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The role of microbial colonization of cervical canal and antimicrobial peptides in prediction of postpartum endometritis

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Background: Postpartum endometritis is one of the important problems of modern obstetrics. The aspects of prophylaxis, early recognition and prediction of disease are still of current interest. Recently it is possible to study the immune effectors which play an essential role in prevention of microbial colonization of uterus. The aim of the study was to determine the correlation between isolation of opportunistic microorganisms from cervical canal of parturients, the levels of antimicrobial peptides and the development of postpartum endometritis.

Material/methods: 117 parturients were observed. They were divided into two groups: group I contained the patients with normal postpartum period (n=59), group II contained the patients with clinical signs of postpartum endometritis (n=58). On the 3-rd day after delivery cervical discharges were sampled for microbiological analysis from all the women. Species identification of microorganisms was realized using Autoflex III mass spectrometer with MALDI Biotyper software package (Bruker Daltonics, Germany). The levels of defensin alpha, antiproteases (secretory leukocyte protease inhibitor (SLPI) and elastase-specific inhibitor (ESI)) in the samples of blood plasma on the 1-st and 3-rd days of postpartum period were evaluated by ELISA.

Results: It is established that on the 3-rd day after delivery the growth of opportunistic microorganisms in group I and group II was found in 81.3% and in 72.4% of the cases respectively, mainly in composition of polymicrobial associations (64.4% of the women from group I, 56.9% of the women from group II). No significant difference in species composition was found. In group I and in group II *E.coli* (45.8% и 44.8% respectively), *E.faecalis* (35.6 and 34.5%), *S.anginosus* (21.7% and 17.2%), *S.epidermidis* (11.9% and 15.5%), *S.agalactiae* (15.2 and 6.9%), *G.vaginalis* (11.9 and 8.6%) were predominated. No significant difference in colonization level of cervical canal for these microorganisms was found: more than 50% of the strains in the both groups were isolated in level $\geq 10^4$ CFU/ml. During dynamic control of levels of antimicrobial peptides on the 3-rd day significant decrease of levels of defensin alpha, SLPI and ESI was found in contrast to the levels on the 1-st day for parturients from group II ($p < 0.01$). These measures on the 1-st and 3-rd days were on the same level for healthy women from group I.

Conclusions: It seems that colonization of cervical canal by opportunistic microorganisms is not a key factor in prediction of postpartum endometritis. Significant decrease of levels of antimicrobial peptides on the 3-rd day after delivery is likely to lead to ascending infection and to development of endometritis. Early dynamic detection of levels of antimicrobial peptides could be useful in early recognition of postpartum endometritis.