Application of medical ozone in purulent surgery

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The treatment of purulent wounds is one of the most difficult and urgent problems of modern surgery. The high rate of infectious complications in patients is probably due to the resistance of microorganisms to the used drugs, decrease of general and local immune reactivity of the organism that requires further study and improvement of treatment methods.

Aim of the research: to improve and improve methods of the complex treatment of acute purulent surgical infection.

Material and methods of investigation. A study of 46 patients with acute purulent surgical infection without concomitant pathology influencing the course of the wound process (diabetes mellitus, systemic collagenosis etc.) divided into 2 groups was carried out.

Group I consisted of 25 patients treated with general and local ozone therapy.

Group II consisted of 21 patients comparable in gender, age, nature of the underlying disease, type and extent of surgical intervention with the previous two groups, who underwent traditional complex therapy: antibacterial, detoxification, antioxidant therapy, immunostimulation.

General clinical manifestations of the disease in the patients were studied (complaints, history, physical examination, etc.), as well as clinical-laboratory and biochemical studies (general blood and urine analysis, blood sugar level, total protein and protein fractions), ECG, chest fluorography, etc. Cytological and microbiological samples from the wound edges were taken on the 1st, 3rd, 7th and 10th days. The level of middle molecular weight (MMW), activity of acid phosphatase (AP) and leukocyte intoxication index (LII) by J.J. Calf-Calif were studied. Microbiological investigations were carried out according to standard schemes, cytological - by the method of smear-prints.

Ozonation was done with the help of "Kvazar" device, creating ozone-oxygen gas mixture with ozone concentration from 0.5 to 50 mg/l.

The following ozone therapy methods were used: intravenous infusion of ozonated 0.9% sodium chloride solution. Infusion of 400 ml of ozone-containing 0.9% sodium chloride solution with ozone concentration of 400-600 μg/l by intravenous drip. Course duration was on the average 5-7 days and depended on the disease severity, general condition of the patients, the course of the wound process, dynamics of biochemical, clinical and immunological parameters of the patient's body; intraoperative sanation of purulent

wounds with ozonated physiological solution; aeration of open purulent wounds with ozone-oxygen mixture using "boot", "pants", "sleeve".

Research results. Complementation of the complex treatment by the methods of ozone therapy of purulent wounds of soft tissues had a beneficial therapeutic effect. This is evidenced by the earlier improvement of the patients' general state, well-being, and decrease of the intoxication syndrome parameters (CMV, LII, acid phosphatase), which were 4-5 days earlier in Group 1 than in the control group (Tables 3 and 4). The therapeutic effect of ozone therapy at purulent soft tissue wounds was probably caused not only by the elimination of hypoxia in the body, but also by the normalization of the oxidative and antioxidant systems, contributing to further activation of the nonspecific protection system and activation of cellular and humoral immunity; the blood rheological properties were improved.

Conclusions. Inclusion of ozone therapy sessions in the complex treatment of purulent wounds of soft tissues facilitates the general state of the patients, promotes early normalization of intoxication parameters, reduces the number of days of hospitalization, i.e. it improves significantly the treatment results**.**