**232**

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# PREMENSTRUAL SYNDROME AND PREMENSTRUAL DYSPHORIC DISORDER: ARE WOMEN AT INCREASED RISK FOR PELVIC FLOOR DISORDERS?

Hypothesis / aims of study
The aim of this study was to assess the prevalence and impact of premenstrual syndrome (PMS) and premenstrual dysphoric disorder (PMDD) on pelvic floor disorders (PFD) using an identical twin-sister study design that can also provide insight into the role of genetic variance. We hypothesized that PFD would be more prevalent and severe in women suffering of severe PMS/PMDD.

Study design, materials and methods
An epidemiologic survey of 432 identical twin-sisters was performed at an annual Twins-Day Festival occurring in 2005 and 2006. All twin-sisters completed a validated premenstrual screening tool questionnaire (PSST) [1], which translates the categorical DSM-IV criteria into a rating scale with degrees of severity to identify women suffering from severe PMS/PMDD. The core symptoms in the DSM-IV criteria include anger/irritability, anxiety/tension, tearful/increased sensitivity, or markedly depressed mood**.** The remaining symptoms include decreased interest in work, home and, or, social activities, difficulty concentrating, fatigue/lack of energy, overeating/food cravings, insomnia or hypersomnia, feeling of overwhelmed or out of control, physical symptoms including breast tenderness, headaches, joint, muscle pain, bloating and weight gain. The second part of the PSST evaluates the extent to which the symptoms have interfered with one's work productivity, relationships with co-workers and family members, social life activities and home responsibilities. Based on the PSST the diagnosis of PMDD is made when: 1) At least one of the core symptoms is recorded as severe, 2) At least 4 out of all 14 listed symptoms are present, 3) and there is severe symptom interference with at least one of work, co-worker relationships, family relationships, social life, or home responsibilities. In addition, all twin pairs completed a 20-item validated Pelvic Floor Distress Inventory questionnaire (PFDI-20) [2] containing Pelvic Organ Prolapse Inventory (POPDI-6), Colorectal-Anal Inventory (CRADI-8) and Urinary Distress Inventory (UDI-6) subscales. Comparisons were made between the twins with PMS/PMDD vs. those without. Mixed effects linear models for clustered data were used for group comparisons on summary scores, and generalized estimating equations were used for comparisons of categorical measures.

Results
Of 362 identical pre-menopausal twin sisters (181 pairs), 44 met the criteria for severe PMS/PMDD, indicating a prevalence of 12.15%. Median age was 26 years (14-56), and BMI was 23.4 (15-54.9). Race was White/ Black/ Hispanic/ other race in 89.78%, 3.04%, 3.04%, and 1.1% respectively, 72.14% were nulliparous, 80.38% had high school education or higher, 61.6% were employed, 32.87%were students and 7% smoked. There were no statistical differences in these demographics between women with PMS/PMDD and those without.

Interpretation of results
Women with PMS/PMDD scored significantly higher total distress scores on all three components of the PFDI; POPDI-6 ($p<0.0001$), CRADI-8 ($p=0.0059$), and UDI-6 ($p<0.0001$). Multivariable analysis for effect of PMS/PMDD adjusted for twinning and depression showed that the UDI-6, POPDI-6 and CRADI-8 scores remained statistically significant ($p<0.0001$). The specific items that were significantly worse on the PFDI in women with PMS/PMDD were symptoms of pressure and dullness, incomplete bowel emptying, fecal urgency, frequent urination and leakage.

Concluding message
The results of this study demonstrated significantly increased overlap and severity of PFD in women with PMS/PMDD. Several studies indicate that PMS/PMDD is underdiagnosed and undertreated. Using the PSST the diagnosis of PMS/PMDD is facilitated, making it readily available for studying the relationship of PMS/PMDD with PFD. Existing data suggests that each individual entity is associated with increased psychological distress. Our future research efforts are targeted to assess the effect of PMS/PMDD and PFD on levels of perceived stress and emotional response using validated questionnaires.

References
1. Arch Women Ment Health. 2003;6:203-209.
2. Am J Obstet Gynecol 2001;185:1388-95.

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**CLINICAL TRIAL REGISTRATION: This clinical trial has not yet been registered in a public clinical trials registry.**
**HUMAN SUBJECTS: This study was approved by the Evanston Northwestern Healthcare Review Board. Ethic committee authorization Nr. EH03-260 and followed the Declaration of Helsinki Informed consent was obtained from the patients.**