

# **The Treatment of Endometritis in Combination with Ozonotherapy**

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## **Abstract**

The inflammatory diseases of female genital organs are numbered among the most frequent pathologies of fertile women. In order to increase the efficiency of treatment and to avoid possible side effects we have used intrauterine irrigations with ozonized distilled water in case of acute endometritis. This method of treatment has been provided to 15 patients with postnatal and postabortive endometritis. Based on the received results, we have drawn a conclusion that in the course of treatment all patients showed an improvement in general state, body temperature returned to normal, symptoms of intoxication decreased, sleep and appetite got better, pain syndrom disappeared faster, pathological discharges were eliminated. The results of laboratory investigations have demonstrated a credible decrease in ESR, normalization of leukocyte number, a decrease in circulating immune complexes.

Thus, for treatment of endometritis we may recommend the given method of ozonotherapy to be used in combination with a basic anti-inflammatory therapy.

## **Introduction**

Endometritis is being still numbered among the most frequent pathologies of fertile women. But in spite of considerable success achieved in the treatment of inflammatory, incl. gynecological diseases, the problem of efficient treatment of endometritis is not solved yet.

It can be explained as follows:

1. high frequency of complications due to endometrial manipulations (therapeutic abortion, diagnostic endometrectomy and so on) that mostly appear then in the form of acute endometritis;
2. considerable risk that the infectious-inflammatory process localized in uterus will generalize;
3. numerous side effects of medicines to be used within the traditional treatment of endometritis.

In practical gynecology along with a basic therapy (antibacterial, desensitization, vitamins, sedative remedies) antiseptic preparations have been widely used in the form of intrauterine applications. The aim of this manipulation is to improve the removal of pyo-necrotic masses

as well as to produce a medicinal effect directly in the focus of inflammation that however can cause a number of side effects. In the above we have described the method of treatment for endometritis on the basis of aspiration/irrigation endometrial drainage with dialyzing solution containing dimexide, lidase, calendula tincture, novocaine solution, dimedrol (1). We feel important to say that the main component producing a sanation effect on uterus mucosa is dimexide which can be substituted for dioxidine. However, the use of these medicines is limited due to some side effects. So, dimexide can cause nausea, vomiting, bronchial spasm, it should be not used in case of antitoxical liver dysfunction, excretory kidney dysfunction, stenocardia, it can also intensify the toxicity of some medicines. Intrauterine application of dioxidine can cause headache, shivering, an increase in temperature, dyspepsia, twitch (2).

Based on the above mentioned we think that it is necessary to increase the efficiency of treatment for endometritis as well as to prevent possible side effects due to this treatment. Medical ozone, which disinfectant properties are well-known (3,4,5,6), to be applied in the complex treatment can be useful for endometrial sanation that allows to refuse the medicines which after resorption can cause adverse reactions.

## **Materials and Methods**

15 patients with acute forms of postabortive and postnatal endometritis received ozonotherapy in the form of intrauterine irrigations with ozonized distilled water. Their age ranged from 18 to 32 years. Clinical picture was characterized by pain syndrom, puruloid uterine secretions, uterus subinvolution. In the course of laboratory investigations it was detected leukocytosis, acceleration of ESR, an increase in circulating immune complexes (CIC).

We investigated:

- the indices of red and white blood cells;
- the level of toxinemia according to the levels of C-reactive protein and medium molecules;
- the state of cell-bound and humoral immunity (the levels of Ig A, M, G, circulating immune complexes);
- the lipid peroxidation process and antioxidative defense system according to the biochemiluminometry results.

Ozonized distilled water was produced by conveying an ozone-oxygen mixture with ozone concentration 4000 to 5000 mcg/L through a container with 400 ml of sterile distilled water. The ozonization of the above volume lasts 20 minutes at ozone-oxygen flow rate 1 L/min. After that, the ozonized distilled water was administered into the uterus drop-by-drop through a 2-way PVC catheter which at the same time allowed to remove washing-up liquids. The total volume of ozonized water to be administered into the uterum within one procedure ranged 400 to 1200 ml. The treatment was carried out once a day within 1-3 days without intervals.

## **Results and Measurements**

Based on the received results, we may draw the following conclusions: in the course of treatment all patients showed an improvement in general state, body temperature returned to normal, symptoms of intoxication decreased, sleep and appetite got better, pain syndrom

disappeared faster, pathological discharges were eliminated. No complications or side effects were observed.

The results of laboratory investigations showed a credible decrease in ESR on average by 50% ( $p < 0,05$ ), normalization of leukocyte number in 90% of patients, a decrease in circulating immune complexes on average by 47%, in Ig M – by 30% ( $p < 0,01$ ). The toxic appearances in plasma decreased particularly evidently – at the end of treatment the level of medium molecules returned to normal in 100% of patients, C-reactive protein was not detected in 90% of patients. The influence of ozonotherapy on lipid peroxidation was not less, so, the level of molecular products decreased by 25-40%, the antioxidative activity of plasma increased by 39% ( $p < 0,05$ ).

Case: Patient L., 21 years, received ozonotherapy according to the above method for acute postabortive endometritis. Before treatment she complained of pains at the bottom of abdomen, puruloid secretions, high body temperature, blood examination showed: leukocytes –  $14,2 \times 10^9 /L$ , ESR – 55 mm/hour, CIC – 180 units/ml, C-reactive protein <sup>++++</sup>.

After ozone treatment in combination with a short course of gentamicine i.m. her state considerably improved, sleep, appetite, body temperature returned to normal, pains at the bottom of abdomen as well as puruloid secretions disappeared, blood examination showed: leukocytes –  $8,5 \times 10^9 /L$ , ESR – 20 mm/hour, CIC – 98 units/ml, C-reactive protein – negative.

## Discussion

The intracavitary way of introducing ozonized distilled water is selected to ensure the most complete contact with the focus of inflammation. The ozone concentration 4000 to 5000 mcg/L is considered the optimal one for saturation of distilled water with the aim of sanitation for this one produces a bactericidal effect, but does not damage mucosa. Distilled water is used as a carrier of solute ozone because water is not subjected to chemical changes. The administered volume of distilled water 400 to 1200 ml is traditionally used for intrauterine irrigation, containers with capacity 400 ml are usually used in the praxis. The ozonization of the above volume lasts 20 minutes at ozone-oxygen flow rate 1 L/min.

The received clinical and laboratory results allow us to speak about high efficiency of ozonotherapy in regard to the most important symptoms of disease, and there is evidence of not only sanitation action of ozonized water, but also systemic action of ozone, realized through ozone resorption in endometry.

## Conclusion

Medical ozone producing a bactericidal effect at local level facilitates to uterus sanitation, prevents the generalization of inflammatory process, reduces the treatment time, allows to refuse the use of preparations for dialysis and is well tolerated by patients that makes its application in the treatment of endometritis extremely promising. However, the successful use of ozonized distilled water for intrauterine dialysis does not exclude the treatment with antibacterial, desensitizing, sedative and other medicines of the basic anti-inflammatory therapy.

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