ORIGINAL RESEARCH—WOMEN'S SEXUAL HEALTH

Sexuality and Psychopathological Aspects in Premenopausal Women with Metabolic Syndrome

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ABSTRACT

Introduction. Metabolic syndrome (MetS) is a cluster of cardiovascular risk factors that have been suggested to impact female sexual function.

Aims. This study aims to assess the prevalence of female sexual dysfunction (FSD) in premenopausal women with MetS compared with healthy controls (HC). Psychopathological aspects and the relationship to FSD were also evaluated in both groups.

Methods. Two hundred four premenopausal women, of whom 98 had diagnosis of MetS, were asked to complete the Female Sexual Function Index (FSFI), the Female Sexual Distress Scale (FSDS), and the Middlesex Hospital Questionnaire (MHQ). Routine laboratory tests and anthropometric measurements were routinely performed.

Main Outcome Measures. FSFI and FSDS questionnaires, prevalence of FSD, and MHQ scores.

Results. In the MetS group compared with the HC group, we found: a lower global FSFI score ($P = 0.005$), higher prevalence of pathological scores compared with HC group, and lower scores in the desire, arousal, lubrication, and orgasm domains. An inverse correlation between the FSFI score and the number of risk factors for MetS was detected. MetS women reported significantly higher total scores in the somatization and depression domains when compared with the HC group. The logistic regression showed that high triglycerides (odds ratio [OR] 3.097; 95% confidence interval [CI] 1.272–7.542; $P = 0.026$) and somatization (OR 7.068; CI 95% 2.291–21.812; $P = 0.001$) are independently associated with FSD in premenopausal women.

Conclusions. Our results indicate a higher prevalence of sexual dysfunction in MetS women. A number of risk factors for MetS are positively associated with FSD and higher triglycerides seem to be the strongest predictors of sexual dysfunction. Psychopathological dimensions such as somatization are strongly associated with sexual dysfunction.

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Key Words. Metabolic Syndrome; Female Sexual Dysfunction (FSD); Female Sexual Function Index (FSFI); Female Sexual Distress Scale (FSDS); Middlesex Hospital Questionnaire (MHQ)

Introduction

Female sexual dysfunction (FSD) has become a worldwide public health problem. FSD is considered a disorder of sexual desire, orgasm, arousal, and sexual pain that results in significant personal distress [1], thereby having a big impact on personal relationships and the quality of a woman's life [2].

Many physiological factors can affect female sexual response. Indeed, a recent report by the

Princeton III Consensus suggests that an association between female sexual function and cardiovascular and metabolic disorders does exist and that more research is needed to clarify the impact of metabolic syndrome (MetS) on sexuality [3]. MetS is a multifactorial disease resulting from the co-occurrence of several cardiometabolic disturbances such as hypertension, central obesity, diabetes, and dyslipidemia. The Third National Health and Nutrition Examination survey reported that the age-adjusted MetS prevalence in the U.S. female population is 23% [4]. Similarly, 18% of Italian women are affected by MetS, and the prevalence increases with age reaching 25% in women aged 70 years or older [5]. Besides the indirect evidence provided by experimental studies [6,7], the impact of cardiovascular and metabolic risk factors, such as hypertension, obesity, dyslipidemia and diabetes on a woman's sexual function has been suggested by a few clinical trials [8–11]. Esposito K et al. reported an increased prevalence of FSD in premenopausal women affected by MetS, when compared with healthy counterparts, suggesting a role of increased inflammation associated with cardio-metabolic disorder in determining the impairment of sexual response [12]. Although subsequent studies have confirmed these results in both pre- and postmenopausal women [13,14], in a recent report, Kim et al. failed to demonstrate such an association suggesting little impact of MetS on women's sexuality [15]. This may be related in part to the fact that the researchers did not use validated questionnaires to evaluate sexual function and to the noninclusion of a concomitant evaluation of sexual dysfunction-related distress.

Finally, the exploration of psychopathological correlates of sexual function in healthy and unhealthy women is lacking.

Aims

The aims of the present study were to assess the prevalence of FSD in premenopausal women affected by MetS, compared with healthy counterparts, and to evaluate whether and which psychopathological domains may be associated with FSD.

Methods

Population

Women were screened for study enrollment. Women were selected from patients who attended the unit of gynecology of the university tertiary care center S. Orsola-Malpighi for regular gynecological checkups and from patients attending the unit of Metabolic Disease and Clinical Dietetics of the same centre who came for the first time or for the first control before starting any treatment.

Inclusion criteria were premenopausal status with regular menstrual cycle (length 26–36 days) [16], body mass index (BMI) <36, and no hormone intake at date of inclusion or during the previous 6 months. Exclusion criteria were postmenopausal status, irregular menstrual cycles (<24 or >36 days), contraceptive intake, gynecological pathologies (endometriosis, fibroma, and uterine prolapse), clinically relevant comorbidities (hepatic and renal diseases, cardiac and respiratory diseases, cancers, blood diseases), and diagnosed depressive syndrome with or without psychotropic treatment.

The diagnosis of MetS was based on the new International Diabetes Federation (IDF) criteria [17], which requires central obesity (waist circumference ≥80 cm) plus any two of the following risk factors: systolic blood pressure ≥130 or diastolic blood pressure ≥85 mm Hg; fasting plasma glucose content ≥100 mg/dL; plasma triglycerides ≥150 mg/dL; and plasma high-density lipoproteins (HDL) ≤50 mg/dL. Informed written consent was obtained from all women included in the study, and the study protocol was approved by the local Ethical Committee in accordance to the 1975 Declaration of Helsinki.

Anthropometric Measures and Laboratory Analysis

Clinical, biochemical, and anthropometric parameters were recorded at study inclusion. Height and weight were measured with women wearing lightweight clothing and no shoes. BMI was calculated as weight in kilograms divided by the square of height in meters (kg/m^2). Waist-to-hip ratio was calculated as waist circumference in centimeters divided by hip circumference in centimeters.

Finally blood pressure was measured (mean of three measurements, 5 minutes apart, in a sitting position using a standard sphygmomanometer), whereas fasting plasma glucose, total cholesterol, HDL, and triglycerides concentration were assessed by the centralized clinical laboratory of the S. Orsola-Malpighi University Hospital.

Assessment of Sexual Function

All women included in the study completed anonymously, the Female Sexual Function Index