



## VITAMIN D DEFICIENCY IN WOMEN WITH VAGINAL DISCHARGE

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<b>Received:</b> May 6 <sup>th</sup> 2022 <b>Accepted:</b> June 6 <sup>th</sup> 2022 <b>Published:</b> July 12 <sup>th</sup> 2022	The results of the study of D-vitamin status in women with bacterial vaginosis are presented. It was revealed that the increase in vitamin D deficiency is associated with the aggravation of vaginal dysbiosis. Given these data, it can be assumed that vitamin D deficiency is an additional risk factor for the development of bacterial vaginosis.

**Keywords:** bacterial vaginosis; vitamin D; D-deficiency

Bacterial vaginosis (BV), or vaginal dysbiosis, is a multifactorial, non-inflammatory syndrome associated with a violation of vaginal microbiocenosis and characterized by the replacement of lactobacillus deficiency by conditionally pathogenic anaerobic microorganisms. Pathological white spots resulting from these changes are one of the most common reasons for women to consult an obstetrician-gynecologist [1]. It is known that the basis of reproductive failures (tubal-peritoneal factor of infertility, spontaneous miscarriages), obstetric complications of childbirth and the postpartum period, such as premature discharge of amniotic fluid, intrauterine and intranatal infection of the fetus and newborn, stillbirth, chorioamnionitis in childbirth, postpartum purulent-septic complications, also lie certain infectious diseases of the genitals organs [2, 3].

The female reproductive system is a complex, multifactorial complex of interrelations, sensitively reacting to the effects of external factors, including vitamin deficiency. Examination of the state of vaginal microbiocenosis showed that among women suffering from deficiency of Ais vitamins, dysbiotic vaginal conditions are often found.

According to Strokova O.A. et al. (2014) in women suffering from retinol acetate hypovitaminosis, lactoflora deficiency was observed in 50% of women, and bacterial vaginosis was detected in every fifth. In the group of women with ascorbic acid deficiency, lactobacilli deficiency was detected in 75% of women, of whom bacterial vaginosis was diagnosed in 20% [4].

Recently, special attention has been drawn to studies of the effects of vitamin D on the process of inflammation and anti-infectious immunity. Clinical manifestations of vitamin D deficiency include a significant increase in the frequency of bacterial vaginosis during pregnancy [5]. According to Zhemela N.I. (2015), BV in pregnant women with the threat of premature birth is detected in a third (32.8%) of

patients. With vitamin D deficiency, the frequency of BV detection in pregnant women with the threat of premature birth increases from 9.1% with vitamin D deficiency to 50.0% with severe D deficiency [6]. Given the data obtained, it can be assumed that vitamin D deficiency is an additional non-classical risk factor for the development of vaginal dysbiosis.

Active metabolites of vitamin D have a pleiotropic effect on numerous physiological processes, including the activity of protective nonspecific and adaptive mechanisms [7]. The discovery of calcitriol receptors in many cells of the immune system, as well as the ability of mononuclear phagocytes to produce calcitriol, are evidence of the participation of vitamin D in the functioning of the immune system. When calcitriol interacts with vitamin-D receptors, cytokine gene expression is stimulated. In all likelihood, the antimicrobial activity of vitamin D is mediated by its ability to induce the expression of antimicrobial peptides – HBD-2 and cathelicidin (LL-37) [7]. That is why adequate provision of vitamin D to the body plays an important role in preventing microbial invasion.

The most informative indicator for assessing the status of vitamin D in the body is the determination of the content of its active metabolite calcidiol in blood serum [8]. According to the results of a number of scientific studies, the level of calcidiol is considered sufficient vitamin DD 20-50 ng/ml, insufficient – 12-19 ng/ml, deficient – below 12 ng/ml. According to other data [5], vitamin D deficiency is a condition in which the concentration level is calcidiol in the blood serum is less than 30 ng / ml, and a pronounced deficiency is the level of vitamin D in the blood serum less than 10 ng / ml.

**THE PURPOSE OF THE STUDY:** to study the level of vitamin D in women with BV.

**MATERIAL AND METHODS OF RESEARCH.** We observed 36 women with BV aged from 18 to 37 years, who made up the main group. The main



reasons for contacting a gynecologist were the presence of pathological secretions from the genital tract, itching and burning in the vagina and perineum. The control group consisted of 30 women with normal vaginal microflora.

All women, except for general and gynecological examination, initially underwent microscopic examination of vaginal smears by Gram, evaluation of vaginal microbiocenosis using the Femoflor-16 test system. Level calcidiol in the venous blood of women was determined by immunochemical method with electrochemiluminescent detection. The data obtained by us during the study were subjected to statistical processing.

#### THE RESULTS OF THE STUDY AND THEIR DISCUSSION.

We revealed an increase in the pH of the vaginal contents and a positive amine test in all cases. Microscopy of vaginal smears of women of the main group revealed the following picture: single leukocytes (69.2%) and less than 10 in the field of view (30.8%), epithelial cells in large (84.6%) numbers, "key cells" (96.1%), microorganisms in large (102-103 in n/a) (34.6%) and massive (>103 in n/a) (65.4%) quantities. A reduced number of leukocytes and an increased content of desquamated epithelial cells in smears are signs indicating BV.

The number of lactobacilli in the smears was insignificant, while gram-negative rods dominated in 73.1%, representatives of the coccoid microflora in 19.2% of the smears. Yeast-like fungi of the genus *Candida* were found in 23.1% of smears in the form of budding forms - the intermediate phase of vegetation. PCR diagnostics of the vaginal discharge of the women of the main group allowed to isolate BV-associated microorganisms in large quantities. Dysbiotic disorders were confirmed in all women of the main group. Moderate anaerobic dysbiosis was detected in 46.2% of women in the main group. The proportion of pronounced dysbiosis was 53.8%.

Analysis of calcidiol levels in the blood serum of women of the main group showed that most of the examined (57.7%) had vitamin D deficiency ( $14.4 \pm 3.0$  ng/ml), and 23.1% of women had severe vitamin D deficiency ( $7.2 \pm 1.4$  ng/ml). Only 19.2% of the examined patients had normal vitamin D levels ( $30.8 \pm 0.41$  ng/ml).

Among women of the control group, normal D-status ( $30.5 \pm 0.22$  ng/ml) was detected in 80.0% of cases, vitamin D deficiency ( $13.7 \pm 1.06$  ng/ml) occurred in 20.0%, severe vitamin D deficiency was not detected in any case.

When distributing women by vitamin D level, taking into account the state of vaginal dysbiosis, an interesting picture was revealed. In women with moderate dysbiosis, vitamin D deficiency was detected in 50.0% of cases and severe vitamin D deficiency was detected in 8.3% of cases. Whereas the majority of women with severe dysbiosis were characterized by a deep vitamin D deficiency (vitamin D deficiency in 64.3% of cases and severe D deficiency in 35.7% of cases).

**CONCLUSION.** Thus, the presence of low vitamin D status is typical for women with vaginal dysbiosis. At the same time, a deeper deficiency of this vitamin was detected in women with severe vaginal dysbiosis. Vitamin D-focused therapy can provide new methods of primary or adjuvant treatment and prevention of viral, bacterial and fungal infections.

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