocardiogram, ED- erectile dysfunction, Li-SWT- low-intensity shockwave therapy, NPTR- nocturnal penile tumescence and rigidity, PDE5i- phosphodiesterase 5 inhibitor

Lifestyle modifications, including regular exercise, and weight loss in men with overweight and obesity, are likely to improve erectile function in addition to their overall metabolic and cardiovascular benefits [32, 33]. As per the latest recommendations for men with diabetes, if the patient has indications for statin therapy, it should be initiated or optimised. This could also provide additional benefits by improving erectile function [34]. Smoking cessation and limiting alcohol consumption are also important. Aggressive management of cardiovascular risk factors (diabetes, obesity/ overweight, smoking, hypertension and dyslipidaemia) is critical in improving sexual functions as well as cardiovascular health [29].

If possible, it is helpful to adjust medicines that can increase the risk of ED, including thiazide diuretics, beta-blockers and tricyclic antidepressants. Nebivolol is preferred if beta-blockers are indicated for a cardiovascular condition [35].

Psychotherapy and psychosexual counselling are beneficial in addressing performance anxiety and psychological problems (depression, anxiety and stress) common among men with diabetes.

Testosterone replacement would benefit men with hypogonadism and improve ED [36, 37]. However, testosterone should not be used without confirmed hypogonadism or for asymptomatic men with low testosterone [38].

Phosphodiesterase-5 inhibitors (PDE5i) have been shown to improve erectile functions in men with diabetes (39) and are the preferred first-line pharmacological agents. They act by inhibiting the hydrolysis of cyclic Guanosine monophosphate. Available PDE5i, sildenafil, tadalafil, avanafil or vardenafil can be prescribed if there are no contraindications, including concomitant use of nitrate-containing medications. These agents have not shown to increase cardiovascular events; however, since sexual activity can induce coronary ischaemia in high-risk men, treatment of cardiovascular disease should be prioritised over-treating with PDE5i. Caution should be exercised when prescribing together with alpha-adrenergic blockers due to the risk of hypotension. Common adverse effects include headache, flushing, dyspepsia and nasal congestion. Visual disturbances and muscle aches are related to non-selective inhibition of other isoforms of PDE and vary between the agents. Since there is no high-quality data comparing these agents' efficacy, the agent's choice will depend on the frequency of intercourse, the onset of action and the individual's personal experience (Table 1).

Instructions should be given on proper timing with sexual activity and meals to improve the efficacy of the drugs. Titrate the dose upwards or downwards depending on the tolerability and efficacy. Lack of response to PDE5i could be due to incorrect drug use or inefficacy. Causes of incorrect use include lack of adequate sexual stimulation, inadequate dosing, improper timing between drug ingestion and sexual activity and interaction with meals [30]. However, inefficacy is commoner among men with diabetes compared to those without diabetes [40]. This could partly be due to the reduced release of nitric oxide from parasympathetic nerve endings in men with diabetic autonomic neuropathy since the drug's efficacy is dependent on nitric oxide release from parasympathetic nerve endings.

For men with poor response or contraindications to PDE5i, vacuum erection devices and topical/ intraurethral alprostadil can be prescribed early [30]. Vacuum erection devices provide passive engorgement of the corpora cavernosa, together with a constrictor ring at the base of the penis to retain blood within the corpora, thereby providing erections adequate for satisfactory intercourse in PDE5i non-responders and can be even combined with PDE5i [41]. Intraurethral/ topical alprostadil are effective as monotherapy or in combination with PDE5i in some men with diabetes having ED [42, 43].

Intracavernosal injections of vasodilator agents such as alprostadil are effective for non-responders to above options, though the response rate can be lower among men with diabetes [44]. Adverse effects include priapism and cavernosal fibrosis. . Agents such as papaverine and phentolamine are not recommended as monotherapy due to higher risk of adverse effects or insufficient efficacy. However, they can be used in combination therapy (Bimix- papaverine and phentolamine, Trimix- papaverine, phentolamine and alprostadil). A trained healthcare provider should teach the patient about the intracavernosal injection after discussing the benefits and risks.

Low-intensity extracorporeal shock wave therapy (Li-SWT) is an expensive emerging option which has shown promising results for men with diabetes having ED, including PDE5i non-responders [45]. It may be considered in selected men with arteriogenic ED, though there is a need for further studies on patient selection, dose-finding and defining treatment protocols [30, 46].

Lack of satisfactory response to all these options is

Table 1 : Summary of characteristics of PDE5i
*eGFR- estimated glomerular filtration rate, N/A- not applicable, PDE- phosphodiesterase

	Sildenafil	Tadalafil	Vardenafil	Avanafil
On-demand dose range (mg)	25-100	5-20	5-20	50-200
On-demand starting dose (mg)	50	10	10	100
Continuous daily dose (mg)	N/A	5	N/A	N/A
Onset of action (minutes)	30-60	30	20-60	15
Duration of action (hours)	4	36	5-7	6
Interaction with diet	Reduced efficacy due to delayed absorption with a fatty meal	None	Reduced efficacy due to delayed absorption with a fatty meal	May delay the absorption
Renal dose adjustment	eGFR<30 ml/min: starting dose 25 mg	eGFR<30 ml/min: maximum 5 mg/72 hours eGFR 30-50 ml/min: starting dose 5 mg	On dialysis: avoid	eGFR<30 ml/min: avoid
Adverse effects due to non-selective PDE inhibition	Visual disturbance	Muscle aches	Visual disturbance	-

frequent among men with diabetes due to significant urogenital autonomic neuropathy, cavernosal arterial insufficiency and Peyronie's disease. In men with refractory ED, penile prosthesis implantation is an effective option with good long-term results [47], though expensive. There is a risk of mechanical failure and infection with a higher risk among men with diabetes [48]. Two classes of penile implants include inflatable and semi-rigid devices. In men with severe diabetic neuropathy involving the hands, there might be problems in the day-to-day manoeuvring of inflatable devices.

Ejaculatory dysfunction

The prevalence of ejaculatory dysfunction had been less well studied among men with diabetes, and the available evidence is conflicting [49]. Ejaculatory disorders include, premature ejaculation, delayed ejaculation/ anejaculation, retrograde ejaculation and painful ejaculation [50].

Premature ejaculation (PE)

According to the International Society for Sexual Medicine, PE can be defined as a male SD characterised by ejaculation that always or nearly always occurs prior to or within one minute of vaginal penetration (lifelong PE) or a clinically significant and bothersome reduction in latency time, to three minutes or less (acquired PE), with an inability to delay ejaculation in all or nearly all vaginal penetrations and associated negative personal consequences [51].

Prevalence of PE does not show a consistent association with diabetes, unlike that of ED. The major limitation in assessing the prevalence is the lack of an accurate definition during thetime many studies

were conducted. Though multiple studies have shown an increased prevalence among men with diabetes, some have shown a lack of association and even lower prevalence among men with diabetes [52]. However, studies showing increased prevalence show an association with increased duration of diabetes, poor glycaemic control, and presence of ED [14, 53]. According to Sri Lankan data, the prevalence of PE among men with diabetes was 18.7% and 40.2% in two hospital-based studies [2, 14]. The aetiology of PE still remains largely unknown. Potential mechanisms of a causal relationship in diabetes include deficient serotonin neurotransmission with autonomic neuropathy or serotonin receptor hyposensitivity and psychological factors [52]. Prostatitis and urethritis could be associated with PE.

Evaluation of a man with diabetes complaining of PE starts with confirming PE by assessing self-estimated intravaginal ejaculatory latency time (IELT), perceived control and its impact (distress, frustration, interpersonal difficulty and avoiding sexual activity) due to PE [30]. Objective assessment using the Premature Evaluation Diagnostic Tool (PEDT) would be beneficial [54]. It is important to assess whether the PE is lifelong or acquired. Sexual history should also focus on other domains of SD since many men with ED develop secondary PE, which is common in diabetes. On the other hand, some men erroneously complain of ED while the primary problem is PE as they lose erection after premature ejaculation. Medical history should assess details of diabetes, co-morbidities and complications, including evidence of neuropathy. Psychological factors including anxiety, depression and stress should be ascertained.

Focused physical examination should include genital examination and examination for complications of diabetes. Except for routine investigations performed as a part of comprehensive diabetes evaluation, specific investigations are not warranted for isolated PE unless there are any clues in the clinical assessment.

During management, it is critical to discuss and agree on treatment expectations since expectations on ejaculatory latency vary between men. Patient and partner counselling should be offered routinely, while sexual psychotherapy is considered in selected patients with psychological factors. Behavioural strategies, including the 'stop-start' method and the 'squeeze' technique, may be helpful in some patients. Underlying ED should be treated to overcome secondary PE. If clinical evaluation suggests, underlying prostatitis or urethritis should be treated.

Pharmacotherapy with selective serotonin reuptake inhibitors (SSRIs), (e.g., dapoxetine 30-60 mg one hour before sexual activity, sertraline 25-200 mg daily, fluoxetine 20-40 mg daily), local application of topical anaesthetic agents (lidocaine/ prilocaine spray, lidocaine/ prilocaine Cream) are proven to be beneficial and superior to behavioural therapy [55]. Combination with PDE5i would be beneficial even in the absence of ED [56]. Tramadol on demand can also be considered [57].

Delayed ejaculation (DE)/ anejaculation (AE)

This is defined as marked delay, infrequency or absence of ejaculation on 75% or more of the occasions persisting for more than six months and causing personal distress [1]. Like PE, DE can also be lifelong or acquired. Since this was less well studied than other SD domains, data on prevalence are lacking. However, it was shown to be common among men with diabetes [58, 59]. Autonomic neuropathy, calcification of vas deferens and seminal vesicles, medicines (diuretics, alpha-blockers, SSRIs) and psychological factors are likely mechanisms of DE among men with diabetes [49].

Clinical assessment starts with detailed medical, sexual and psychological history. Before diagnosing AE, retrograde ejaculation (RE) should be excluded by inquiring about the experience of orgasm and post-ejaculatory urine sample. Particular attention should be paid to the drug history and evidence of autonomic neuropathy.

In the presence of psychosexual problems, psychosexual therapy will be helpful. Adjustment of medicines, where possible, is beneficial. If the aetiology is primarily organic with significant autonomic neuropathy, it is unlikely to be reversible. However, good risk factor control might halt the progression of the disease. There is no established evidence-based pharmacotherapy for DE. Agents like cabergoline, bupropion and pseudoephedrine may be attempted. Given some evidence of glycaemic benefits with cabergoline, that might be considered in men with diabetes having bothersome DE [60].

Retrograde ejaculation (RE)

Retrograde ejaculation is the total or partial failure of the semen to be ejected out through the urethral meatus as a result of semen moving backwards through the bladder neck into the bladder [1]. The man experiences normal or decreased orgasmic sensation. This is due to the failure of the internal vesicle sphincter during ejaculation.

Compared to other ejaculatory disorders, RE is strongly associated with diabetes, with some studies reporting a prevalence of up to 34.6% [61, 62]. The commonest reason for RE in men with diabetes is autonomic neuropathy causing sympathetic dysfunction [49]. Medicines like SSRIs, antihypertensives (thiazide diuretics, alpha blockers) can be causative.

This is diagnosed based on the history of orgasmic sensation without despite ejaculation and the presence of sperms (>10/hpf) in a post-ejaculatory urine sample [50].

Pharmacological management with sympathomimetic agents such as ephedrine and pseudoephedrine provide benefit in some men. Since infertility is the primary concern, sperm retrieval methods are attempted for fertility [50].

Hypoactive sexual desire disorder (HSDD)

Hypoactive sexual desire disorder (HSDD) Male HSDD is defined as, persistent or recurrent deficiency or absence of sexual or erotic thoughts or fantasies and desire for sexual activity [1]. This has received less attention among men with diabetes than other SD domains. However, evidence suggests the increased prevalence of low libido among men with diabetes [63, 64]. The presence of diabetes was associated with an increased prevalence of low libido with an odds ratio of 2.4 (95% CI: 1.3, 4.6) in a large population-based study (64). The prevalence of HSDD was reported to be 16% and 25% in two hospital-based Sri Lankan studies (2, 14). A community-based study from Sri Lanka showed a much lower prevalence of 6.4%, which was still higher than men without diabetes [15].

Reasons for HSDD among men with diabetes include chronic ill health due to poor glycaemic control / complications or co-morbidities, hypogonadism, antidepressants & psychological factors.

A thorough medical history should be obtained in the evaluation, especially focusing on evidence of complications of diabetes, chronic ill health, hypogonadism & drug history. Attention should be paid to psychological problems, including depression & relationship issues, and explore whether the lack of sexual desire is global or limited to a specific relationship. In the sexual history, other sexual problems such as ED and ejaculatory problems should be explored since they can secondarily result in avoidance of sexual activities, which would be misinterpreted as HSDD.

Physical examination would target identifying underlying co-morbidities (hypertension, obesity), complications (kidney disease, peripheral neuropathy, vascular disease, liver disease) and hypogonadism. In addition to the routine comprehensive evaluation of a man with diabetes, testing for TT is warranted unless a specific underlying aetiology is elicited from the initial evaluation.

Patient and partner counselling and optimisation of medical conditions such as glycaemic and blood pressure control would constitute the general management of the patient. If psychosexual or relationship issues are predominating, psychosexual therapy is indicated. If an underlying psychological issue like depression is recognised, treatment of it will address the secondary HSDD, with the caveat that some antidepressants can decrease sexual desire [65]. In men with diabetes having HSDD due to hypogonadism, testosterone replacement would improve their sexual desire as well as their metabolic parameters [37, 66].

Conclusions

There is a high prevalence of ED, ejaculatory dysfunction and HSDD among men with diabetes which remains poorly addressed in routine consultations despite their significant QoL and cardiovascular impact beyond sexual life. These complications have complex pathogenic mechanisms among men with diabetes, necessitating comprehensive evaluation and a holistic management approach with patience, understanding the limited response to treatment compared to men without diabetes. Identifying a specific treatable cause would improve the response rate providing higher patient satisfaction.

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