

Transcriptomic data of eutopic endometrium as a basis for a minimally invasive test of endometriosis.

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Context: absence of effective minimally-invasive methods of timely diagnosis of endometriosis creates the relevance of studying this disease at genomic and transcriptomic levels.

Objective: to identify all specific changes of intracellular signaling pathways (ISP) activity in eutopic and ectopic endometrium of patients with endometriosis and to analyze correlation between molecular abnormalities in these locations.

Methods: transcriptome has been investigated by microchip hybridization (CustomArray). Profiles of ISP activation were calculated using bioinformatics methods.

Patients: 50 women with different forms of endometriosis, who were not treated with hormonal medicines 1 year prior to the surgery. To date we have fully analyzed data from 29 patients.

Intervention: laparoscopic endometriosis excision of ectopic foci, hysteroscopy with endometrial sampling. Transcriptome (2200 genes) has been investigated by microchip hybridization (CustomArray B3 Synthesizer). The profiles of activation/repression of intracellular signaling pathways in the studied samples were calculated using the bioinformatics method Oncofinder.

We normalized all pathway activation profiles of the normal endometrium samples and proceeded with the identification of strongly differentiating signaling pathways in endometriotic foci. We then carried out multiple comparisons between eu- and ectopic endometria of women with endometriosis.

Main Outcome Measures: Statistically significant differences between eutopic endometria of women with and without endometriosis were found. The top-30 most strongly differentiating up- and down-activated signaling pathways were identified.

Results: Evaluation of eutopic and ectopic endometrium in each patient took place and indicated a high degree of correlation (85%-98%) in signaling pathway activation profiles between eutopic and ectopic endometrial samples in each individual patient.

Conclusion: Our findings suggest that easily accessible eutopic endometrium can be used as a marker of the presence of endometriotic foci outside the uterus. It, therefore, may create a basis for early reliable diagnosis of endometriosis via utilization of endometrial sampling/biopsy.