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Sexual Function and Depressive Symptoms in Young Women With Nonclassic Congenital Adrenal Hyperplasia

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ABSTRACT

Introduction: Women with classic forms of congenital adrenal hyperplasia (CAH) or polycystic ovary syndrome have been found to have impaired sexual function.

Aim: This study investigated sexual activity in young women with nonclassic CAH (NC-CAH).

Methods: The study included 24 untreated women with NC-CAH and 24 age-matched healthy women. Plasma levels of free and total testosterone, androstenedione, and dehydroepiandrosterone sulfate were measured. Hirsutism was evaluated according to the modified Ferriman-Gallwey score. Questionnaires assessing female sexual function (Female Sexual Function Index) and the presence and severity of depressive symptoms (Beck Depression Inventory, Second Edition) were completed by each participant.

Main Outcome Measures: Sexual function and depressive symptoms in young women with NC-CAH.

Results: Women with NC-CAH presented increased plasma levels of 17-hydroxyprogesterone, total and free testosterone, androstenedione, and dehydroepiandrosterone sulfate and higher hirsutism scores compared with healthy women. The study group also showed a lower total Female Sexual Function Index score and lower scores in four domains (sexual arousal, lubrication, sexual satisfaction, and dyspareunia). Scores for sexual desire and orgasm correlated with total hirsutism score and testosterone levels. The Beck Depression Inventory questionnaire showed that the total score was higher in women with NC-CAH than in healthy women, correlating with the hirsutism score and testosterone levels.

Conclusion: The presence of NC-CAH in young women is associated with impaired sexual function and mild depressive symptoms.

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Key Words: Androgens; Nonclassic Congenital Adrenal Hyperplasia; Depressive Symptoms; Sexual Function

INTRODUCTION

Congenital adrenal hyperplasia (CAH) is a general term applied to a group of autosomally recessive disorders, caused by inactivating mutations in single enzymes, involved in cortisol biosynthesis. The most frequent defect, accounting for more than 90% of all cases of CAH, is 21-hydroxylase deficiency resulting from mutations or deletions of the *CYP21A2* gene.[1,2] The severity of the disease is determined by the degree of enzyme activity inhibited by the mutation. Nonclassic CAH (NC-CAH), a consequence of a mild adrenal enzyme defect, seems to affect 0.1% to 0.2% of the Caucasian population and 1% to 2% of women with hyperandrogenism.[3,4] The disease is frequently diagnosed in late childhood, adolescence, or adulthood and is characterized by signs and symptoms of excessive androgen production, such as accelerated bone maturation, short final height, hirsutism, acne, androgenic alopecia, anovulation, menstrual dysfunction, and hypofertility.[5,6]

In recent years, it has become clear that some women with CAH complain of sexual dysfunction. Women with this disease have recalled significantly more male-typical behavior in their childhood and less satisfaction with their assigned female sex than healthy women.[7] Most women with this disorder have identified their sex as female.[8] Although most have identified themselves as heterosexual, homosexual and bisexual orientations have occurred more frequently than in the general population.[9]

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Psychosexual and surgical outcomes depend on the severity of CAH, because female sex, sexual concerns, and impaired sexual function are more frequent in the salt-losing than in the simple virilizing form of this disorder.[10] Impaired fertility has been observed in women with classic forms of CAH, particularly in women with the salt-wasting form.[11] Unfortunately, most studies assessing sexual function in women have included only or mainly patients with classic forms of this disease, characterized by the markedly increased production of androgens and the requirement for lifelong glucocorticosteroid therapy.[1,2] The sexuality of women with NC-CAH likely differs from the sexuality of women with classic CAH. Women with NC-CAH have been characterized by increased bisexual and homosexual orientation[9] and masculinization of gender-related behavior.[8] Interestingly, the phenotype of women with NC-CAH is similar to that of women with polycystic ovary syndrome (PCOS).[3] The results of studies assessing sexuality in women with PCOS are not definitive but seem to suggest some relation between sexual function and the presence of this syndrome. PCOS has been associated with decreased quality of life and marital sexual functioning in women.[12] Obese women with PCOS have been found to be at a higher risk of sexual dysfunction and have lower Female Sexual Function Index (FSFI) scores.[13] Women with this syndrome have reported less satisfaction with their sexual lives.[14] Although sexual function and response, attitude toward sexuality, and relationships with sexual partners have indicated no difference between women with PCOS and healthy women, women with this syndrome have rated themselves negatively as sexual partners.[15] With the exception of a significantly lower orgasm and completion score, women with PCOS have obtained a similar sexual functioning score.[16]

The paucity of data concerning NC-CAH and data suggesting a relation between the presence of PCOS or classic forms of CAH and impaired sexual function encouraged this investigation of the sexual cycle, satisfaction, and pain in women with NC-CAH.

MATERIALS AND METHODS

Study Population

The study population was comprised of 24 women (20 to 40 years old) with symptomatic NC-CAH. Inclusion criteria for the study included peak 17-hydroxyprogesterone levels higher than 10 ng/mL after stimulation with cosyntropin 250 μg in the follicular phase in menstruating women or on any day in anovulatory women combined with the presence of hirsutism, acne, oligomenorrhea, or infertility. These patients were compared with a control group comprised of 24 age- and weight-matched healthy women.

The study was approved by the bioethics committee of the Medical University of Silesia (Katowice, Poland). All participants provided written consent as approved by the local ethics committee.

Methods

After a 12-hour overnight fast, venous blood samples were drawn from the antecubital vein in a quiet, temperature-controlled room (24–25°C) from 8:00 to 9:00 AM (to avoid possible circadian fluctuations in the studied parameters). Plasma levels of total and free testosterone, dehydroepiandrosterone sulfate, androstenedione, and 17-hydroxyprogesterone were determined by an enzyme-linked immunosorbent assay (DRG Instruments GmbH, Marburg, Germany). Hirsutism was assessed using a modification of the Ferriman-Gallwey score.[17]

All participants were asked to complete a questionnaire assessing their demographic characteristics, marital state, education, general health, medical and sexual histories, functional activity, sexual activity (vaginal intercourse), sexual distress, and sexual functioning. The FSFI was used because it is a validated test evaluating all phases of the female sexual cycle, sexual satisfaction, and dyspareunia in the past 4 weeks.[18,19] The test consists of 19 items divided into six collective domains (subscales): I = sexual desire, II = sexual arousal, III = lubrication, IV = orgasm, V = sexual satisfaction, and VI = dyspareunia.[18,19] Each answer is rated on a scale from 0 to 5 or from 1 to 5, with 0 indicating no sexual activity in the past month. Scores for each of the six domains are calculated by summing up individual domain question scores and multiplying the result by the domain factor (ie, 0.6 for desire, 0.3 for arousal and lubrication, and 0.4 for orgasm, satisfaction, and pain). The minimum and maximum scores were 2 and 36, respectively. A higher score in each domain indicates better status.[18] A summary score below 26.55 indicates sexual dysfunction.[20]

The presence and severity of depressive symptoms were evaluated using the Beck Depression Inventory, Second Edition (BDI-II). This questionnaire is a 21-item self-reporting scale, and each answer is scored on a scale of 0 to 3 and can be used for screening purposes.[21] The items of its English-language version have been adjusted to measure depressive symptoms corresponding with the diagnostic criteria for depressive disorders outlined in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision.*[22] The total score ranges from 0 to 63, with higher values indicating more severe depressive symptoms. A total score of 0 to 13 was considered minimal depression, 14 to 19 as mild, 20 to 28 as moderate, and 29 to 63 as severe.

Statistical Analysis

Quantitative data underwent natural logarithmic transformation to yield a normal distribution for statistical analyses. Comparisons between groups were performed using the Student t test for independent samples. Qualitative variables were compared using the χ^2 test. The Pearson correlation analysis test was used to determine the significance of each correlation. The level of significance was set at a P value less than .05.