

ROLE OF GARDNERELLA VAGINALIS IN THE PATHOGENESIS OF BACTERIAL VAGINOSIS

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Bacterial vaginosis is usually understood as a non-inflammatory disease of the vaginal mucosa, characterized by a breach of the balance between the population of representatives of different types of vaginal microflora.

Among women of childbearing age, bacterial vaginosis is the most common cause of fetal loss, chorioamnionitis, cervicitis, endometritis, urinary tract infection, cervical intraepithelial neoplasia, pelvic inflammatory disease, premature birth and delivery of low birth weight children, as well as an increased risk of HIV infection [1].

Normally, the microflora of the female vagina consists mainly of acidophilic lactobacilli (*Lactobacilli* spp), most of which are represented by peroxide-forming lactobacilli, bifidumbacteria is a small part of the microflora (up to 10 %) and less than 1 % are other microorganisms. Bacterial vaginosis is characterized by the loss of vaginal lactobacilli, commonly found in healthy women, and the overgrowth of anaerobes including *Gardnerella vaginalis* and *Mycoplasma hominis*, as well as *Mobiluncus*, *Bacteroides*, *Prevotella*, and *Peptostreptococcus* species [2].

Gardnerella vaginalis is one of the species of bacteria that is the most permanent representative of the vaginal microflora and an increase in the concentration of which is considered one of the main signs of bacterial vaginosis.

Gardnerella vaginalis actively reproduces in the microflora of the vagina and urethra, quickly destroying the normal microflora. *Gardnerella* is able to reproduce in an anaerobic environment, creating favorable conditions for the development of inflammatory processes in which other microorganisms may be involved. Actively reproducing, *Gardnerella* abundantly cover the mucous membrane of the vagina (urethra).

Gardnerella vaginalis have an enzymatic metabolic pathway. The main products of fermentation are acetic acid. In addition, some strains can produce lactic, succinic and formic acids. *Gardnerella vaginalis* does not form catalase, but significantly produces the formation of peroxidases [3].

Among the individual criteria used for the diagnosis of bacterial vaginosis, increased pH is recognized as the most sensitive, but the least specific criterion [4]. Some studies have found that the pH of vaginal fluid is significantly associated with bacterial vaginosis. The majority of patients (46,6 %) with bacterial vaginosis had a pH between 5,0-5,5, 26,2 % and 21,4 % of patients had a pH between 4,5 and 5,5-6, respectively. Previously, scientists have also recorded pH values of more than 4,5 in 81 % of cases of bacterial vaginosis.

Gardnerella vaginalis adherence to vagina's cells increased with increasing acidity of the test medium, being greatest at pH 5 to 6. It is known that bacteria carry net negative charges that create an electrostatic repulsive force. This is reduced at a lower pH, with the result that binding is increased. Adherence in the vaginal microenvironment doubtless also is influenced by pH. [5]. Errors in pH measurement can be made by sampling cervical mucus rather than vaginal secretions that have a higher pH or due to the presence of a cervical infection that increases pH by increasing the flow of cervical secretions into the vaginal canal.

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