

THE USE OF NITROFURANS IN THE TREATMENT OF SEXUALLY TRANSMITTED INFECTIONS.

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<https://doi.org/10.5281/zenodo.7594304>

Abstract: Bacterial vaginosis is not only the cause of unpleasant discharge, but also a risk factor, or even a cause of severe pathology of female genital organs and complications of pregnancy and childbirth. The use of promotes significant improvement in the vaginal microbiota and positive changes in the clinic of bacterial vaginosis.

Keywords: dysbiotic processes, inflammatory diseases, bacterial vaginosis, immunological disorders, hormonal homeostasis.

ПРИМЕНЕНИЕ НИТРОФУРАНОВ В ЛЕЧЕНИИ ИНФЕКЦИЙ ПЕРЕДАЮЩИХСЯ ПОЛОВЫМ ПУТЁМ

Аннотация: Бактериальный вагиноз является не только причиной неприятных выделений, но и фактором риска, а то и причиной тяжелой патологии женских половых органов и осложнений беременности и родов. Применение способствует значительному улучшению микробиоты влагалища и положительным изменениям в клинике бактериального вагиноза.

Ключевые слова: дисбиотические процессы, воспалительные заболевания, бактериальный вагиноз, иммунологические нарушения, гормональный гомеостаз.

INTRODUCTION

Dysbiotic processes and inflammatory diseases of the lower genital tract of women are among the most common pathological conditions in gynecological practice. The presence of protective mechanisms of the vagina, preventing infection of the uterus and fallopian tubes, ensures the adequate functioning of the upper parts of the reproductive tract. Both the normal and pathological state of the vaginal biotope is due to the ability of microorganisms to develop in the vagina and compete with each other for the habitat [2]. In the clinical variant of the course of bacterial vaginosis with severe symptoms, long-term, abundant, liquid, milky or grayish-white, homogeneous discharge is noted, which often has an unpleasant fishy odor. In some cases, the smell may not be constant, but appear periodically, during menstruation or sexual contact. Many patients also note the onset of such discharge after a change in sexual partner. Often there is a combination of bacterial vaginosis with diseases of the cervix.

MATERIALS AND METHODS

Bacterial vaginosis (BV) cannot be considered a harmless pathological condition. So it is noted that cervical dysplasia, which is a precancerous disease, has a certain relationship with bacterial vaginosis. The reason is that many types of anaerobic bacteria produce an increased amount of nitrosamines, which have an oncogenic effect.

With prolonged, untreated and recurrent bacterial vaginosis, infection of the upper parts of the patient's reproductive system can occur, which leads to the development of inflammatory processes in the uterus and uterine appendages. Against this background, patients may experience uterine bleeding. Inflammation of the fallopian tubes often leads to ectopic pregnancy and tubal infertility. There are also more frequent and severe postoperative complications in gynecological

patients, and therefore it is recommended that all women who are scheduled for surgery be examined for bacterial vaginosis.

With BV, infection of the urinary system often occurs, which leads to the development of recurrent inflammatory diseases.

The growth of BV is caused by environmental and immunological disorders, changes in hormonal homeostasis, and the irrational use of various drugs, especially antibiotics [4].

If, during examination of women with vaginal discharge, sexually transmitted infections (STIs) or actively multiplying fungi of the genus *Candida*, which are opportunistic microorganisms, are found, then in such cases the doctor's tactics are quite clearly defined in the relevant recommendations.

The situation is much more complicated with patients who complained of unusual vaginal discharge, during the examination of which it was not possible to isolate the only microorganism that explains the presence of such discharge.

A classic example of such conditions and the leading cause of pathological vaginal discharge is a violation of the normal microbial composition of vaginal contents - bacterial vaginosis (BV). The leading role in the development of BV belongs to obligate anaerobic bacteria.

This condition is considered as a polymicrobial vaginal syndrome, characterized not only by vaginal discharge, but often accompanied by damage to the cervix, uterine body, its appendages, and also causing pathology of pregnancy and childbirth.

In this case, it is necessary to take into account the specifics of the contingent of patients (women of reproductive age, pregnant women, women in whom a possible pregnancy in the near future cannot be ruled out, adolescents). Because of this, the drugs used must be not only effective, but also as safe as possible

Nitrofurantoin demonstrates strong antiprotozoal and antibacterial activity and also has some fungicidal effect [1]. One of the main advantages of nitrofurantoin, proven earlier, is the absence of inhibition of the physiological flora, in particular lactobacilli [6].

In addition to antitrichomonas, antibacterial and antifungal activity, nitrofurantoin also has antichlamydial activity and activity against *Ureaplasma urealyticum*, which significantly increases the therapeutic interest in this drug. Nitrofurantoin has an inhibitory effect on anaerobic microorganisms (*Bacteroides fragilis* and *Clostridium perfringens*).

In relation to anaerobes, the antibacterial effect of nitrofurantoin is more pronounced for gram-positive bacteria. Its wide spectrum of activity, confirmed in studies in artificial and natural conditions, covers almost all microorganisms responsible for infections of the genitourinary tract.

Nitrofurantoin is rapidly absorbed. So, with a single oral dose of 200 mg, the peak serum concentration (9.48 mg / l) is reached after 2 hours and is excreted from the body just as quickly (half-life is 2 hours 45 minutes).

The drug is excreted via the kidneys (directly or as metabolites) and thus the effective therapeutic concentration of the drug in serum and urine is maintained. Nitrofurantoin has a high bioavailability (>95%) as well as an extremely safe toxicological profile. The drug demonstrates an extremely favorable risk/benefit ratio in the treatment of patients not only with BV, but also with mixed urogenital infections. Nitrofurantoin has a very safe toxicological profile and is devoid of teratogenic effects; moreover, a comparison between past and recent clinical studies confirms that no treatment resistance phenomena have been observed with nitrofurantoin [3]. Nitrofurantoin has a wide spectrum of antiprotozoal and antimicrobial activity. The drug is effective against *Trichomonas vaginalis*, *Gardnerella vaginalis*, anaerobes (*Bacteroides fragilis*, *Clostridium perfringens*),

Chlamidia tr., Mycoplasma spp., as well as gram-positive and gram-negative bacteria. Nitrofurantoin is well tolerated and safe even with systemic use, which allows it to be used in pediatric practice for the treatment of giardiasis, in pediatric gynecology. Taking into account the principles of rational pharmacotherapy, nitrofurantoin has a clear advantage over metronidazole, the first systemic trichomonocidal agent and the traditional drug of choice for the treatment of infections caused exclusively by protozoa.

Metronidazole continues to be considered the drug of choice in the treatment of both bacterial vaginosis and trichomoniasis. Although metronidazole is highly active against anaerobic bacteria, it is less active against *Gardnella vaginalis* and does not work well against *Mobiluncus* subspecies. Despite this, a repeated 7-day course of metronidazole often proves to be an effective therapy for relapse. A small number of women experience multiple relapses. Long-term oral administration of metronidazole is associated with a high likelihood of side effects localized in the gastrointestinal tract and the risk of peripheral neuropathies. Its use during pregnancy caused some concern due to theoretically expected teratogenic effects [5]. The associated bacterial flora reduces the effectiveness of metronidazole.

PURPOSE OF THE STUDY: to evaluate the effectiveness of complex treatment of bacterial vaginosis with the inclusion of nitrofurantoin preparations. Clinical observations were carried out in 54 women aged 18-45 years who were on inpatient and outpatient treatment in the maternity complex in Tashkent with bacterial vaginosis, which was established on the basis of objective examination data, clinical picture, anamnesis, results of microscopic and cultural examination of genital excretions using the criteria of Amsel (1993). Exclusion criteria: pregnancy and lactation, the presence of STIs during the study period, systemic and local antibiotic therapy within 2 weeks before the start of the study.

Microscopy of the vaginal smear before treatment, the number of leukocytes ranged from 8 to 22 per field of view, which corresponded to the second (43%) and third (57%) degree of purity of the vaginal contents. Against this background, in bacterial cultures, *Candida albicans* was detected in 37% of women, *Staphylococcus epidermidis* at a concentration of 10⁶ CFU in 19%, *Enterococcus fecalis* in 17%, and *Staphylococcus saprophyticus* (10⁴ CFU) in 23%. In 67% of observations, key cells (*Gardnerella*) were detected in large numbers, conditionally pathogenic strains of ureaplasma were determined in 11%, and mycoplasmas detected by PCR and RIF methods were detected in 6% of cases. Lactobacilli were absent in 27%, at a concentration of 10² CFU were found in 22%, 10³ CFU - in 36%, 10⁴ CFU - in 13%, and only in 2% of patients lactobacilli were detected at a concentration of 10⁵ CFU.

RESULTS AND DISCUSSION

The results of the comparative effectiveness of systemic therapy for BV with nitrofurantoin and metronidazole were evaluated in 54 patients, 31 of whom received nitrofurantoin 1 tablet (200 mg) 3 times a day after meals for 7 days (group 1), and 23 received metronidazole 500 mg orally 2 times a day for 7 days (group 2). For local therapy, both groups used standard treatment with suppositories containing 500 mg of metronidazole, 1 suppository 1 time per day for 10 days.

The nature of clinical manifestations was comparable in both groups, as well as the duration of treatment. Clinical efficacy was assessed on the basis of the dynamics of the clinical manifestations of the disease, improvement in the general condition of patients, subjective sensations, tolerability of treatment, as well as microscopy data.

The dynamics was taken into account on the 3rd, 7th day of treatment and on the 10th day after treatment. In the first group of patients, already on the 3rd day there was a more successful

dynamics of clinical manifestations than in the 2nd group. There was a decrease in the intensity of subjective sensations (itching, burning, discomfort in the genital area) in 21 (67.7%) women, which was reflected in the general well-being of patients. On the 7th day, a decrease in the intensity of subjective sensations was observed in 27 (87%) patients.

At the same time, the amount of secretions decreased, their character and consistency changed. On the 3rd day from the start of treatment, 24 (77.4%) patients noted a change in the nature of the discharge from abundant foamy to scanty mucous membranes. On the 7th day, mucous discharge was noted in 29 (93.5%) women, while the remaining 2 remained curdled discharge. On the 10th day after treatment, all 31 patients had mucous discharge. During vaginal examination, there was a decrease in the intensity of hyperemia, swelling of the mucous membrane on the 3rd day in 12 (38%) patients, on the 7th day in 23 (75%) patients. Clinical and bacteriological cure was observed on the 10th day after the end of treatment in 100% of patients of the 1st group. Microscopy of the vaginal smear testified to the absence of both inflammation and signs of BV. All women had no opportunistic flora and had a negative Amsel test. As a result of the use of the drug Nitrofurantoin, by the end of the course of treatment, not only complete sanitation of the vagina from a mixed pathogenic infection was achieved, but conditions were also created for restoring the normocenosis of the vaginal environment in 29 (93.5%) women, as evidenced by the restoration of the normal concentration of lactobacilli and the pH of the vaginal contents.

In the 2nd group of patients, relief of symptoms of itching and burning in the vaginal area on the 3rd day from the start of treatment was noted by 11 (47.8%) women, on the 7th day - 18 (78.2%) women.

A decrease in the number and change in the nature of secretions from the genital tract from abundant to scanty mucous membranes on the 3rd day was noted by 14 (60.8%) women, on the 7th day, mucous discharges were noted in 18 (73.9%) women. 10 days after treatment, cheesy discharge resumed in 2 patients.

CONCLUSIONS

Clinically, a decrease in the intensity of hyperemia of the mucous membranes of the cervical canal and urethra was observed on the 3rd day in 7 (30%) women, in 16 (69.5%) - on the 7th day. On the 10th day after treatment, hyperemia of the vaginal and urethral mucosa persisted in 2 women. When comparing the results of therapy in both groups, significant differences in the effectiveness of treatment in favor of the group of patients treated with nitrofurantoin (Nitrofurantoin). Side effects, hypersensitivity reactions were not noted in any of the patients who completed the full course of Nitrofurantoin therapy and came for follow-up examinations. In the group of patients receiving tab. Metronidazole, in 2 cases clinical signs of vaginal candidiasis were observed, in 4 patients such side effects as a metallic taste in the mouth, dyspeptic disorders were observed. BV recurrence in group 1 was observed 3 times less frequently than in the group of women who received standard treatment. Thus, bacterial vaginosis is a fairly common disease of the vaginal ecosystem, requiring timely diagnosis, comprehensive and adequate therapy. In the treatment of bacterial vaginosis with Nitrofurantoin, a clinical and etiological cure occurred in almost all patients, which suggests that the drug is a highly effective treatment that quickly relieves symptoms, is easy to use, does not have a negative effect and does not cause adverse reactions.

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