MORPHOFUNCTIONAL FEATURES OF THE ENDOMETRIUM IN WOMEN WITH RECURRENT PREGNANCY LOSS AND THYROID HYPOFUNCTION

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ABSTRACT

Recurrent pregnancy loss (RPL) remains one of the major challenges in modern reproductive medicine. Despite advances in the diagnosis of genetic, anatomical, and immunological causes of pregnancy loss, impaired endometrial receptivity continues to play a crucial role. Recently, increasing attention has been paid to the impact of thyroid hypofunction on endometrial secretory transformation, steroid receptor expression, and the development of chronic endometritis. However, the underlying mechanisms remain insufficiently investigated.

Background

Recurrent pregnancy loss (RPL) remains one of the major challenges in modern reproductive medicine. Despite advances in the diagnosis of genetic, anatomical, and immunological causes of pregnancy loss, impaired endometrial receptivity continues to play a crucial role. Recently, increasing attention has been paid to the impact of thyroid hypofunction on endometrial secretory transformation, steroid receptor expression, and the development of chronic endometritis. However, the underlying mechanisms remain insufficiently investigated.

Objective

To evaluate the morphofunctional characteristics of the endometrium in women with recurrent pregnancy loss associated with thyroid hypofunction.

Materials and Methods

The study included 53 women with recurrent pregnancy loss. The main group consisted of 43 women diagnosed with recurrent pregnancy loss and thyroid hypofunction. The comparison group included 10 women with recurrent pregnancy loss but without thyroid dysfunction. All participants underwent comprehensive clinical examination, assessment of thyroid function, pelvic ultrasonography, evaluation of the vaginal microbiota using the Femoflor-screen PCR assay, and pipelle endometrial biopsy. Histological examination and immunohistochemical analysis were performed to evaluate estrogen receptor (ER), progesterone receptor (PR), and CD138 expression as a marker of chronic endometritis. Statistical analysis was carried out using standard parametric and nonparametric methods.

Results

Impaired secretory transformation of the endometrium was identified in 35 (81.4%) patients of the main group compared with 3 (30,0%) women in the comparison group ($p < 0,01$). Morphological signs of chronic endometritis were detected in 31 (72,1%) women with thyroid hypofunction versus 2 (20,0%) women in the comparison group ($p < 0,01$). The mean H-score for estrogen receptor expression in the glandular epithelium was significantly lower in the main group (174,2 ± 8,6) than in the comparison group (198,5 ± 7,4, $p < 0,05$). Progesterone receptor expression was also reduced (108,6 ± 10,4 vs 141,8 ± 9,7, $p < 0,01$). Positive CD138 immunostaining was observed in 32 (74,4%) women in the main group compared with 2 (20,0%) women in the comparison group ($p < 0,01$). A decrease in Lactobacillus spp. was detected in 30 (69,8%) patients with thyroid hypofunction, whereas similar microbiological changes were observed in only 2 (20,0%) women in the comparison group ($p < 0,05$).

Correlation analysis demonstrated a significant negative association between thyroid-stimulating hormone (TSH) levels and progesterone receptor expression ($r = −0,58$, $p < 0,05$), as well as a positive correlation between TSH concentration and the number of CD138-positive plasma cells ($r = 0,54$, $p < 0,05$).

Conclusions

1. Women with recurrent pregnancy loss and thyroid hypofunction demonstrate significantly higher rates of impaired secretory transformation of the endometrium and chronic endometritis.
2. Thyroid hypofunction is associated with decreased expression of estrogen and progesterone receptors together with increased CD138-positive plasma cell infiltration.

Comprehensive histological and immunohistochemical assessment of the endometrium improves the detection of impaired endometrial receptivity and may enhance the diagnostic evaluation of women with recurrent pregnancy loss.