PREVALENCE, PATHOGENESIS AND DIAGNOSIS OF SEXUAL DYSFUNCTIONS IN DIABETIC WOMEN

SAVITA DEVI1, KAMALDEEP SINGH1 AND PRANAY P PANKAJ2*

1Lovely Faculty of Applied Medical Sciences, Lovely Professional University, Punjab, India
2Department of Zoology, Nagaland University, Lumami, Nagaland, India - 798627

ABSTRACT

Diabetes mellitus is a chronic metabolic disorder in almost all countries. The secondary complications may include female sexual dysfunctions (FSDs) which are characterized by decreased libido, anorgasmia, dyspareunia and psycho-physiological disturbances. 40-60% FSDs cases are reported each year worldwide with increased late menopause period (42-88%), insufficient vaginal lubrication (5-28%), orgasmic disorder (5%) and dyspareunia (3-12%). Etiologies of FSDs are doubtful but certain physiological and psychological factors are involved in its contribution. The other risk factors for diabetes associated FSDs include cardiovascular disease, hypertension, genitourinary disease, psychological disorder, cancer and other chronic diseases. Subject’s histories with physiological and psychological attributes are the basis for FSDs diagnosis. Currently no specific treatment is available to treat FSD but its risk factors and complications may be controlled with the help of pharmacological, non-pharmacologic treatment and hormonal replacement therapy.

KEY WORDS: Diabetes mellitus, Female sexual dysfunction, Psycho-physiological disturbances, Dyspareunia, Genitourinary disease, Non-pharmacologic treatment.

PRANAY P PANKAJ
Department of Zoology, Nagaland University,
Lumami, Nagaland, India - 798627
INTRODUCTION

Diabetes mellitus (DM) is a group of metabolic disorders which is characterized by chronic hyperglycemia. DM may be due to the insulin deficiency or improper response of insulin cell receptors, resulting in disturbance of carbohydrates, proteins and lipid metabolism. Hyperglycemia is known for a major cause of serious micro and macro vascular diseases which affects nearly or every system of the body. It may also cause the problem to kidney (nephropathy), heart (cardiopathy), nerve (neuropathy) and blindness (retinopathy). The resultant hyperglycemia produced the symptoms such as polyuria, polydipsia and polyphagia. Researches related to etiology and risk factor for sexuality of females with DM patients are still a controversial issue. Moreover, it has also been suggested that sexual functions among type 1 diabetic women varies during the menstrual cycle and comparable during the luteal phase but not at the follicular phase of the menstrual cycle. Diabetic patients were reported for lower estradiol levels than control subjects during both the follicular and luteal phases. Zarzycki et al. (2005) showed that type 1 diabetic women usually have delayed menarche and an early onset of menopause as compared to non-diabetic women. Type 1 diabetic women have also at higher risks of having menstrual disturbances such as amenorrhea and oligomenorrhea. Furthermore, the risk of sexual and gestational problems is higher in type 1 diabetic women than the general population. FSD is a disorder of libido, arousal, orgasm and sexual pain that leads to personal distress or interpersonal difficulties. It is multifactorial in etiology with physiological and psychological roots. The determinants of sexual function in DM include age, duration of diabetes, menopause, micro vascular complications and psychological complaints. Epidemiologic studies have shown that the prevalence of Sexual Dysfunction (SD) in Type 1 and type 2 female diabetic groups are 71% and 42% respectively. It exhibited multifactorial in the etiology with physiological and psychological roots. Increased prevalence of DM will inevitably result in sexual related dysfunction and consequences. It is indicated that type 1 diabetic women are mostly affected by SD as compared to type 2 diabetics and healthy women. Similar findings have also been reported taking animal model. The aim of the present review is to discuss diabetic effect on female reproductive functions and its suggested risk factors, etiology pathways as well as evidence-based strategies for FSD management.

Prevalence of SD in diabetic women

246 million people are affected worldwide with DM and expected to be 380 million by 2025. A number of SD cases with diabetes have been reported and it was observed that the prevalence of SD is higher in diabetic men and estimated to be 20-85% which is less than diabetic women. Ziae-Rad et al. (2010) reported that out of 200 random diabetic patients (100 male and 100 female), 82.5% were experienced at least one SD though data were scanty and there were a great deal of uncertainties in prevalence of FSDs. Epidemiological studies on sexual attitudes and behaviors in female showed sexual difficulties to be common in middle-aged adult's worldwide, and ranged between 40-60%. In different group of study, lack of subjective arousal, insufficient vaginal lubrication, orgasmic disorders and dyspareunia have been observed in 17%, 5-28%, 5% and 3-12% of diabetic women respectively. Overall studies were suggested that women with diabetes have more SD than normal subjects.

Causes and risk factors of SD in diabetic women

Diabetes-induced vascular damage and nerve dysfunction may impair the sexual response by producing structural and functional changes in the female genitalia. Vascular damage can affect blood supply to the vagina and clitoris which further cause problems of dryness leading to decreased arousal and dyspareunia during sexual intercourse. Neuropathy exhibits reduction in sensitivity by altering both the normal transduction of sexual stimuli and triggering of sexual response. The etiologies related to FSD in DM (Fig 1) are still unclear but certain physiological and psychological factors are thought to contribute such problem. SDs are mainly associated with longer duration of diabetes, older age, higher BMI and presence of CVD. Esposito et al. (2010) revealed that metabolic syndrome and atherogenic dyslipidemia were independent predictors of FSD in type 2 diabetic women even though depression and marital status were the strongest independent factors associated with FSD.

Pathogenesis of FSD in diabetes

Hyperglycemia induced vascular dysfunction may lead to changes in the local blood flow which may cause inhibition of the puffiness of the clitoris and lubrication of the vagina during arousal, resulting in dyspareunia and poor vaginal lubrication. Animal studies showed that DM may affect arousal and orgasmic sexual responses by inducing impaired relaxation responses of the vaginal tissue to almost all transmitter systems. It is hypothesized that hormonal imbalance that accompanies DM plays a potential role in the pathogenesis of the FSD. Correlation has been shown between the observed changes in the levels of androgens, estrogens and sex hormone binding globulin (SHBG) in diabetic female.

Diagnostic approach to diabetic females with SD

FSDs are more complex and difficult to diagnose due to a woman’s perception about sex particular during diabetes is different. Assessing FSD and their disorders like decrease in sexual desire, inability to achieve an orgasm and the feeling of pain during sexual intercourse can be very challenging. For the evaluation of FSD an open talk about sexual life and its problems are essential for both clinicians and patients. An accurate diagnosis of FSD requires medical history including sexual life history, physical examination, lab testing and other tests. Several causes can contribute to FSD during diabetes like presence of chronic medical condition such as CVD, neurological disorder and physical disability, so during diagnosis such factors are taken in consideration. There are several diagnostic models that help in estimation of FSD especially during DM in order to facilitate medical practice; mainly two simple models have been adopted by clinician i.e.
ALLOW (Ask, Legitimize, Limitations, Open, Work) and PLISSIT (Permission, Limited Information, Specific Suggestions, Intensive Therapy) models which help at initial to diagnose sexual functions\textsuperscript{34}. ALLOW and PLISSIT models are the most commonly used methods for a more detailed and extensive evaluation apart from structured interviews and self-reported validated questionnaires (Fig 2) are also done. Structured interviews have a more personal character as these provide the opportunity in clarifying possible details, answering questions and explaining terms. These are adjusted to the female population and perceptions about sex which can include measurable data that can be further analyzed\textsuperscript{34}. Female Sexual Function Index (FSFI), Brief Index of Sexual Functioning for Women (BISF-W), Derooges Interview for Sexual Function (DISF/DISF-SR) and the Female Sexual Distress Scale (FSDS) are some of the available questionnaires that evaluate female sexual function and its disorders\textsuperscript{34}. Multidisciplinary approaches are preferable with appropriate trained physicians and specialists because of the complexity of the female sexual function\textsuperscript{35-36}.

**Figure 1**
Risk factors and associated complications in DM induced FSD

**Figure 2**
Diagnostic approaches in DM induced FSD
CONCLUSION

Diabetes mellitus is a disease related to metabolic dysfunction, characterized by severe hyperglycemia along with secondary complications. The diabetes impair the sexual response in female by promoting vascular damage and nerve dysfunction which further producing the structural and functional alteration in female genitalia. Blood supplied affected through vascular damage that causes dryness of vagina. Still unclear aetiologies of FSD in DM, but certain physiological and psychological factors are contributed to cause FSD. Diagnosis is based on medical history of patients include sexual life history, physical examination, lab testing and other tests. Two diagnostic simple models are help to estimate the FSD in DM i.e. ALLOW and PLISSIT.

REFERENCES


