New Methods to the Correction of Vaginal Microbiocenosis During Pregnancy

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ABSTRACT

Violation of the vaginal microbiota – bacterial vaginosis has clinical significance due to a variety of adverse factors, the main of which are reproductive outcomes and an increased risk of acquiring sexually transmitted infections.

Treatment of bacterial vaginosis causes significant difficulties, especially during pregnancy, since the use of antibacterial therapy negatively affects lactobacilli, forming the risk of recurrent recurrence of the disease. The use of differentiated correction of vaginal microbiocenosis significantly improves treatment outcomes and reduces the number of recurrences of bacterial vaginosis in women during pregnancy.

Keywords: Bacterial vaginosis; pregnancy; correction of vaginal microbiocenosis; probiotics; acid-containing drugs.

Introduction

The urgency of the problem of bacterial vaginosis (BV) during pregnancy is determined primarily by its high frequency [1, 2, 3]. Many authors confirm the causal relationship between the violation of the vaginal microbiota and pregnancy complications such as miscarriage, placental insufficiency, fetal infections [4, 5, 6].

Despite modern methods of treating BV, a high frequency of its relapses remains during pregnancy, ranging from 3.6 to 30% [7, 8]. Along with the difficulties of treating BV in women in the first trimester of pregnancy, associated with the restriction of the use of antibacterial drugs, one of the causes of relapses of the infectious process of the lower reproductive tract of a pregnant woman women can be considered the absence or inadequate correction of vaginal microbiocenosis after the stage of antimicrobial therapy.

The restoration of the vaginal biotope after antibacterial therapy in the treatment of BV in the first trimester is important for maintaining the anti-infective protection of the lower part of the reproductive tract of a woman throughout pregnancy [9, 10].

In clinical practice, two groups of drugs are mainly used to correct vaginal microbiocenosis: probiotics and drugs that acidify the vaginal environment [11, 12, 13]. Probiotic preparations contain strains of lactobacilli that adhere to epithelial cells, blocking epithelial receptors for pathogenic microbes, and also, by producing lactic acid, reduce the acidity of the vaginal contents, suppressing the growth of opportunistic microflora [12]. When using acid-containing preparations (lactic, ascorbic acid), the induced acidic environment in the vagina suppresses the growth of anaerobic bacteria and allows colonization by its own species of lactobacilli to be restored [13, 14].

However, currently, when treating BV in pregnant women, there are no clear criteria for choosing a drug to restore vaginal microbiocenosis. The identification of such

criteria can become the basis for effective restoration of the vaginal biotope and will contribute to the prevention of recurrence of BV during pregnancy.

The purpose of the study

To evaluate a differentiated approach to choosing a method for correcting vaginal microbiocenosis in women with BV in the first trimester of pregnancy.

Material and methods of research

A comprehensive examination of 42 pregnant women at the gestation period of 8-12 weeks was carried out. Bacterial vaginosis was diagnosed based on the presence of at least three of the four Amsel criteria: whitish-gray, thick homogeneous vaginal discharge, pH >4.5, a positive amine test and the presence of "key" cells during microscopy. Evaluation of the vaginal microflora was carried out by microscopic and molecular genetic methods of examination of the vaginal discharge.

All pregnant women with BV included in the study were divided into 2 groups. The main group (n=16) included pregnant women who were prescribed drugs to restore vaginal microbiocenosis differentially, taking into account the microscopic characteristics of the state of gram-positive rod vaginal microflora after the use of antiseptic. The comparison group consisted of pregnant women (n=14) who underwent restoration of vaginal microbiocenosis without a differentiated approach. 12 pregnant women with vaginal normocenosis made up the control group.

Results and their discussion

All the women surveyed were between the ages of 18 and 31. The average age was 25.4±0.8 years in group 1, 26.1±0.5 years in group 2 and 25.6±0.6 years in the control group. There were no statistically significant differences between the groups in terms of social status. Employees dominated in all groups (65.2%, 72.2%, 61.4%, respectively). The share of unemployed was 34.8% in group 1, 22.2% in group 2, and 29.5% in the control group. No statistically significant differences were found in the groups for transferred/concomitant extragenital and genital diseases.

Before treatment, the following microscopic picture of the vaginal discharge was observed in pregnant women: leukocytes were single in the preparation (3.4%), less than 10 in the field of view (50.5%) and 10-20 (20.2%), epithelial cells in moderate (11.2%) and large (48.3%) quantities. The "key" cells characteristic of bacterial vaginosis were found in 55.5% of smears. When calculating the number of microorganisms, it was found that their moderate number was observed in 3.9%, a large number in 14.0% and a massive number in 52.8% of smears. The causative agents of specific infections during bacterioscopic examination were not identified in any case.

A qualitative assessment of the microflora revealed the absence or insignificant amounts of lactobacilli, while gram-negative rods dominated the smears of 52.8% of women. As the dominant morphotype of microorganisms, representatives of the coccoid microflora were detected in the smears of 32.6% of women. Candida fungi in the form of budding forms in the intermediate phase of vegetation were found in the smears of 20.2% of women.

At the first stage, the antiseptic chlorhexidine was used (1 vaginal tablet per day for 6 days). The choice of the drug is due to the wide range of its activity against gram-positive, gram-negative microbes, fungi and protozoa, as well as permission for its use in the early stages of pregnancy according to the instructions.

In order to evaluate the effectiveness of antiseptic therapy, along with a clinical examination, a microscopic examination of the vaginal discharge (Gram staining) was performed, assessing the leukocyte reaction, the number of epithelial cells and the state of the microflora.

The criteria for the effectiveness of therapy were the absence of complaints, pathological secretions during gynecological examination, as well as the absence of a leukocyte reaction, the absence of yeast-like fungi of the genus Candida (vegetative yeast-like cells and pseudogyphs), coccal flora. The

effectiveness of BV therapy with chlorhexidine in the first trimester of pregnancy was 90%.

After therapy with the antiseptic chlorhexidine, vegetative (in 2 patients) and non-vegetative (in 1 case) yeast cells were detected in 3 patients (10% of cases) with initially negative tests for Candida fungi. The presence of vegetative forms determines the additional appointment of antimycotic drugs to patients before choosing drugs for the second stage.

After the use of antiseptic, the vaginal microflora of pregnant women was represented by various morphological forms of microorganisms: rods, cocci, yeast-like cells. Based on the bacterioscopic study of the number of gram-positive rods, we identified three variants of the state of the vaginal microflora: 1st variant (27% of women) – large gram-positive rods from 51 to 100 were visualized in the field of vision; 2nd variant (33% of women) – large and small gram-positive rods in the amount from 11 to 100 in the field vision; Option 3 (30% of cases) – small gram-positive rods were detected in the smears in an amount of 10 or less in the field of vision.

Thus, after the use of an antiseptic in the treatment of BV in most women (63% of cases), a change in the size and number of lactobacilli was detected, which dictates the need for the use of drugs aimed at restoring vaginal microbiocenosis.

With a moderate number of gram-positive sticks (from 11 to 50 in the field of view), after applying an antiseptic, we decided to use acid-containing drugs that contribute to creating favorable conditions for the growth of our own lactobacilli in the vaginal environment. With a small number of gram-positive rods (single cells in the smear or their absence during microscopy) we decided it would be advisable to use probiotics containing cultures with high adhesive ability, which will prevent the excessive growth of opportunistic microflora by attaching surface cells of the vaginal epithelium to free sites.

After the treatment in the comparison group, where treatment was carried out without a differentiated approach, the recurrence rate was 35.7% and was statistically significantly higher compared to the main group – 12.5% (p=0.039).

Conclusion

Violation of the vaginal microbiota is accompanied by an excessive growth of opportunistic microorganisms, which ultimately contributes to the occurrence of bacterial vaginosis and the addition of obstetric complications during pregnancy. Antibacterial therapy for infectious diseases of the vagina can harm the healthy microbiota of the vagina. New therapeutic strategies include the use of prebiotics and/or probiotics to prevent these complications. The second stage of treatment, aimed at restoring the microbiocenosis of the vagina, should be differentiated depending on the number of lactobacilli.

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