The New Method of Treatment of Inflammatory Diseases of Lower Female Genital Organs

Guennadi O. Gretchkanev[1], Tatyana S. Katchalina[2], Olga V. Katchalina[3], El-Hassoun Husein[4]

[1,2,3] Department of Obstetrics and Gynecology, Medical Academy of Nizhny Novgorod, Pl. Minina 10/1, 603005 Nizhny Novgorod, Russia
[4] Russian Association of Ozonetherapy, Jordan

Abstract

For treatment of 40 patients with non-specific colpitis we used a method of streaming ozonetherapy with assistance of the ozone generator MEDOZONS-BM and special attachment on the basis of vaginal speculum. The irrigation with an ozone-oxygen mixture with ozone concentration of 2000 mcg/L was carried out within 5 minutes after preliminary moistening of mucosa with sterile distilled water.

In the course of investigations it was established that along with a positive clinical effect ozonetherapy caused an improvement in vaginal local immunity indices – a credible increase in lysozyme in 70% of patients, a decrease in IgG level in 60% of patients, stabilization of cervical mucus myeloperoxidase in 80% of patients.

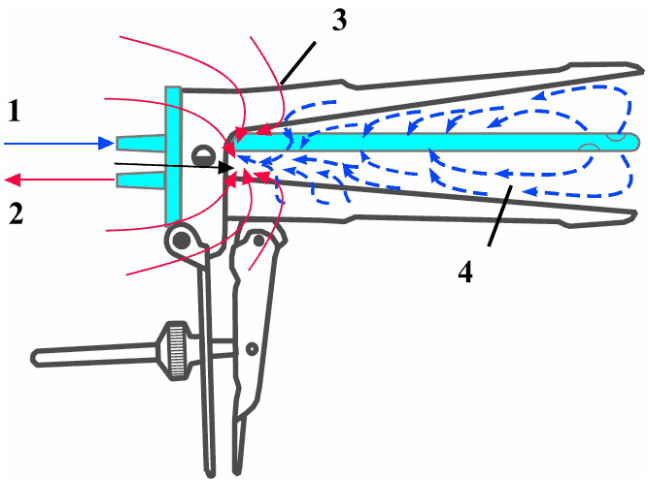
Introduction

The problem of infectious diseases and dysbiosis nowadays acquires particularly great importance that is connected with growing ecological problems of urbanized society, exposure to various adverse factors having influence on the immunity status in general as well as microbiocenosis of human body. It is established that the pathological processes of vaginal microbiocenosis are caused by such stress factors as treatment with antibiotics (at local and systemic level), hormones, cytostatic preparations, X-ray therapy, particularly on the background of endocrinopathies (most of all, diabetes), anemia, in case of birth defects of genital organs, the use of contraceptives and so on (1). It is convincingly demonstrated that the disturbances of a quantative correlation between the associants of vaginal microbiocenosis on the background of local immunity changes lead to clinical appearances of vaginal infection process, the most frequent of them are non-specific vaginitis and bacterial vaginosis (1,3). Bacterial vaginosis is detected in 24% of practically healthy women and in 61% of patients with recidivating colpitis of non-specific etiology (2), frequency of non-specific vaginitis, in reference to different authors, reachs 40 to 50%. The extensive use of new antibiotics does not solve the problem, but in some cases aggravates it by inducing the disturbances of the local and general immunity, by suppressing saprophytic flora, by causing the formation of antibiotic-resistant forms of microorganisms, by creating favourable conditions for infection that increases frequency of recidivating colpitis. In this connection, our attention is drawn to the methods of treatment which can be characterized as highly effective against the most frequent causative agents of infection, able to reduce antibiotic and any other drug therapies and able to restore the normal vaginal biocenosis.

The aim of the present investigation was to study the efficiency of ozonetherapy methods in the treatment of non-specific colpitis and bacterial vaginosis.

Materials and Methods

60 patients with non-specific bacterial colpitis and bacterial vaginosis were included into our investigation. Due to mixed infection in an absolute majority of patients, it was impossible to divide the patients into the groups according to the causative agent, that was why the patients were grouped in accordance with the used method of treatment. The test group (40 women) included the patients which received ozonetherapy in the form of vaginal circulatory insufflations of an ozone-oxygen mixture. As ozone generator we used the medical ozone device of Medozons series (Nizhny Novgorod/Russia) equipped with a special gynecological accessory set including intravaginal tip and vaginal catheter fastened onto vaginal speculum (Fig. 1). The control group (20 women) included the patients treated with antiseptic solutions. The treatment was applied as follows: "the vagina is treated with 4% chlorhexidine solution with a single exposure for 5 minutes, during this time up to 99% of vaginal flora are being destroyed. Immediately after this, the tampon enriched with lactobacillus suspension is inserted into the vagina for 8-10 hours. This treatment of vagina is repeated daily within 7-10 days" (4).



1. Delivery of ozone-oxygen mixture
2. Removal of ozone-oxygen mixture
3. Vaginal Kusko speculum
4. Ozone-oxygen mixture

Fig. 1 : Attachment for vaginal ozonetherapy

All patients underwent a bacterioscopic and bacteriological investigation before and after treatment. The aim of the investigation was to evaluate the dynamics of vaginal local immunity factors – IgA, IgM, IgG levels, vaginal secretion lysozyme and cervical mucus myeloperoxidase, balance coefficient of local immunity factors (integrative index allowing to evaluate objectively the homeostatic balance).

Results and Measurements

The analysis of patients' anamnestic data indicated that their average age was 22,5 years inside the test group and 23,1 years inside the control. The acute form of bacterial colpitis was

observed in 12,2% of women of the test group and in 11% inside the control, the recidivation was registered in 67,8% and 64%, respectively. 27% of patients of the test group and 25% inside the control were diagnosed for bacterial vaginosis on the basis of moderate liquid secretions with specific odour, positive amine test, vaginal secretion pH > 4,5 and "key" cells detected in vaginal smear. Clinical picture of colpitis varied from clear (complains about pain, itch, burning sensation, dyspareunia; after examination - hyperemia, swelling and vaginal mucosa infiltration, puruloid or curd-cheese secretions) to vague, mostly among the patients with recidivating colpitis forms. The bacterioscopic and bacteriological investigations showed that most of the patients with colpitis had mixed opportunistic-pathogenic flora (the patients with verified chlamydia, gonococcal, trichomonad, herpetic, cytomegalovirus infections were excluded from the investigation during selection). 30% of patients of the test group and 38% inside the control were diagnosed for vaginal candidiasis (as diagnostic criteria there were curd-cheese secretions, negative amine test, yeast cells detected in vaginal smear, no "key" cells).

The ozone treatment inside the test group was carried out as follows: "ozone-oxygen mixture with ozone concentration 1500 to 2500 mcg/L is being administered into the vagina via the special attachment (Fig. 1) at flow rate 0,5 – 1 L/min for 5 – 10 minutes provided that the vagina has been beforehand treated with ozonized distilled water daily within 5 – 8 days. The ozonization of water should be performed immediately before treatment with saturation concentration 5000 mcg/L of an ozone-oxygen mixture, the ozonization of 400 ml lasts 15 minutes".

The direct way of introducing gaseous ozone into the vagina ensures the most complete contact of the active agent with the vaginal epithelium of wrinkled structure. The flow rate 0,5 – 1 L/min and treatment duration 5 - 10 minutes are established as the optimal ones because treatment prolongation leads to drying of vagina walls, and its reduction – to a decrease in the efficiency of treatment. The preliminary moistening of the vagina with ozonized distilled water also increases the efficiency of treatment and protects vaginal mucosa from drying. The duration of one treatment session (5 – 8 days) was determined experimentally – by this time the clinical-laboratory effects achieve the maximum and do not improve any more in case of treatment prolongation, the daily (without intervals) performance of procedures reduces the treatment time.

Discussion

After treatment, the bacterioscopic investigation indicated that in 76% of patients treated with ozonetherapy vaginal smears did not show any opportunistic pathogens, yeast fungi. The bacteriological investigation detected a credible decrease in opportunistic pathogen colonization in 74% of patients. The special attention was drawn to the fact that the investigation of antibiotic resistance showed an increase in sensitivity of the microbial agents to antibiotics.

The investigation of vaginal local immunity factors among the patients treated with ozone demonstrated an increase in lysocyme activity indices by 25% ($p<0,05$), an increase in IgA level by 37% ($p<0,05$), a credible increase in cervical mucus myeloperoxidase along with a simultaneous decrease in IgM by 40% and in IgG by 45% ($p<0,05$) that led to stabilization of the balance coefficient of local immunity factors. The analysis of treatment results inside the control group indicated that bacterioscopic picture returned to normal only in 50% of patients,

in 25% it did not change, in 25% it got even worse – practically at the same quantity of leukocytes and epithelium cells the content of lactobacteria ($p<0,05$) decreased or completely disappeared. The sensitivity of the causative agents to antibiotics remained the same, in accordance with the results of an immunological investigation the indices of IgA, IgM and IgG did not change credibly, the levels of cervical mucus myeloperoxidase and vaginal secretion lysocyme had a tendency to decrease, the balance coefficient of local immunity factors got worse in 25% of cases, and only in 10% it showed an improvement.

Thus, we established that the above described method of treatment with a certain grade of efficiency was linked to a risk of further vaginal dysbiosis for in spite of the use of lactobacillus preparation there was no evidence of any improvement in the local immunity. Moreover, in some cases of advanced bacterial colpitis owing to the insufficient anti-inflammatory effect it was necessary to use peroral antibiotic preparations that did not stimulate the immunity. Among the patients with deep disturbances of microbiocenosis the antibiotics intensified vaginal mucus colonizations with opportunistic pathogens.

Conclusion

The results of the conducted investigations allow us to draw a conclusion that ozonetherapy is not only a reliable method of sanation of lower female genital organs among the patients with non-specific colpitis and bacterial vaginosis, but also serves to restore the body's own defense abilities by stimulating the normalization of vaginal mucosa local immunity. Without producing a disturbing effect on the saprophytes ozonetherapy is preferable to conventional treatment in the form of antiseptic solutions.

References

1. Анкирская, А.С. «Микроэкология влагалища и профилактика акушерской патологии», *Инфекции и антимикробная терапия*, 3:89-91 (1999).
2. Картвелишвили, К.З. Эффективность применения сорбции в комплексном лечении рецидивирующих форм бактериального вагиноза, вагинального кандидоза и неспецифического кольпита», *Вестн. Росс. ассоц. акуш.-гин.*, 1: 100-103 (2000).
3. Муравьева, В.В. Микробиологическая диагностика бактериального вагиноза у женщин репродуктивного возраста (Автореф. дис. … канд. биол. наук, М., 1997).
4. Краснопольский, В.И. *Патология влагалища и шейки матки* (М.:Медицина, 1997), с.272.