

FEMALE URINARY INCONTINENCE AND SERUM OESTRADIOL LEVELS

Hypothesis / aims of study

To outline perceived associations between different urinary incontinence symptoms and serum levels of oestradiol in middle-aged women reporting urinary incontinence.

Study design, materials and methods

Women were recruited from a community-based observational study conducted between 1996-2000. The Women's Health In the Lund Area, WHILA study, comprised all women aged 50-59 in Dec 1995 (n=10766) living in the Lund area. All were invited to a screening procedure including questionnaires, physical and laboratory examinations. Sixty-four percent (n=6917) attended the screening and contributed laboratory variables. One question was "Do you experience urinary leakage?" Four hundred of the 2221 (32%) women that reported their urinary incontinence being a social or hygienic problem were selected by computerized randomization to receive a more detailed questionnaire on lower urinary tract symptoms. Serum levels of oestradiol were analysed by conventional ELISA techniques. In the selected 400 women, serum oestradiol levels were compared between women with stress, urge or mixed incontinence by Kruskal-Wallis, ANOVA and logistic regression and adjusted for BMI, age, parity and use of hormone therapy.

Results

The incontinent group in the total WHILA series had significantly higher serum levels of oestradiol (87.1 ± 138.4 pmol/l) than the continent group (78.0 ± 118.5 pmol/l, $p=0.043$) and also higher levels of oestradiol/SHBG (1.5 ± 2.6 vs 1.4 ± 6.0 , $P=0.002$). When adjusted for BMI, serum oestradiol still differed significantly between the groups ($P=0.002$) but not oestradiol/SHBG.

In the 400 women, serum oestradiol in women with stress urinary incontinence, SUI (n=186) was 97.4 ± 132.9 , in those with mixed urinary incontinence, MUI (n=143) 73.3 ± 108.7 , in those with urge urinary incontinence, UUI (n=40) 75.2 ± 97.8 . However, no statistically significant differences between the groups were encountered.

Interpretation of results

Incontinent middle-aged women seem to have higher serum oestradiol levels than age-matched continent women. This coincides with studies showing a higher incidence and/or prevalence of urinary incontinence in women using HRT. The findings show that UI is not related to loss of endogenous estrogen production in menopause. We could not verify any significant differences in oestradiol levels between women with stress, mixed or urge incontinence, albeit women with SUI had a tendency towards higher levels. Higher oestradiol levels lead to a more elastic, mobile connective tissue i.e. bladder neck and urethra and an impaired ability to keep the urethra closed during the filling phase, which can result in pure SUI, urge symptoms as well as mixed symptoms.

Concluding message

Incontinent middle-aged women have higher serum oestradiol levels than age-matched continent women. There were no significant difference in oestradiol levels between women with stress, mixed or urge incontinence.

FUNDING: No

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 Ethics committee of Lund University Hospital and followed the Declaration of Helsinki Informed consent was obtained from the patients.