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Original Article

Sexual orientations of women with polycystic ovary syndrome: Clinical observation in Taiwan

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ABSTRACT

Objective: This study was conducted to explore the association between sexual orientations and polycystic ovary syndrome (PCOS)-related parameters.

Materials and methods: A cross-sectional study with participants recruited from the regular outpatient clinic at the Department of Obstetrics and Gynecology at Taipei Medical University Hospital, Taipei, Taiwan between July 2012 and December 2013 was carried out. A total of 97 women met the criterion of having been diagnosed with PCOS. Among these 97 women, 89 were heterosexuals and eight were self-identified as lesbians. At the same time, 78 women without PCOS were enrolled to serve as the control group. Participants were given a standard questionnaire and had blood withdrawn for biochemical analysis of androgen parameters—including total testosterone, androstenedione, sex hormone binding globulin, free androgen index, 17β-estradiol (E2), luteinizing hormone, and follicular-stimulating hormone. The biochemical data were measured to compare the PCOS clinical parameters present in people of different sexual orientations (lesbians and heterosexuals).

Results: The women with PCOS, regardless of sexual orientation, had higher percentages and serum levels of hyperandrogenism-related clinical parameters than the women without PCOS [acne (87.5% and 60.7% vs. 23.1%), $p < 0.001$]; hirsutism (62.5% and 57.3% vs. 15.4%, $p \leq 0.001$)]; and biochemical parameters (total T, $p < 0.05$ or $p < 0.001$, and luteinizing hormone/follicular-stimulating hormone ratio, $p \leq 0.001$]. The sexual orientation of women with PCOS affected their body mass index (BMI), because lesbians with PCOS possessed higher BMI than heterosexual women with PCOS (26.5 ± 1.9 vs. 22.5 ± 0.55; $p < 0.05$). However, hyperandrogenism-related clinical and biochemical parameters were not significantly different statistically between women with PCOS but of different sexual orientations.

Conclusion: Our preliminary data showed that sexual orientation influenced the BMI of women with PCOS, but did not affect hyperandrogenism-related clinical or biochemical characteristics. This observation requires further confirmation.

Introduction

Polycystic ovary syndrome (PCOS) is a common endocrine disorder that causes substantial psychological, social, and economic burden for women of various ages [1–5]. The prevalence of PCOS in childbearing aged women is approximately 5–20% [6–8], and

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accounts for anovulatory infertility [9,10]. Based on the Rotterdam 2003 criteria for the diagnosis of PCOS, the clinical expressions of this disease include chronic anovulation, clinical or biochemical signs of hyperandrogenism, and polycystic ovaries [11], which contribute to the following clinical symptoms: irregular or absent menstrual periods, infertility, excessive growth of body and facial hair, adult acne, high blood pressure, and elevated cholesterol levels. These clinical expressions are thought to result from the imbalance of hormones and insulin resistance of the body. Approximately 50–70% of women with PCOS were found to have symptoms of insulin resistance [12], which contributes to the clinical expression of prediabetes in women with PCOS [13]. Currently, PCOS is considered a genetic disease associated with various conditions including infertility, type 2 diabetes, cardiovascular disease, and ovarian cancer [14]. However, the exact pathophysiology of this complex disease is still unclear.

As discussed above, PCOS is associated with psychological, social, and metabolic problems, as well as issues regarding infertility. However, the relationship between sexual function and PCOS is rarely discussed. Recently, only a few studies have indicated that PCOS is also associated with particular sexual responses and sexual dysfunction [15–17]. Based on the homosexual cases studies, Ferraresi and his colleagues [15] showed that women with PCOS had higher levels of serum androgen and a lower sexual function index, but no significant association was found between body mass index (BMI), serum androgen level, and sexual function. Another study conducted by Stovall et al [17] demonstrated that an elevated BMI was associated with a reduction in the orgasm/completion phase during the sexual response cycle, but not associated with acne or hirsutism. Mansson et al [16] further suggested that high BMI had only a minor effect on sexual function, and the total serum testosterone (T) level was positively associated with sexual satisfaction. These homosexual cases studies results imply that BMI and serum androgen levels might be independent factors that contribute to the clinical expression of PCOS. As to the impact of these PCOS-related physiological factors on sexual orientation, a pilot study [18] also suggested that the prevalence of PCOS and its related symptoms might not differ between lesbians and heterosexual women. However, studies on different sexual orientations are still under debate, and physiological factors may still vary between the two groups. For example, it was considered that lesbians have higher T levels than heterosexual women [19]. However, the evidence is still under debate, and very few studies have been done on the relationship between sexual orientation and PCOS. Moreover, the majority of the previous studies were conducted on Caucasians, so the association of PCOS with race, sexual orientation, and hormonal factors is still poorly understood [20].

Thus, in the current study, we took advantage of being based in Asia, because sexual dysfunction is an embarrassing issue and seldom discussed in Asia [21]. We aimed to evaluate the association between sexual orientation and PCOS-related physiological parameters, and to clarify the hormonal factors that may differ between different groups among Taiwanese people. Through the quantitative analysis of questionnaires, patient history, and hormone assays, we evaluated the physical activity, medical history, ultrasound data, and various hormone levels of the patients including 17β-estradiol (E2), luteinizing hormone (LH), follicular-stimulating hormone (FSH), prolactin, total T, androstenedione (A4), and sex hormone binding globulin (SHBG). The conventional therapeutic targets of PCOS were aimed at the exhibited symptoms relating to insulin resistance, such as overweight issues and hirsutism. The outcomes of this study advanced our understanding of the relationship between PCOS and sexual orientation in Taiwanese women and provided additional information about the features of PCOS in people of different ethnic backgrounds. The study may also contribute to the improvement of future care for women with PCOS from various cultural backgrounds.

Methods

The study was carried out by using a cross section of participants recruited from the regular outpatient clinic at the Department of Obstetrics and Gynecology at Taipei Medical University Hospital, Taipei, Taiwan between July 2012 and December 2013.

A medical history questionnaire was used to recruit participants. Participants had to meet the following criteria: (1) be between the ages of 20 years and 35 years (this was done to avoid including those who were experiencing the hormonal effects of puberty and premature menopause), (2) have at least one functional ovary, (3) not taking oral contraceptives at the time when blood was drawn, (4) display no menopausal symptoms (defined by no period in the past 12 months accompanied by hot flashes, vaginal dryness, and dizziness) at the time of participation, and (5) report to have never been diagnosed with Cushing's syndrome, androgen-secreting tumors, or congenital adrenal hyperplasia on the medical history questionnaire that was used for this study. Of the 97 women who met the criteria and were diagnosed with of PCOS, 89 were heterosexuals and eight were lesbians. At the same time, 75 women without PCOS were recruited to serve as the non-PCOS control group. An unpaired t test and two-sided p value were used.

Data collection and laboratory analysis

Upon meeting the eligibility criteria, participants were scheduled to visit our university-affiliated hospital. During the first clinic visit, participants consented to participate in the study and completed the questionnaires. They were then interviewed regarding their physical activity and medical history. At the second visit, participants underwent a transvaginal or transabdominal ultrasound, and a fasting venipuncture of hormone assays, including, E2, FSH, LH, prolactin, total T, A4, and SHBG. The entire hormone assay was done at a laboratory at Taipei Medical University Hospital using the electrochemiluminescence immune assay. All study instruments and protocols were approved by the University Institutional Review Board (TMU 201202017). The participants completed a lengthy questionnaire about their sexual life history to determine their sexual orientation.

Measurement and observation

Demographic information (race, age, sexual orientation, and education) was obtained from the screening/recruitment forms and questionnaires. Sexual orientation was based primarily on self-identification with confirmatory questions regarding sexual behavior, attraction, and sexual history over the past 2 years.

PCOS diagnoses were made by a reproductive endocrinologist, who was blind to the sexual orientation of each participant, using a modified version of the 2004 and 2009 Rotterdam diagnostic criteria for PCOS [8,11]. In brief, a case of PCOS was identified when at least two of the following three criteria were met: (1) biochemical and/or clinical hyperandrogenism, (2) oligomenorrhea, and (3) polycystic ovaries on ultrasound, after exclusion of known disorders.

Clinical hyperandrogenism was based on current adult acne and excessive hair growth (hirsutism). Hirsutism was determined by using the modified Ferriman–Gallway scale in which women marked seven body areas (0–4) according to their hair density; a score of 8 or higher indicates excessive hair growth. Biochemical hyperandrogenism was defined by elevated total T and A4 (>2.4 ng/mL) concentrations [22]. Oligomenorrhea was defined as menstrual