VAGINAL AND INTESTINAL MICROBIOTA AS A CONJUGATE RISK FACTOR FOR REPRODUCTIVE LOSS IN THE FIRST TRIMESTER OF PREGNANCY

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Relevance. The infectious and inflammatory factor is among the most significant conditionally preventable causes of early reproductive loss, and the role of opportunistic microorganisms in the genesis of missed abortion is reported to be increasing. Bacterial vaginosis occurs in 10–46 % of pregnant women and significantly increases the rate of miscarriage, and in 70–84 % of patients it is combined with intestinal dysbiosis. However, the conjugate involvement of the two biotopes — intestinal and vaginal — in women with embryochorial insufficiency (ECI), and its relationship with pathology of the extraembryonic structures, remain insufficiently studied.

Aim of the study. To assess the state of the vaginal and intestinal microbiota in pregnant women at risk of ECI and to determine the prognostic value of the disturbances identified for the development of reproductive loss in the first trimester.

Material and methods. 139 pregnant women up to 8 weeks of gestation were examined: the main group (n=62) at risk of ECI; the comparison group (n=57) with retrochorial haematoma; and the control group (n=20) of conditionally healthy pregnant women. The vaginal microbiocenosis was assessed by real-time polymerase chain reaction using the Femoflor-16 test system, which allows qualitative and quantitative analysis of normal, facultative anaerobic and obligate anaerobic flora, yeast-like bacteria and mycoplasmas. The intestinal microflora was studied bacteriologically with determination of the degree of dysbiosis; the material was delivered to the laboratory in a sterile container within two hours.

Results and discussion. Salmonella, Shigella and haemolytically active Escherichia coli were not detected in any of the women examined. At the same time, the main group showed significant suppression of the obligate flora and growth of opportunistic microorganisms in both biotopes (Table 1).

Table 1. Intestinal and vaginal microbiota parameters (lg, M±m)

Microorganism	**Main group, n=62**	**Comparison group, n=57**	**Control group, n=20**
Bifidobacteria (intestine)	4.3±0.1***^^^	6.3±0.1^^^	7.3±0.2
Lactobacilli (intestine)	3.3±0.1***^^^	5.2±0.08^^^	5.6±0.07
E. coli (intestine)	5.3±0.2	5.2±0.2	4.0±0.0
St. aureus (intestine)	0.7±0.1	0	0
Lactobacillus spp. (vagina)	4.9±0.5**^	5.4±0.3*^	6.2±0.3
Gardnerella vaginalis et al.	4.2±0.1*^	3.8±0.12*^	3.4±0.3
Atopobium vaginae	2.6±0.09***^^	1.5±0.07***^^	0.1±0.01
Candida spp.	2.6±0.03***^^	1.8±0.03***^^	0.6±0.01
Mycoplasma hominis	1.5±0.03^^	0.9±0.02	0

Note. Significance versus the comparison group: * — $p<0.05$; ** — $p<0.01$; *** — $p<0.001$; versus the control group: ^ — $p<0.05$; ^^ — $p<0.01$; ^^^ — $p<0.001$.

Grade III intestinal dysbiosis was diagnosed in 85.5 % of the main group and grade II in 14.5 %; grade I dysbiosis and normal microbiota did not occur in this group. In the comparison group grade II dysbiosis prevailed (82.4 %), while grades I and III were found in 12.3 % and 5.3 % respectively. All women in the control group (100 %) had grade I dysbiosis. Analysis of the types of vaginal dysbiosis showed pronounced anaerobic dysbiosis in 25.8 % of the main group versus 19.3 % in the comparison group and its complete absence in the controls; pronounced dysbiosis was found in

12.9 % and 7.1 % respectively; absolute normocenosis was observed in only 9.7 % of the main group versus 21.1 % and 50.0 %. Thus, as the risk of reproductive loss increases, the microbiocenosis consistently shifts from normocenosis towards pronounced anaerobic dysbiosis, while the reduced levels of vitamins K and B12 synthesised by the intestinal microflora provide indirect biochemical confirmation of the depth of the intestinal disturbances.

Conclusions. 1. Pregnant women at risk of ECI develop a conjugate disturbance of the intestinal and vaginal biotopes: suppression of lacto- and bifidoflora is combined with growth of opportunistic anaerobes, Candida fungi and mycoplasmas. 2. The shift of the microbiocenosis from normocenosis towards pronounced anaerobic dysbiosis is closely associated with the risk of reproductive loss and with pathological changes in the extraembryonic structures. 3. Simultaneous assessment of both biotopes before 8 weeks of gestation may be regarded as a prognostic criterion and justifies early probiotic correction and restoration of vaginal normocenosis.