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Aspects on chronic stress and glucose metabolism in women with recurrent vulvovaginal candidiasis and in women with localized provoked vulvodynia

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Aspects on Chronic Stress and Glucose Metabolism in Women with Recurrent Vulvovaginal Candidiasis and in Women with Localized Provoked Vulvodynia

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Abstract

Objective: To evaluate the degree of stress in women with recurrent vulvovaginal candidiasis (RVVC) and in women with localized provoked vulvodynia (LPV) (former vulvar vestibulitis syndrome) compared with controls. To measure the change of glucose in plasma and in vaginal secretions during oral glucose tolerance testing (OGTT) in women with RVVC, and in healthy control subjects.

Material and Methods: Altogether 147 women participated in the studies. A careful vulvovaginal examination was performed and a health questionnaire was completed. In some women, saliva for analysis of cortisol was collected 4 times in the morning and once in the evening. The analysis was performed with a time-resolved fluorescence immunoassay. A questionnaire about perceived stress at work and in private life was completed. Another part of the women underwent OGTT. Vaginal secretion from the proximal part of the vagina was collected on filter papers. Glucose in plasma and in vaginal secretions was measured at fasting and after two hours. In a subgroup of women with RVVC and control subjects, glucose in vaginal secretions and in plasma was collected every half-hour during OGTT. All samples were analysed with the hexokinase method.

Results: Blunted morning rise cortisol was registered more often in women with RVVC ($p < 0.002$). Mean levels of salivary cortisol were lower the first 45 minutes after awakening in women with RVVC, compared with controls.

Blunted morning rise cortisol was registered more often in women with LPV ($p < 0.05$), compared with controls.

Both women with RVVC, and women with LPV reported signs of burnout ($p < 0.001$ and $p < 0.005$), emotional symptoms of stress ($p < 0.005$ and $p < 0.05$), bodily symptoms of stress ($p < 0.05$ and 0.005), and presented type D-personality ($p < 0.05$). Moreover, women with RVVC perceived more worrying factors at work ($p < 0.05$), and an impaired balance between work and leisure time ($p = 0.01$).

More women with RVVC than controls reported a history of condyloma ($p < 0.001$), and bacterial vaginosis ($p < 0.001$). No differences were seen between women with RVVC and controls regarding SHBG, DHEA-s, testosterone or HbA1C.

In healthy women, the median level of glucose in vaginal secretion was 5.2 mmol/L before and 3.7 mmol/L after OGTT, and plasma glucose was 5.0 mmol/L before and 5.8 mmol/L after OGTT. No significant difference was seen regarding change of glucose level in vaginal secretions, and plasma glucose after, compared with before OGTT. Neither was there any difference between women with RVVC and controls regarding vaginal and plasma glucose levels every half hour during OGTT. Hemoglobin A1C and body mass index did not differ between the groups. In oral contraceptive users glucose in plasma 60 minutes after intake of 75 g of glucose ($p = 0.005$) was higher than in women not using oral contraceptives.

Conclusions: More women with RVVC and LPV than controls showed signs of chronic stress. The evaluation was performed with two different techniques.

There were no differences between women with RVVC and control subjects regarding change in glucose level in vaginal secretions or in plasma, during OGTT. Vaginal glucose levels did not rise in oral contraceptive users during OGTT, in spite of higher plasma glucose levels 60 minutes after intake of 75 g of glucose. There were no differences in plasma or vaginal glucose levels before and after OGTT.

Key words: Recurrent vulvovaginal candidiasis, localized provoked vulvodynia, vulvar vestibulitis syndrome, Hypothalamus Pituitary Adrenal-axis, salivary cortisol, chronic stress, morning awakening cortisol, oral glucose tolerance testing, glucose in vaginal secretions, plasma glucose, body mass index