THE

OZONE THERAPY

IN BIOLOGY

AND MEDICINE

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ABSTRACTS

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Theoretical and Fundamental Investigations of Mechanisms of Ozone Use in Medicine

Part II:

Clinical Aspects of Ozonetherapy

Part III:

Sanitary and Hygiene Aspects of Ozone Use

Part IV:

Ozone Devices and Equipment

Part 1:

Theoretical and Fundamental Investigations of Mechanisms of Ozone Use in Medicine

PHYSICO -CHEMICAL PROPERTIES OF OZONE AND ITS BIOCHEMICAL AND MEDICAL APPLICATION

S.D.Razumovskii

Moscow

Fast development of ozone treatment in medical practice force specialists to more carefully analyse the available data on ozone physico-chemical properties and work hard to get new ones, much wider and deeper.

Often application of ozone water solution gives us some reason of better knowledge of intermediates, which are formed during ozone decomposition in water and it reactions with treated tissues.

Reactions occured in processes of gaseous ozone action on a skin and other living surfaces are possible to be effectively described using analogy with well-known processes of polymer materials modification.

The complicacy of living objects is not obstacle for preparation of mathematical models which are very useful for prognosis of the results, evaluation ozone dozes, optimization of treatment processes.

The study of ozone consumption dynamics in medical practice can be useful for understanding the mechanisms of observed processes, for early detection of biochemic pathology.

In the communication an accent will be made on the benefits of active using of ozone physico-chemical data to dissolvation of medical, biochemical and hygienic problemes.

NON -SPECIFIC MECHANISMS OF SANOGENIC EFFECT OF OZONE

G.V.Leontyeva, O.E.Kolesova

Moscow

Experimental and clinical studies have demonstrated adaptogenic effect of ozone.

Ozone reduces redox potential of organism and thus, determines the direction of metabolic processes, hormon-vegetative and immune status of organism.

The totality of these changes is the metabolic adaptation, which promotes integration of homeostatic reactions of different levels and reduction of disorders of selfregulation of organism.

APPLICATION OF OZONETHERAPY IN POLYORGANIC INSUFFICIENCY FOR ENERGY METABOLISM

O.E.Kolesova, G.V.Leontyeva

Moscow

The polyorganic insufficiency, complicating the current of peritonitis and destructive pancreatitis, urgently requires the development of pathogenetically justified therapy of given pathology with the account of microcirculatory and metabolic disturbances lying in its basis.

On experimental models of peritonitis and destructive pancreatitis the complex study of micro-circulation, energy exchange, POL processes, hormonal status of the organism was conducted.

It was established, that in the basis of metabolic and microcirculatory disturbances there was the energy deficiency, causing the failure of balance in POLAOS system and the generation of free-radical processes in bodies, resulting in the development of their functional insuffi-ciency.

The choice of ozone for elimination of specified frustration was stipulated by its ability to restore infringed redox balance at the expense of the stimulation of enzymatic AOS link.

So it leads to frustration of selfregulated system such as lipid peroxidation (LP) - antioxidant defence (AOD) and amplification of LP. Ozonetherapy restores redox balance by use of activation of enzymes of AOD, utilization of glucose, reduction of LP intensity.

Thus ozone is the adaptogenic factor, which by increase of energy efficiency of oxidizing process and utilization of energy substrata and oxygen, improves metabolism and tissue microcirculation.

OZONE AN INSTRUMENT OF INCREASING IN PHARMACOLOGICAL POTENTIAL OF CELLS

V.K.Matus, M.A.Martynova, A.M.Melnikova, N.L.Baranec, N.V.Marunchak, A.I.Victorov, S.V.Konev

Minsk, Moscow

It is shown that at certain regimes of ozonation it is feasible to provide a drastic increase in accumulation of several biologically active substances (phosphorylated nucleotides, regulatory peptides, vitamins and amino acids) by microbic cells.

New possibilities on elevation of pharmacological potential of cells as well as strategy and tactics in the development of efficient technologies for therapeutical and preventive drugs are discussed.

KINETICS OF MICROORGANISM INACTIVATION UNDER LIMITED AND EXCESS SUPPLY OF OZONE

V.B.Gavrilov, T.V.Trukhacheva

Minsk

During the last years ozone is widely used in medicine and biotechnology for sterilization of water and water environments.

Therefore the problem of the quantitative description of kinetics of inactivation of microorganisms during their processing by ozone. The biphasic character of ozone induced microorganism inactivation was established, reflecting time changes in the ozone inactivation with cells.

Depending on size of a specific flow of ozone two various modes of the inactivation of cells are allocated:

1. The mode of inactivation at limited supply of ozone, is practically characterized by the complete absorption of ozone. The rate of inactivation decreased on increasing initial cell concentration and the biphasic kinetics was observed with the first period of slow death and the second period of fast death.

2. The mode of inactivation under excess supply of ozone, when the cells have time to absorb only a part of ozone arriving in environment. A doze of oxidizer, absorbed by one cell and the kinetics of change of relative concentration of viable cells N / N 0 do not depend on their initial concentration.

Another character of inactivation curve was obtained - after the first period of fast death the rate of inactivation decreased 3-5 fold. The kinetic model describing biphasic death of cells under ozone treatment was proposed.

STIMULANT EFFECT OF OZONE ON INSULIN SECRETION

O.E.Kolesova, T.M.Frolova, T.J.Uchanova

Moscow

Experimental studies have shown the increase of concentrations of immunoreactive insulin and C-peptide during ozone infusion. The adrenaline test allowed to indicate the decrease by ozone inhibitory effect of cotacholamines on B-cells. Administration of ozone caused the change of redox potential that also controls secretory activity of B-cells.

CELL TARGETS AND THE MECHANISMS OF THE STIMULATION OF PHYSIOLOGICAL ACTIVITY IN YEAST CELLS UNDER OZONE TREATMENT

A.M.Melnicova, V.K.Matus, N.L.Baranec, S.V.Konev

Minsk

At low doses - 1-5 x 10 8 molecules O 3 /cell - a stimulation of reproductive activity, respiration and energy - dependent translocation of protons was observed. It was shown that the main target for stimulating action of ozone were biological membranes.

Stimulation of protone H + -ATPHase in the range of doses corresponded to a phase of reduction in microviscosity of bilayer and annular lipids. Inhibition effects corresponded to inversion of microviscosity change (increase in microviscosity) and developed at higher ozone doses.

Cell targets and the mechanisms of the ozone stimulating action are discussed.

BIOCHEMICAL PRINCIPLES OF OZONETHERAPY EFFICIENCY

C.Kontorshchikova

N. Novgorod

The evaluation of biochemical data, received in experiments on animals and in clinical conditions, has allowed to allocate the following effects of ozonetherapy.

As a result of free oxygen radical decomposition ozone obtains fag properties and detoxicant activity similar to that of microsomal. SOD and catalase are increased.

The activation of oxygen dependent on erythrocyte reactions promotes restoration of enzyme and nonenzyme antioxidant systems, lipid peroxidation normalization, increase of erythrocyte deformability and better oxygen supply of tissues.

The similar processes in immune cells and in the platelets are observed in immunomodulation, lipid and protein metabolism, activation of Crebs's cycle and oxydated processes in mitochondrias are observed in the cells of different organs.

The obtained NADN 2 formula is used as protone donor for restoration of nonenzyme antioxidant systems.

DRASTIC DECREASE IN THE RESISTANCE OF CELL LIPIDS TO OZONE UPON THE ISOLATION OF MEMBRANE PREPARATIONS

M.A.Martynova, V.K.Matus, S.V.Konev

Minsk

The significant differences between development of ozonolysis of lipids in membrane preparations and in intact cells of the yeast were revealed.

Firstly, unlike isolated membranes in which lipid oxidation could be initiated by low ozone doses (less than 0,2 mkmole O 3 /mg protein) and developed proportionally the treatment dose, in the intact yeast cells even the most ozonesensitive sterols and nitrogen-containing phospholipids (phosphatidylcholine and phosphatidylethanolamine) did not undergo oxidative distruction at up to 6,0 mkmole O 3 /mg protein.

The second peculiarity of ozone-initiated modification of lipids as a component of the intact cell was that various classes of lipids possessed different sensitivity to ozone.

With an increase of ozone dose the neutral lipids (sterols and triglycerides) and nitrogen-containing phospholipids (phosphatidylcholine, phosphatidylethanolamine, sphingomyelin) were oxydated in a greater extent.

It is suggested that these differences are related both to function of antioxidative enzymes (catalase, superoxyddismutase, peroxydase etc.) and to nonidentify of structural states in isolated membranes and in those of the intact cells.

THE EFFECT OF OZONE ON ENERGY RESERVES LEU

N.P.Lebkova, O.A.Tugushi, I.T.Vasiljev

Moscow

By means of cytachemical methods the effect of paranteral introduced ozone isotonic solution on fatty and glicogen inclusions in the peritonitis was studied. The amount of glycogen inclusions in leukocytes for the effect of ozone was below by comparion without therapy, that, probably, was connected with increased glycogenolis. The fatty inclusions in leucocytes were completely absent for the peritonitis without treatment, while their content gradually increased to normative level after introduction of ozone.

According to our data ozonetherapy standardizated energy methabolism in leucocytes. The appearence of fatty inclusions in these cells is favourable prognosis symptom in the course of disease.

THE EFFECT OF OZONIZED SALINE ON UNSATURATED PLASMA INDEX

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N. Novgorod

The present study was done in experiment in vitro on human blood. The saline was barbataged by ozone-oxygen mixture with ozone concentration of 800 mkg/l, plasma being mixed with saline in the following proportions: 50:4; 50:8; 50:l2.

The content of double connections was assessed in dynamics. Fatty acid plasma spectrum was measured by gas-liquid chomatography. In the initial state the double-connections content in human plasma was 2,4 x 10 -2 mol/l.

Having been exposed to ozone this value decreased to 2,2 x 10 -2 mol/l in 5 minute's period and had a double fold decrease in 40 minutes.

The 2-3 fold increase of ozonized saline resulted in 2-fold decrease of double-connections content in 5 minute's period, and by the end of experiment the index gradually reached the value of 1,1 x 10 -2 mol/l.

The change in double-connections content caused the 2-3 fold decrease of unsaturated fatty acids: 20:4; 20:3; 18:3 in fatty acid spectrum with simultaneous increase of saturated ones: 14:0; 15:0; 16:0.

BLOOD-STOPPING PROPERTIES OF GASEOUS OZONE

A.A.Adamyan, Yu.P.Kashpersky, V.A.Zhukov

Moscow

We have made studies into the blood-stopping characteristics of gaseous ozone using the model of parenchymatous (from a wound in the liver) bleeding in rats. We have discovered that a gas/ozone mixture offers distinct hemostatic properties when the intensity of the stream is 1 l/min and the density of the stream is 2 mg/ml.

Thus, if a wound in the liver is treated with a flow of air or pure oxygen it takes 244,5 + 11,3 sec and 209,4 + 10,8 sec, respectively, to stop the bleeding.

If the same wound is treated with a stream of gaseous ozone the time it takes for stopping the hemorrhage is 45.0 + 3,8 seconds. It has been observed that hemostatic properties of the method are connected with forming of a fibrin membrane.

A COMPARATIVE STUDY OF BACTERICIDAL PROPERTIES OF DIFFERENT OZONATED SOLUTIONS

E.B.Lazareva, T.G.Spiridonova, T.A.Vasina, S.V.Smirnov

Moscow

A study on conservation duration of antibacterial activity of 5 ozonated solutions (saline, Derrow solution, 0,7 % potassium chloride solution, 0,5 % calcium chloride solution, 5 % glucose solution, distilled water) on microorganisms, the most frequently selected from wounds in burn disease (Staphylococcus aureus, Streptococcus pyogenes, Streptococcus faecalis,Escherichia coli, Proteus mirabilis, Pseudomonas aeruginosa and Candida albicans) was carried out.

The concentration of dissolved ozone in these solutions was from 3 mg/l up to 9 mg/l.
It was established, that from listed solutions the heaviest saturation in a time unit occurs in Derrow solution.

It saves antibacterial activity, which is marked even through 24 hours after ozonation of liquid more durably. The shortest period of bactericidal effect - during several minutes after ozonation - is marked for distilled water and weak action on microorganisms is found out.

The other solutions on stability of bactericidal action can be arranged in the following order: saline, 0,7 % patassium chloride solution, 0,5 % calcium chloride solution. The use of 5 % glucose solution strengthened the antibacterial activity inherent to it.

The received data are the basis for study hereinafter a gear of the influence of ozone on antibacterial activity of various substances, used in clinical practice with medical purpose.

THE SIGNIFICANCE OF SELECTIVE OZONETHERAPY FROM POSTHYPOXIVE LIVER DAMAGE

V.V.Novomlinski

Voronezh

The method of antyhypoxive liver protection has been experimently grounded with over tightness of duodenal liver ligament.

The method consists of the interportal injection of ozonized physiological solution.

The method gives the possibility to prevent the development of liver insufficiency and to achieve the high percent of animal survival during the long period excluding liver of bloodcirculation.

THE FUNCTIONAL ACTIVITY STATE OF NEUTROFIL LEUKOCYTES IN WOUND DISCHARGE ON THE OZONOTHERAPY BACKGROUND

V.F.Bolgov, S.J.Miroshin

N.Novgorod

With the purpose of study of a functional condition of neutrofil leukocytes in conditions of a purulent wound during its treatment with application of ozonized antiseptics there were conducted 40 experiments on dogs and 150 immunologic experiments in clinic during the treatment of patients with purulent surgical diseases of tissues.

Wound tests separated, picked up at patients of one age - specific group of the same type of pathology during surgical processing of wound and further during bandages on the 1, 3, 5 and 7 days from the beginning of local treatment with application of ozonized antiseptics were subjected.

During the experiments the sharp tendency to the increase of quantity of functionally active neutrofil leukocytes in the wound during treatment by ozonized antiseptics, in compareson with control group (in 2-3 times) is revealed.

So, based on received data, it is possible to make the conclusion that ozone has neutrophil-stimulating activity which promotes significant reduction of terms of recovery of the purulent wound.

THE RESULTS OF STUDY ON COMPARATIVE BACTERICIDITY OF OZONIZED AND UNOZONIZED ANTISEPTICES

S.I.Miroshin, G.N.Ladigin
N.Novgorod

During the last years an attribute of stability not only to antibiotics, but also to antiseptics has become widespread among pyogenetic microorganisms, on supervision of many researchers. We stated the assumption of strengthening of bactericidal properties of some antiseptics with the help of ozone.

During the experimental work 180 microbiological experiments on research of comparative bactericidity of ozonized and unozonized antiseptices were executed On comparison of received results it was found out, that the action of ozonized antiseptics appeared to be perniciouse for 100 % of bacilli already during the first minute.

The ozonized water has displayed its bactericidal properties, after 5-minute exposition. Not a single observed unozonized antiseptic has displayed such a bactericidity. Thus, in our opinion, with the help of the ozonation it is possible to achieve essential strengthening of the bactericidal properties of antiseptics.

PHYSICO -CHEMICAL PROPERTIES OF OZONIZED SOLUTIONS

I.Ivanova, C.Kontorshchicova

N.Novgorod

The analysis of a physico-chemical condition of water and saline, processed by ozone, the safety and efficiency of concentration of which is proved by clinical and biochemic methods is given in submitted work.

With the help of EPR methods and chemiluminescence it is shown, that in water environments ozone disintegrates with the formation of free radicals.

We have obtained the quantity of flashes and maximum amplitude dependent on ozone concentration in ozone-oxygen mixture. Life time of free oxygen radicals in distilled water is 2 hours 40 minutes; in ozonized isotonic solution of sodium chloride - is only 10 minutes. This fact limits the use of ozonized solution.

Medical effects of ozonized solution on molecular level were concluded to be driven both by ozone and free oxygen radicals.

THE INFLUENCE OF OZONE TO THE STRUCTURAL FORMULAR OF SOME PHARMACOLOGICAL MEANS AND SOLUTIONS

G.A.Boyarinov, V.A.Balikin, A.N.Monachov, A.S.Gordetcov, A.Gavrilushkin, L.V.Boyarinova, A.P.Medvedev

N.Novgorod

Filming of infrared spectra of absorption of 12 pharmacological preparations, used in intensive therapy, of cardiac solution and perfusate from a vehicle of artificial bloodstream up to and after processing of them by ozone infrared spectrophotometre "Specord-75 UP" in the field of 400-4000 sm -1 was made.

The results of the research recorded by "Specord" in a kind of the schedules, where on a vertical the percent of absorption, and on a horizontal a length of the wave were designated.

From researched pharmacological preparations after effect on them of ozone the change of the structural formula of antibiotic and hormone was marked.

CHOICE OF OPTIMAL OZONE CONCENTRATION IN CORRECTION OF TIREDNESS FOR PHYSICAL LOAD IN EXPERIMENTS

Yu.Sharov, C.Kontorschikova, S.Peretyagin, V.Smirnov

N.Novgorod

The search of means and ways of correction of tiredness and increase of serviceability is an urgent problem of sport medicine.

Efficiency of ozone on various pathological processes, accompanied by development of hypoxias is at present shown.

In the present study the white rats endurance have been investigated. Simultaneously miocardium levels of energy - rich compound and morphological structure have been analysed.

On the basis of the findings the optimal ozone concentration was chosen for inhalation promoting increase of tolerance against physical load of animals.

BLOOD -STOPPING OF ARTERIOLOVENULAR EXPERIMENTAL BLEEDING WITH GAS /OZONE STREAM

Yu.P.Kashpersky, A.A.Adamyan, V.A.Zhukov

Moscow

We have made studies into the blood-stopping characteristics of gaseous ozone using the model of arteriolovenular (from a stump of the tail) bleeding in rats.

We have discovered that a gas/osone mixture offers distinct hemostatic properties when the intensity of the stream is 1 l/ min and the density of the stream is 2 mg/ml.

The spontaneous hemostasis in a stump of a rat's tail occured in a matter of 710.5 + 15,4 sec and hemostasis in a stream of ozone took 40.1 + 3,8 sec.

It has been observed that the hemostasis which comes about from the action of ozone is conditioned by a fibrin membrane formed on the surface of a bloodstream and high constricting vessels in rich collagen tissues of a rat tail.

PATHOMORPHOLOGICAL CHANGES IN FUNCTIONAL ELEMENT OF MYOCARDIUM ON OZONOTHERAPY OF HAEMORRHAGIC SHOCK

N.U.Zhemarina, V.P.Smirnov, L.B.Snopova

N.Novgorod

Morphohystochemical characterictics of functional element of myocardium in dogs with its correction by ozonized saline and extracorporal ozonized blood of haemorrhagic shock were studied.

Extracorporal ozonizing of blood in posthaemorrhagic period makes positive effect on functional element of myocardium, because ozone eliminates semioxydate products of meta- and katabolism and reconstructs structural and functional organisation.

It becomes possible because ozone activates adaptional mechanisms on molecular, subcellular, cellular and tissueal levels.

THE USE OF OZONIZED PERFUSION IN RESTORATION OF MYOCARDIUM FUNCTION IN RATS AFTER CLINICAL DEATH

C.N.Kontorshchikova, T.I.Soloviova, N.N.Andreeva, I.V.Mukhina

N.Novgorod

Experiments were conducted on isolated heart taken at the time of clinical death. The heart was perfused by ozonized Krebs-Henseleit solution.

In 60 minutes there were noticed the intensification of Carbon and lipid exchange, H + -ATPH-ase activation and accumulation of ATPH and creatinphosphat in myocardium tissue.

The restoration of antioxidant system and normalisation of Lipid Peroxidation processes were shown.

Due to lipid exchange modification and the presense of ATPH transport Na + -K + -ATPH-, Ca 2+ -ATPH-pumps responsible for the myocardium excitation and contraction functions.

FUNCTIONAL AND MORPHOMETABOLIC CHANGES OF MYOCARDIUM IN CORRECTION OF HYPOXIC BREACHS BY OXIDANT

N.V.Zhemarina, V.P.Smirnov, S.P.Peretyagin, O.V.Mashkovtsev

N.Novgorod

Functional and morphometabolic changes of myocardium in dogs in model of hypovolemic hypothensia with extracorporal ozonization of blood were studied. The use of ozonized blood leaded to emprovement of cardiohemodynamics, common peripheral resistance and differential perfusional pressure.

It created the additional conditions for elimination of consequences of circulatory-hemic hypoxia at the expense of oxidation semioxydate products and decrease energical expenditures for securing of function of vasculocardiac

CORRECTION OF DEFENSE MECHANISMS IN PERITONITIS

I.T.Vasil'ev, O.Ye.Kolesova, R.B.Mumladze, I.N.Markov, S.M.Chudnykh

Moscow

Metabolic disturbance in peritonitis is caused by quickly developing hypoxia of complex polypathogenetic nature, that leads to diminishing of organism adaptive-compensative potential maintained by equilibrium of oxidation-reduction processes.

Accelerating hypoxia and intoxication prohibits adaptation change of homeostatic reactions, as a result of insufficient energetic processes mobilization and increasing energy deficiency. Our experiments have revealed the leading role of antioxidant system in methabolic correction of energetic substrata redistribution.

Correction of methabolic processes and, in the first turn, correction of antioxidant defence in complex with adequate surgical measures and antibacterial therapy is necessary for the patients with widespread forms of peritonitis.

To solve this problem such methods as infusion of UV-irradiated blood components, low-intensive laser radiation, ozonized 0.9% sodium chloride solution, synthetic antioxidante in low concentration (mexidol) and inhibitors of prostoglandin synthesis (indometacin, aspirin) have been successfully used.

Thus, pathogenetic cause of methabolic disturbance in peritonitis is the disturbance of oxidation-reduction equilibrium. That demands inclusion of measures for intracellular methabolism recovering as one of the complex therapy elements.

PROTECTIVE EFFECT OF PARENTERAL OZONOTHERAPY AT EXPERIMENTAL LUNGS' PATHOLOGY

E.I.Jakovleva

N.Novgorod

The effect of parenteral ozonetherapy was studied in the submitted work. Ozonetherapy was used for the treatment of dogs with lungs' pathology.

After extracorporal processing of blood during 30 minutes with concentration of ozone 48 mkg/l in ozoneoxygen mix in the animals with respiratory disstress-syndrome (RDS) the improvement of lungs' microcirculation in a kind of desagregation of blood elements, reduction of leukostasis, increase of albumins and globulins in blood was marked.

Thus, the conducted research has shown, that at lungs' insufficiency the efferent ozonetherapy improves microcirculation and increases lungs' protective function.

THE OIL "OZONIDE" - PROBLEMS OF OBTAINING AND PRACTICAL USING

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Moscow

High velocity of the ozone reactions leads to short times of it existens in biologic systems.
Its activity usually depends on intermediates: ozonides and side products. The part of side products (malonic dialdehyde, hydroperoxides etc.) can be toxic. It is important to find the ways to avoid its formation.

Hard research allows to decrease side reactions and exclude the formation of free aldehydes and related compounds. The stability of oil "Ozonide" was increased at the same time significally.

The storage of samples for a year at +5 0 C shows decrease in activity less than 15%. At the optimisation of composition of the oil "Ozonide" the results of clinic testing were taken into account.

The oi1 "Ozonide" was successfully used in many clinics in Russia for the treatment in dermatology, surgery, gynecology etc.

FUNCTIONAL ELEMENT PATHOLOGY OF ISCHEMIC MYOCARDIUM WHEN PERFUSED BY OZONIZED CARDIOPLEGIC SOLUTIONS

V.P.Smirnov, L.B.Snopova, A.N.Monacha, I.Y.Skvortsova, K.E.Yunusova, N.N.Prodanets

Moscow

In experiments with dogs under extracorporal circulation ischemised for 90 minute myocardium was perfused by ozonized solution (1 series), oxygenated solution (2 series) and "clean" Doring solution (3 series).

The use of ozonized Doring solutions provides maximum approximation of histologic picture to normal myocardium including subendocardial areas.

Presence of single contractures, PAS-positive substance in cardiomyocytes, absence of interstitial and intracellular edema with activation of microcirculation in profound layers of myocardium which were mostly subjected to ischemia were indicative of positive protective influence of ozonized cardioplegic solutions (Doring solutions) on ischemic myocardium.

CORRECTION OF CHANGES IN LYMPHOID ORGANS ON HAEMORRHAGIC SHOCK BY ANTIHYPOXANTS AND OZONE

V.O.Nikolsky, V.P.Smirnov, N.V.Zhemarina, O.V.Mashkovtsev

N.Novgorod

The main model of our work was hypovolemic hypotenzion on Wiggers which was made on 91 dogs.

In 60 minutes hypotenzion therapy transfusionic began, by clear physiological solution, physiological solution with gutimine, Na oxybutirate and ozone.

In 120 minutes of hypotenzion haemotransfusion was made.

It was shown with the help of functional and morphological methods that the application of gutimine,

NOB and ozone acts positively on the cardio-haemodinamic and the structure of lymphoid organs. So the application of antihypoxants and ozone prevents irreversible changes in lymphoid organs.

COMPARATIVE STUDY OF OZONIZED NATURAL OILS AND RELATED PRODUCTS.

V.Ya.Zaitsev, M.L.Konstantinova, V.V.Podmasterjev, S.D.Rasumovskii

Moscow

Large number of the publications about high biochemic and medical activity of ozonized natural oils, compositions on their basis and related products made us conduct comparative research of their properties.

It was found, that the ozonized natural oils contain free dycarboxylic and monocarboxylice acids (azelaic, pelargonic and some others), mono- and dialdehydes. The main reasons of its formation are high polarity of natural oils and viscosity.

The contence of main biochemically active component - thrioxolane is, as a rule, high and makes from 88 % up to 99,8 % depending on a chosen technique and firm of the manufacturer.

The level of the error depends on ways of synthesis and nature of initial raw material. It is marked, that the thrioxolanes in a system are partially in monomeric and partially in the oligomeric forms.

It is possible to assume, that the oligomers are less stable, than monomeric forms. The valuation of biochemic activity of appreciable distinctions was not given.

In the report the physico-chemical characteristics of ozonized products will be indicated and the accessible influence of conditions of reception to the structure of active fragments will be shown

ULTRASTRUCTURAL CRITERIA OF DETOXICATING ACTION OF OZONETHERAPY

N.P.Lebkova, V.Ja.Zaitzev, L.N.Zeitlenok

Moscow

A single intraperitoneal injection of ozonized salt solution to rats in complete starvation or in peritonitis reduced destructive alterations in hepatocytes, intensifies functional activity of nuclei, regeneration of mitochondria, destruction of lipid inclusions and glycogen formation from them in these areas, raises the contents of catalase and cytochrom P-450 synthesizing cell structures (peroxysomes and endoplasmic reticulum membranes).

All this improved detoxycating function of liver and general status of organism.

THE SOFT GELATINOUS CAPSULES WITH OZONIZED OIL – A NEW MEDICINAL FORM OF OZONIDES

N.N.Ershova, L.A.Pavlova, D.G.Krasnicov, A.S.Seleznev, V.A.Bikov

Moscow

In medical practice for treatment of diseases of a gastro - intenstinal tract , inflammatory diseases of a female genital sphere ozonized saline, as well as ozonized vaselin oil are widely used.

At the same time the application of ozonized oil is connected with some inconveniences:

it is difficult to dose it, at peroral application of oil there is a vomiting reflex and negative emotions in a patient, in vaginal application of oil its distribution on mucous is hindered, it is hard to mix it with physiological separated and is quickly evacuated.

The above stated defects in application of ozonized oil have compelled to search for the new approaches to creation of its convenient medicinal form.

The technology and structure of soft gelatinous capsules with ozonized oil was developed for peroral and for vaginal introduction.

On the basis of the given scientific and patent literature research on study of the opportunity of inclusion in a structure of gelatinous weight of a number of auxiliary substances was conducted.

On the basis of conducted researches a structure of gelatinous weight, ensuring disintegration of a gelatinous capping of the capsule during 60 + 10 sec. against 300 + 10 sec. of the standard samples is chosen.

The study of microbiological activity the developed medicinal preparation has shown the bactericidal action concerning staphylococcuses, colon bacillus, representatives of candida. Besides the developed technology of reception of soft gelatinous capsules excludes contact of oil to a capping material.

Part 2:

Clinical Aspects

Of

Ozone Therapy

PROBLEMS AND PERSPECTIVES OF DEVELOPMENT OF OZONOTHERAPY AND OZONE PROPHYLACTIC TECHNOLOGIES IN THE PUBLIC HEALTH

S.P. Peretyagin

N. Novgorod

The investigation of the role of lipid peroxide oxydation and antioxydant systems is a special feature of development of ozone therapy technologies on the present stage.

The experience of its practical use in Russian Public Health shows the ability and the necessity of organization of ozone therapy service in public health structure.

There are some unsolved problems in the ozone therapy. It is necessary to investigate the possibilities of ozone in treating inflammatory diseases, atherosclerosis, immunodeficiency, allergic diseases and endocrinopathies.

There is a task to elaborate the unified standartizational system and the apparatus for measuring the concentrations and doses of ozone.

THE OZONETHERAPY OF THE ACUTE SUPPURATIVE INFECTION

S.A.Kasumjan, A.D.Lelyanov, E.D.Guseva, B.P.Alexeev

Smolensk

The effectiveness of ozone has been studied in treatment of 146 patients with suppurative pathology. Ozone was used in the gaseous phase and in solutions (physiological and distilled water), enriched by ozone (OPS and OS).

After its surgical treatment the suppurative centre was washed by the OS and plugged with the OS tampons every day.

In 3-4-6 days wounds cleared from purulent necrotic mass, phagocytosis was active and 76% of patients had the microbe contamination of the wounds below the critical level. The duration of treatment decreased by 1,4-1,6 times.

The intravenous infusion of the OPS and the washing of the suppurative cavity with the OS were used in treatment of 68 patients with severe suppurative pathology.

After 2-4 procedures the haemodynamics was stabilized, the level of endotoxicosis decreased and the phagocytosis became very active. The deathrate decreased by 1,4 times.

OZONE IN XENOHAEMOPERFUSION OF PATIENTS WITH SUPPURATIVE SEPTIC PATHOLOGY

A.D.Lelyanov, S.A.Kasumjan, V.S.Starshinova, N.I.Fedotova
Smolensk

The effect of ozone has been studied in the xenohaemoperfusion (XHP) of 21 patients with the suppurative septic pathology. The physiological solution enriched by ozone (OPS) was put into the perfusion system before the xenospleen. The OPS was also used for the bathing of the xenospleen and for giving the blood left in the xenospleen to the patient.

The inclusion of the OPS into the system of the biohaemosorption made the postperfusion allergic reactions 2 times less, despite the prolongation of the procedure. The obvious increasing of the detoxicating and immunomodelling effects of the XHP has also been noted. The positive effect was obviously caused by the improving the conditions of the spleenocytes functioning and by the antiallergic impact of ozone.

THE USE OF OZONETHERAPY TECHNOLOGY IN THE TREATMENT OF MODERN WAR SURGICAL TRAUMA

S.J.Miroshin, C.N.Kontorshikova

N.Novgorod

The results of complex treatment with ozonetherapy of 240 injured and war victims are reviewed in the submitted work. The more distinct therapeutic effect was marked in comparison with routine methods of treatment. No complications after the use of ozonotherapy were noticed.

OZONETHERAPY OF PURULENT WOUNDS

Y.Belokurov, W.Molodkin

Yaroslavl

The influence of local ozonetherapy to the current of limited and unlimited purulent process in 163 patients is considered in the work. It is marked that the application of the local ozonetherapy after the conducted surgical allowance normalizes redox processes in purulent wound.

The local ozonetherapy supplements operative treatment and improves its results.

OZONETHERAPY OF PURULENT WOUNDS

I.P.Moshurov, U.M.Sorocoletov

Voronezh

The new method of infective and purulent treatment was suggested including long-period unhealed wounds on the background of the bad accompanied pathology.

It was based on the local application of hydropressive influence with the help of specially elaborated device, giving the possibility to recieve high-head stream of fluid.

The recieved results have proved the expedience of the elaborated methods application with purulent-inflammatory process patients.

THE SURGICAL SEPSIS' OZONETHERAPY

V.I.Bulinin, A.I.Ermakova, A.A.Gluhov, I.P.Moshurov

Voronezh

The ozonetherapy has been used in 49 patients with surgical sepsis of various genesis by giving them the intravenous injections of ozonized sodium chloride solution.

The results of the research have demonstrated the efficacy of the method, especially with the resistance to antibiotic therapy and reduced immunoreaction of the organism.

OZONETHERAPY OF DIFFUSE PERITONITIS

O.E.Kolesova, L.M.Alexeeva, I.T.Vasiljev, N.B.Volchovskaya, A.I.Lazarenco, V.I.Zaitcev

Moscow

The application of ozonized 0,9% solution of sodium chloride for the irrigation of abdominal cavity and intravenous infusion stimulates pentouse shunt and promotes the adaptability of glutationreductase system.

The stimulation of antioxidant system activates detoxication and reparation processes, improves tissue microcirculation and gives immunological effect.

THE ROLE OF OZONETHERAPY IN CORRECTION OF HOMEOSTASIS AT PURULENT-SEPTIC PATHOLOGY

S.I.Miroshin, K.N.Kontorshikova, O.B.Moshkovcev, A.S.Miroshin

N.Novgorod

The results of treatment of 72 patients with purulent - septic pathology, including phlegmon and abscesses, osteomyelitis, postoperative wounds of soft tissues, burns, sepsis with complex ozone therapy, consisting of local (gasation by ozone - oxygen mix in plastic chamber, bandage with the use of ozonecontaining antiseptics) and general (intravenous, intraarterial and intraosteal introduction of ozonized physiological solution) are given in the present work.

At the absolute majority of patients after 1-2 sessions of complex ozonetherapy displays the each general intoxication and of attributes of local inflammation.

Wounds became sterile, and after 2-3 bandages were completely cleared and executed by high-grade granulation. Thus, the complex ozonetherapy makes it possible to increase the efficiency of treatment of patients with purulent-septic pathology.

ANTIBACTERIAL THERAPY CORRECTION IN OZONE TREATMENT OF PYO-INFLAMMATORY PROCESSES IN EMERGENCY SURGERY

T.A.Vasina, E.V.Lazareva, V.Ye.Shestoperov, V.M.Gogos
Moscow

The influence of ozone solutions with respect to Staphylococcus aureus, Pseudomonas aeruginosa, Proteus mirabilis, Escherichia coli, Candida albicans, Streptococcus pyogenes and Streptococcus faecalis was studied; ozone inhibiting concentration 2,8-4,9 ml/l was revealed.

In a combined use of penicillins, cephalosporins, macrolides, aminoglycosides of fluorquinolones and carbapenems with ozone in 6 ml/l concentration a linear character of their synergic effect was revealed.

Ozone concentration increase of 6 ml/l and more resulted in partial or complete inactivation of the antibiotics, apparently due to the rupture of the disulfide bonds in the latter.

Treatment and prophylaxis were carried out with clinical effect in 96,7% cases of operated patients.

PREVENTION OF POSTOPERATIVE WOUND SUPPURATION

I.T.Vasilyev, R.B.Mumladze, I.N.Lebedinsky, V.I.Yakushin, T.A.Vasina

Moscow

The main factor of wound suppuration is the degree of dissimilation during the operation and antibiotic resistance of microflora.

Ozonized 0,9% sodium chlorid solution with 2-10 mg/l ozone concentration completely suppresses the growth of staphylococcuses, proteus, colon and blue pus bacilli at 10 3 KOE/ml.

In higher concentration only partial inactivation of some types of microorganisms has been observed. Suppressing action of ozonized solution has been revealed for all investigated concentrations of microorganisms.

Bacteriological tests have revealed that parenteral application of ozonized solutions diminishes bacterial dissimination and quantitative composition of microflora in wound exudateat 1-2 orders of magnitude (P<0,05).

THE RESULTS OF CLINICAL APPLICATION OF OZONIZED ANTISEPTICS IN THE TREATMENT OF PURULENT WOUNDS

S.I.Miroshin

N.Novgorod

The conducted microbiological experiments and the treatment of models of purulent wounds in the animals with the use of ozonized antiseptics, have shown their high efficancy.

The concentration of ozone in ozoneoxygen mixtures is from 2000 mkg / l up to 8000 mkg/l. 108 wounded and patients were in control group. Nonozonized antiseptics were used for the local treatment of wounds in this group.

In the main group after 2-3 bandages wounds separated became sterile, the wounds for 4-5 days before were cleared from purulent-necrotic weights and began to be executed by granulations with simultaneous disappearrance of the attributes of local inflammation and general intoxication.

Thus, the use of ozonized antiseptics for the local treatment of purulent wounds has appeared rather effective. The average terms of treatment in the hospital of patients of the main group were reduced in comparison with control group for 6-7 days.

THE APPLICATION OF OZONETHERAPY FOR TREATMENT AND PREVENTION OF PURULENT -SEPTIC COMPLICATIONS IN THE RECONSTRUCTIVE VESSELS' SURGERY

V.I.Bulinin, V.V.Aryasov, S.V.Martemyanov

Voronezh

The efficacy of ozonetherapy has been demonstrated on necrotic process and post-operative wound purulency patients in the course of reconstructive vessels' surgery.

This method gives the possibility to decrease the number of purulent complications with secrevestration of vessels prosthesis in postoperative period.

OZONETHERAPY OF SEPTIC COMPLICATIONS IN PATIENTS WITH SPINAL CORD TRAUMAS

A.L.Kladovshikov, A.A.Gluhov, I.P.Moshurov, U.M.Sorokoletov, V.M.Lanetskaja

Voronezh

In order to improve the results of complex treatment of patients with spinal cord traumas with combining of uroseptic complications the new method of sanitation infections was elaborated on the base of local and parenteral application of ozonized solution according to the elaborated plan.

18 patients in age group from 17 till 56 years with closed spinal traumas in intermediate and late periods of its current were observed.

All patients had attributes of a sharp or chronic infectional cystitis. In 9 patients urologic sepsis was advanced.

The dynamic control at efficiency of treatment was executed with the help of clinical, laboratory, immunologic and bacteriological methods of research. A favourable effect consists in a rapid elimination of infection stimulation of the local immunity and common resistence of the organism.

The received results permit to consider inclusion of ozonetherapy in the complex of treatment of patients with septic complications to be expedient.

OZONE SANITATION OF ABDOMINAL CAVITY IN TREATMENT OF PURULENT PERITONITIS

A.A.Gluhov, I.P.Moshurov, V.P.Glyancev

Voronezh

The new method of sanitation of abdominal cavity in purulent peritonitis was elaborated.

Abdominal cavity was bathed by ozonized solution and visceral layer was processed with high-head stream of perfused ozone.

A favourable effect was achieved in 15 patients. The use of ozonized sanitation of abdominal cavity gives the possibility to eliminate infection rapidly, remove the fibrinous applying and produce ozone hydromassage of intestine with purpose to stimulate peristaltic and local immunity.

THE USE OF OZONIZED SOLUTIONS IN COMPLEX TREATMENT OF PERITONITIS

B.P.Kudravcev, S.J.Miroshin, S.V.Semyonov

Moscow

Taking into consideration bactericidal activity, detoxicant and biostimulating effects of ozone we applied ozone in complex treatment of 15 patients with the widespread forms of peritonitis.

Ozone containing preparations were ozonized physiological solution in concentration 800 mg/l for the parenteral introduction and in concentration 4-6 mg/l for the introduction in abdominal cavity through drainages with exposition of 30 min. and subsequent passive removal of liquid from abdominal cavity.

The ozonization of solutions was executed with thehelp of a device "Sintesator of ozone" directly before the application. The efficiency of use of ozonized preparations in complex treatment of peritonitis was evaluated in comparison with control group of patients from 20 persons, where the treatment of widespread peritonitis was conducted without application of preparations of ozone.

It was established, that in patients of main group the clear positive effect was more expressed and came earlier in patients of control group.

Thus, the received data have shown efficiency of inclusion of ozone containing prepara-tions in complex treatment of the widespread forms of peritonitis.

THE FIRST EXPERIENCE OF CHRONIC ABSCESSES AND PLEURA EMPHYEMAS TREATMENT BY THE METHOD OF OZONIZATION

V.I.Bulinin, N.V.Solod, I.P.Moshurov

Voronezh

The purpose of conducted research is to justify expediency of application of ozone for the sanation of purulent lung and pleura cavities, especially in patients with anaerobic microflora and expressed purulent intoxication.

The first experiment of chronic lung abscess and pleura emphyema treatment by the method of ozonization by irrigation of purulent cavities with ozonized solution of 0,9 % of sodium chloride in concentration 500 mkg/ml allowed to achieve favourable results.

Clinical, bacteriological and immunologic parameters of blood were normalized considerably faster, than in conrol group treated with the traditional methods.

The number of postoperative complications and the time of inpatient presence decreased.

OZONETHERAPY IN COMPLEX TREATMENT OF EMPHYEMA

R.B.Mumladze, S.A.Uljanov, O.Ye.Kolesova, S.M.Chudnykh

Moscow

The purulent - inflammatory diseases of pleura are accompanied by hypoxia, bacteriemia and increase of endogenic intoxication. Ozonetherapy has been used for stimulation of protective and compensatoric systems of organism.

Antiinflammatory, bactericidal effects of ozonetherapy in the complex of remedial measures have been revealed for the patients with emphyema and pyopneumothorax.

Ozonetherapy included intravenous infusions and pleural cavity lavage by ozonized physiological salt solution (OPSS) with 4-6 mg/l ozone concentration.

The efficiency of ozonetherapy was checked by bacteriological tests (inoculation pleural exudate on medium antibiotic sensivity).

The results indicate that ozonetherapy diminishes bacteriemy, activates detoxication processes and organism defence reaction stimulates reparative processes, diminishes duration of inpatient treatment and letality rates.

THE INFLUENCE OF OZONIZED PERFUSATE ON BLOOD OXYGENTRANSPORT FUNCTION IN ARTIFICIAL BLOODCIRCULATION

G.A.Boyarinov, S.B.Dobrotin, V.A.Balikin, A.N.Monachov, A.P.Medvedev, A.P.Gavrilushkin, L.V.Boyarinova, A.B.Gamzaev

N.Novgorod

At the prosthetics of heart valves in conditions of artificial bloodcirculation (AB) in control group (100 patients) the perfusate was ozygenated, and in researched (150 patients) group ozone (0,08-0,15 mg/l) was added in the perfusate.

Comparative analysis of results of blood transport function research has shown, that during zonized AB, more ATPH utilises in erythrocytes and more 2,3 DPHG formes, the number of their pathologically changed and destructive forms, of aggregating cells decreases and the use of oxygen by the organism of patients grows, the consequence of that is the reduction of lactate level in blood.

Thus, ozone does not activate LP processes, but on the contrary, stimulates activity of antioxydant system.

THE USE OF OZONE IN COMPLEX INTENSIVE THERAPY OF PATIENTS WITH INFECTIONS ENDOCARDITIS

A.P.Medvedev, A.P.Gavrilushkin, G.A.Bojarinov, S.S.Dobrotin, A.N.Monakhov, V.A.Balikin, A.B.Gamzaev, V.M.Bober, E.N.Givulin, V.A.Chiginev

N.Novgorod

The treatment of endocarditis is one of the most difficult problems of modern cardiosurgery. The role of the surgical method grows in the decision of it.

From 1987 till 1994 in occassion 236 patients were operated for endocarditis, 21 from them died.

Hospital mortality was 9 %. In clinic oxygen-ozonized solutions are widely used during the operations and postoperative period.

The perfection of methods of treatment of infectional endocarditis has allowed to lower hospital mortality from 25 % (1978-1987) up to 4,8 % (1988-1994).

During the last 80 operations in occassion of infectional endocarditis there were no mortal outcomes.

INFLUENCE OF OZONIZED CARDIOPLEGIC SOLUTION TO THE CARDIODYNAMICS AT PROSTHETICS OF VALVES OF HEART.

G.A.Boyarinov, A.N.Monachov, A.P.Medvedev, V.A.Chiginev, V.M.Bober, A.B.Gamsaev

N.Novgorod

The study of cardiodynamics in postischemic period after prosthetics of valves of heart in patients with infectional endocarditis in control group have been conducted, where during ischemia coronary channel was injected with common cardioplegic solution (CCS), and in the studied group the patients were injected with ozonized CCS.

Comparative analysis of results of research has shown, that the ozonization of CCS provides fast and effective restoration of bioelectric and reducing function of heart, increases cordial index, improves delivery of oxygen to tissues, reduces the doze and duration of inotropic stimulation of cardiac muscle in postoperative period.

TREATMENT BY OZONE OF ARTHRITISES AND ARTHROSISES

S.N.Gorbunov

N.Novgorod

Arthritises and arthrosises are rather frequent diseases.

The pathology of joints arises in various periods of life from early children age up to a senile period. Under our supervision there were 42 persons.

From them 13 patients had a sharp posttraumatic arthritis and 29 had deformatious by a arthrosis.

For treatment of a posttraumatic arthritis we apply a daily irrigation of a cavity (lumen) of a joint by a ozonesaturated solution of a chloride of a sodium with the subsequent introduction of a gaseous ozone, depending on size of a joint, in a doze from 1 about up to 40 ml.

At a deforming arthrosis up to 14-16 injections resorted to the introduction only a gaseous ozone in a cavity (lumen) of a joint in the day.

After 3-4 introductions of ozone pain in rest and at movement (traffic) abated, volume of movement (traffic) in joints increased. The remission after treatment by ozone lasted from 3 till 6-7 months.

THE USAGE OF OZONOTHERAPY IN PRACTICE OF SURGICAL DEPARTMENT OF CENTRAL REGIONAL HOSPITAL. SHUYA. IVANOVO

V.Deputatov, A.Abdulkerimov

Ivanovo

For a period about 10 months in surgical department of central regional hospital 163 persons basically with pathology of a surgical structure, 10 patients with diseases of the skin and 4 patients with tonsillitis were put to the test.

Ozonized water in concentration from 4 up to 7 mg/l of ozone was applied both inwards (at treatment of stomach ulcers, gastritises, duodenum ulcers), and external.

In 108 cases the patients recovered, 53 patients got better and only in 2 cases the effect was not attained. The effect of the method was confirmed by the fibro-gastroduodenumscopy.

No complications after the use of ozone were noticed.

NEW POSSIBILITIES IN TREATMENT OF HIGHLY CONTAMINATED WOUNDS

T.M.Gassanov, I.S.Bogatova, L.S.Puchkova, V.B.Genkin

Moscow

The authors have been using a new originally developed method of treatment of contaminated burn wounds of IIIa, IIIb-IV degrees.

The method is based on the bactericidal effect of ozone applied locally in combination with the treatment in an airtherapeutic apparatus with abacterial medium.

Optimal parameters of the local ozonetherapy have been developed: concentration, exposition, frequency of procedures. The method may be used for the treatment of trophic ulcers and purulent wounds of different etiology.

The results of treatment of 79 patients with burn wounds of different size and depth have been analysed. The recieved results have been compared with the results of the control group of patients having similar burn wounds (47 patients).

The recieved results have been analysed and high efficacy of the new method of treatment of patients with purulent burn wounds of different depth have been shown.

OZONETHERAPY IN THE TREATMENT OF MAXILLOFACIAL INFLAMMATORY DISEASES

I.D.Kinyapina, Y.A.Dournovo

N.Novgorod

Successful ozone (O 3) use in the treatment of the diseases of different organs and systems has given us an opportunity to use ozonetherapy in maxillofacial surgery and stomatology.

Groups of patients suffering from odontogenic inflammatory maxillofacial diseases, such as periostitis, jaw osteomyelitis, perimaxillary phlegmons and absesses, maxillary sinusitis, were studied. Special attention was paid to the patients with putrefactive necrotic processes caused by anaerobic infection.

The principal method of treatment in this case was ozonetherapy. Mobilization resources of organism reserve power, increase of local immunologic reactions of the oral cavity and influence upon pathogenic organism are studied.

Ozone (O 3) was used locally in gaseous condition and as a solution with concentration on ozonator from 1500 mkg/l and higher, and parenterally.

Control was carried out through clinical follow-up observation of pathologic development process, bacteriological, immunological, biochemical blood and oral fluid examination.

The successful clinical findings lead us to be optimistic about continuing our research work.

APPLICATION OF VARIOUS METHODS OF OZONETHERAPY IN CHILDREN'S SURGERY

S.N.Gorbunov, L.N.Shesterikov, U.P.Birukov, V.A.Gorshenenko, V.E.Pivikov
N.Novgorod

We used medical ozone in a gaseous phase, in a kind of ozonosaturated solutions and oleoozone.

The application of medical ozone in more, than 300 patients, at age from newborn till 14 years, has shown its efficiency as a powerful antiseptic, immunomodulator, component of a detoxicational therapy, regulator of oxygendependent processes, aid donor of molecular oxygen.

The intrapleural, intra-abdominal introduction, hypodermic, intravenous, intra-osteal injections of ozone and ozonosaturated solutiones were used.

Complications from application of ozone in therapeutic dozes were not observed.

OZONE IN TREATMENT OF SEVERAL PURULENT DISEASES OF ENTPATHOLOGY

A.V.Shakhov, A.V.Terentjeva

N.Novgorod

Washing of the purulent cavities was performed by ozonized destilated water at patients with purulent maxillaris sinusitis. The results were compared with traditional method of treatment of the same pathology.

THE FIRST EXPERIENCE OF USING OZONE IN COMMON LARYNGEAL CARCINOMA AFTER LARYNGECTOMY EXTENSION

I.V.Eliseev, S.A.Rudelev

Ryasan

The apparatus with the regulated 0,1-10 l/min oxygen-ozone mixture feeding with ozone concentration, respectively, was constructed. The method of treatment of purulent wounds in oncological patients in the post-operative period after the laryngectomy extension was suggested.

The flow (5 l/min) oxygen-ozone mixture was directed 1-2 cm far from the purulent wound, the waste product being simultaneously sucked by the electroexhauster where extra ozone changed to oxygen.

The lysis of necrotic tissues with the destruction of the pathogenic media took place because of the blowing and caused a rapid healing of the wound.

The study of the oxygen-ozone mixture influence on the purulent wound is continuing.

OZONETHERAPY OF PATIENTS AFTER LARYNGACTOMY

A.V.Shakhov, A.V.Terentjeva

N.Novgorod

Intravenous injection of ozonized solution in patients after laryngactomy showed the posessing bactericidal activity, detoxical and biostimulating effects, reducing the period of treatment.

OZONETHERAPY IN COMBINED TREATMENT OF DESTRUCTIVE PANCREATITIS

S.M.Chudnykh, O.Ye.Kolesova, R.B.Mumladze, I.N.Markov, I.T.Vasil'ev, V.I.Yakushin

Moscow

Low efficiency of traditional therapies of acute pancreatitis makes it necessary to develop new methods of its treatment.

The methods can be based on correction of antioxidant defence which is the main mechanism of adaptation controlling the organism methabolic change promoting homeostasis recovery.

Equilibrium of oxidation-reduction potential, when it is reached, promotes energetic processes development, stabilizes antioxidant system that, in turn, increases albuminous synthesis by liver and activates reparative-regenerative processes in pancreas.

Efficiency of ozonotherapy was founded pathogenically and proved by experiments that makes it possible to use this method for treatment of patients.

The apparatus "Medozon" produced in Russia, Moscow, has been used for ozonization of physiological salt solution.

The ozone concentration in solution is 4-6 mg/l. It is shown that ozonetherapy initiates cascade type interconnected curative (detoxicative, regenerative, immunostimulative etc.) effects and can be successfully used in complex treatment of destructive pancreatitis.

AN OZONETHERAPY APPLICATION IN THE COMPLEX TREATMENT OF LOWER EXTREMITIES ARTERIES OBLITERATION DISEASES

V.I.Bulinin, V.V.Aryasov, S.V.Martemyanov, G.I.Mesheryacov

Voronezh

Ozonetherapy according to elaborating method was used in 120 patients with critical chronic ischemic disease.

The increasing of shoulderankle index on 0,2 + 0,01 and oxygen tension in an extremity tissues over 30,2 + 3,0 mm Hg have been observed at the course of treatment.

The number of amputations have decreased by 25 % in comparison with the control group of the patients.

OZONE THERAPY. ASPECTS OF CLINICAL APPLICATIONS

A.Groshev, M.Kazhura, A.Hajdack, V.Shevjakov, N.Popkov

Tolgiatty

There are many different types of ozonized solutions used in great number of patients suffering from various diseases subdivided in 7 main groups.

According to its properties, ozone was used in following applications:

- infusion of O 3 solutions;
- compresses with O 3 solutions ; - major & minor autohaemotherapy;
- extracorporeal O 3 blood modifications; - intracavity ozone therapy.

Good clinical effects were observed in all these groups.

Summary:

- O3 therapy is more effective pathogenetic method in some diseases. These are - Prolonged incurabilis purulent wounds; - Burns; - Furunculosis; - Local or generalized Herpes infections;

- O3 therapy is effective in various acute and chronic surgical, gynecological, infections and therapeutical diseases as one of basis therapy methods;

- O3 therapy is method potentializing the basis of extracorporeal efferential therapy.

OZONE AND OZONE CONTAINING PREPARATIONS IN COMPLEX TREATMENT OF PATIENTS WITH TRAUMAS

V.I.Tichonov, S.J.Miroshin

N.Novgorod

Complex ozonetherapy (local and parenteral) was sucessfully used in the treatment of 18 patients with long tubular bone fracture.

The early normalization of local and general manifestation was noted in comparison with the course of traumatological disease with the use of traditional methods. X-ray signs of fracture consolidation had been found 1,5 weeks earlier.

THE POSSIBILITY OF THE OZONETHERAPY IN THE THERAPY OF THE TROPHIC ULCERS IN THE ELDERY PATIENTS

Y.Belokurov, W.Molodkin

Yaroslavl

The including of ozonetherapy in the therapy of varicose vein widenning with such complications as trophic ulcers help us to cut down the period of therapy.

The best results were recieved in the group of patients who had complications no more than 2 months.

The complete recovery of the trophic ulcer and the loss of the painful syndrome start in 5-7 days.

The positive results are recieved in the group of patients with 2-6 months ulcer destruction, too.

Thus ozonetherapy gives economical effect as compared with traditional methods of treatment.

SYNDROME OF LYPOPEROXIDATION IN TOXICAL MYELODEPRESSION IN ONCOLOGICAL PATIENTS

V.I.Andruhin, A.G.Artimenco, D.A.Sotnicov

N.Novgorod

In the present work the data on a condition of lypoperoxidation in 11 oncological patients with bonecerebral complications of antitumorous therapy are submitted.

The treatment, including ozonetherapy has allowed to improve the state of patients.

Classical methods of the laboratory control - the picture of blood, the level of albumin, etc. - permitted to register the shifts of homeostasis not earlier, than through 3-6 days after conducted treatment.

The braking of pathologic lypoperoxidation was observed much earlier. Already on the 1 day the MDA level has decreased on 65 % on the 3 day the DK quantity has authentically decreased.

Thus, the changes of POL processes in oncological patients have primary character in relation to the other shifts of homeostasis and their valuation is more informative, in comparison with traditional laboratory methods.

APPLICATION OF MAGNETIC BLOOD PROCESSING WITH OZONE THERAPY IN THE INTOXICATION SYNDROME COMPLEX TREATMENT OF SURGICAL PATIENTS

M.F.Zarivtchatski, G.E.Kirko, J.R.Kustova, I.N.Mugotarov, I.V.Popova

Perm

Many surgical diseases are accomponied by the development of intoxication syndrome.

The method of the complex application of magnetic blood processing and ozone therapy like the component of the intoxication syndrome treatment has been worked out .

In the magnetohydrodinamic organization the problem of the blood current in the homogenous constant magnetic field and in the constant magnetic field with the setting tension gradient.

POTENTIAL USE OF SODIUM HYPOCHLORITE FOR ACUTE EXOGENOUS POISONING

Yu.S.Goldfarb, K.K.Iliashenko, A.L.Soloviova, N.N.Firsov, S.I.Petrov, M.M.Potzkhveriya, I.R.Suprunenko, E.V.Yastrebova

Moscow

Sodium hypochlorite (SH) (0.03% and 0.06% solution) was used in 170 patients with acute poisoning.

Positive effect was noted in toxicogenic stage in alcohol and methemoglobin-inducing agents intoxications, and the combination of SH with hemosorption was associated with intensification of "middle molecules" (MM) sorption and with the significant improvement of arterial and capillary blood oxygenation.

In the somatogenic stage the decrease of MM level in blood and similar changes of blood acid-alkali state were observed.

Besides, the major decrease of intoxication leukocyte index and neutrophil index shift were noted. Blood rheology improved.

The use of SH in complex detoxication therapy allowed to reduce mortality, to decrease risk and duration of pneumonia.

METHOD OF LOCAL OZONE-OXYGEN THERAPY OF BURNS ON EXTREMITIES

T.G.Spiridonova, L.I.Gerasimova

Moscow

A method of local ozone-oxygen therapy (LOOTh) has been devised for the treatment of burns on extremities. LOOTh has been performed in plastic with the application of the device "Ozonosan PM 83k" (made in Germany), either daily or in a day.

It has been established that the efficiency of this method depended on three factors: tericidal, necrolytic and trophic.

As a result of use of new method we obtained an excellent results: high bactericidal effect, preservation of paranecrotic zones, release from necrosis, shortening of the length of hospital stay.

Auto-dermotransplantation results have become considerably better.

(HBOT) HYPERBARIC OXYGEN THERAPY OF ENDOGENIC INTOXICATION IN ACUTE PERIODS OF BURN DISEASE

O.A.Isachenkova, G.Ya.Levin

N.Novgorod

The experiments on burnt rats and clinic tests were aimed at the analysis of HBO-therapy influence on endogenic intoxication level.

An average 27 per cent decrease in MMP (middle mollecular peptids) level in blood plasma was established in experiments on rats. In clinic MMP level after HBO-therapy course was 1.3 or 27 per cent lower than in control group at the same investigation time.

LII (leucocyte intoxication index) and BI (Baevsky index) (according to reographic data) showed similardynamics.

We advanced the hypothesis that the obtained results were connected with the improvement of hepatic function and renal excretive function by means of hypoxia reducing of those organs.

Hypoxia reduction after HBO-therapy was caused by means of oxygen saturated plasma and erythrocytes with increased deformability.

OZONE IN THE TREATMENT OF CHRONIC URETHRITIS

A.Artjuchin, V.Zuev, T.Djibladze, L.Alexandrov

Moscow

The experiency of treatment of 16 patients with chronic nonghonoreal urethritis is given in the submitted work. The increased effectiveness with ozone application was obtained due to irrigation of urethra. The objective data were proved by endoscopic and lab investigation. No side effects were observed.

OZONIZED SOLUTIONS OF CRYSTALOID IN TREATMENT OF ACUTE PURULENT PYELITIS COMPLICATED BY UROSEPSIS

B.V.Semenov, O.V.Firsov, E.I.Eremin

Voronezh

Intravenous treatment with ozonized 0,9 % sodium chloride solutions has been applied in intensive therapy of obstructive pyelitis patients.

Effectiveness was controlled by general-clinical and immunologic tests. The findings have demonstrated the effectiveness of ozonetherapy with a group of patients.

APPLICATION OF OZONIZED CRYSTALOIDS IN THE TREATMENT OF CYSTITIS

O.V.Firsov, B.V.Semenov, E.I.Eremin

Voronezh

The effectiveness of the ozonized, 0,9% sodium chlorid solution local application was investigated in treatment of acute and chronic cystitis.

The received results have proved the effectiveness of the ozonetherapy especially in such cases when cystitis is caused by the nonsensetivity of the microorganisms to the majority of antibacterial medicines.

EFFECTS OF SODIUM HYPOCHLORITE AND CHLORAMINE DERIVATIVES OF AMINO ACIDS

M.A.Murina, D.I.Roshchupkin, V.I.Sergienko

Moscow

The release reaction and the arachidonic acid peroxidation in platelets induced by thrombin are suppressed by sodium hypochlorite at the moderate concentrations (15 mcM) stronger than the platelet aggregation. Such the inhibitory effect is, perhaps, due to membrane modification (sulfhydryl group oxidation) which leads to an alteration of intracellular signalling.

Amino groups of platelet plasma membrane estimated by means of the fluorescamine fluorescent label are significantly destroyed at the high concentrations of hypochlorite ions.

Amino acids in which amino groups are converted into chloramine ones by hypochlorite ions suppress strongly the ADP-aggregation of platelets in platelet rich plasma.

The amino acid chloramines whose volumes of molecule are small exibit the higher anti-aggregative effects.

PHOTOPLASMAPHERESIS IN THE TREATMENT OF ATOPIC DERMATITIS

N.V.Vasilyeva, A.V.Popov, T.K.Loginova

Moscow

The submitted work is devoted to the treatment of atopic dermatitis. The new method was based on photoplasmapheresis. Patient's plasma taken after centrifugation was exposed by ultraviolet radiation.

Blood was put in Hemokon "500/300" and cenrifugated. Mass of erythrocytis was retrieved and plasma was centrifugated once more.

After that 200 ml of plasma was radiated by "ISOLDA" during 15-20 min and retrieved to the patient.

Remained plasma (100 ml) with sediment of high molecule wight proteins was got off and replaced by 100-150 ml of saline.

THE USE OF NATRIUM - HYPOCHLORITE IN THE TREARMENT OF CHRONIC BRONCHITIS

V.V.Komov, A.M.Vachnin, S.A.rudnev, L.N.Fisher

Moscow

Natrium Hypochlorite may be recommended as a method of choice in the treatment of patients with inflammatory diseases of respiratory system. Clinical effect was achieved by inhalation and per os use of the drug in low doses (8,0 by inhalation and 3 x 30,0 ml intra a day.

Concentration - 400 mg/ml). Patients with tracheobronchial hyperreactivity need more careful and indicated tactics of drug use.

NATRIUM - HYPOCHLORITE SOLUTION IN PROPHYLAXIS AND TREATMENT OF SUPPURATIVE PROCESSES OF MAXILLO - FACIAL REGION

N.N.Bazchanov, V.U.Kassin, A.Z.Chalumov, A.F.Kuznetsova

Moscow

The use of natrium - chlorite solution (NHS) was very effective in local treatment of patients with suppurative processes of maxillo - facial region. NHS promoted acceleration of wound healing by suppressing of bacteria growth. Draining of antrum cavity and the region of bone fractures creates the prophylaxis of their inflammation.

COMPLEX TREATMENT OF SEVERE FORMS OF PSORIASIS (COMBINATION OF ERYTHRODERMIA AND ARTHROPATHY)

T.K.Loginova, O.A.Mashkov, G.J.Sharapova, H.U.Vasileva, N.I.Kotkov

Moscow

A complex treatment was performed in 38 patients with severe forms of psoriasis (combination of erythrodermia and psoriatic arthropathy): plasmapheresis, cryodestruction of psoriatic plaques, cryotherapy of psoriasis-affected joints, peroral enterosorbent FAS-E, pathogenic therapy.

Positive effect was shown in 31 patients leading to regression of psoriatic skin lesions, disappearance of arthritis signs, improvement of laboratory results.

KINETICS OF THROMBOCYTES AGREGATION AT SHARP PANCREATITIS AND ACTION OF AERIONS

A.P.Vlasov, V.A.Trofimov, R.S.Ashirov, V.N.Poderov, R.R.Ashirov, S.V.Aksenova

Saransk

In 24 patients with sharp pancreatitis the changes of ADF- and FAT-induced - kinetics of agregation of thrombocytes in comparison with agregation of thrombocytes in patients (15 persons) of control group were found out.

The application in complex treatment of patients with sharp pancreatitis of aerions renders an expressed stimulating effect at the level of functional activity of thrombocytes.

Sharp increase of sizes of agregation degree, maximum speed and time of agregation was thus found out in such manner that on physiological functions the thrombocytes of patients with sharp pancreatitis became comparable with thrombocytes of healthy people.

CLINICAL & LABORATORIAN ASPECTS OF APPLICATION OF OZONE AS A COMPONENT OF COMPLEX TREATMENT OF FEMALE GENITAL INFLAMMATORY DISEASES

N.M.Shaschova, T.S.Kachalina

N.Novgorod

The present investigation concerns the study of ozonetherapy effect on the course of female genital inflammatory diseases. The method of ozone application presented intravenous infusions of ozonized NaCl saline. 70 patients were treated, control group included 30 patients.

Effectiveness of treatment was evaluated according to the results of clinical observation and the number of laboratory data. The middle course of the disease was noted in the basic group in comparison with the control one.

Laboratory test showed the following: LP activity in the control group was maintained, tendency of decreasing Tr/Ts index and phagocytosis indices (spontaneaus hemiluminescence, induced hemiluminescence - SHL, IHL) was marked and the level of the middle molecules remained increased.

The basic group showed normalization of LP, optimization of Tr/Ts index, increase of phagocytic activity, decrease of middle molecule level. The mentioned above, allows to draw a conclusion of the effectiveness of ozonetherapy as a component of complex treatment of female genital inflammatory diseases.

APPLICATION OF OZONE AND CO 2 LASER FOR THE TREATMENT OF WOMEN WITH HPV -INFECTION

T.D]ibladze, V.Zuev, N.Elizarov, M.Niazova

Moscow

To increase the effectiveness rate of treatment of HPV-infection of women genital tract women ozonetherapy and CO 2 Laser were used.

The study includes 98 patients with condyloma acuminata and papillomatosis of vulva, vagina, urethra and cervix. Intravenous and local ozone administration were used.

The results of complex treatment of HPV-infection with ozone showed high rate efficiency due to immunological improvement in T-helpers, B-lymphocytes, killers and A, M, G immunoglobulines increase.

OZONETHERAPY IN GYNECOLOGY

V.M.Zuev

Moscow

The scientific data concerning the application of ozonetherapy in obstetrics and gynecology are very rare.

Yet such properties of ozone as its antimicrobial, viruslythic, immuno-modulating desensibilisating, and pronounced biochemical effects are highly promising for the treatment of gynecologic patients.

We have examined and treated 180 patients with the following disorders: acute and chronic inflammations of uterus and uterus appendages of bacterial, virus and mycotic ethyology, genital herpes and cytomegalia, infertility and early miscarriages, and also the patients after surgery.

Ozonetherapy has proved to be effective in respect to herpes virus 2 and cytomegalovirus, chlamidia and mycoplasm (82% and 69% respectively), has helped to establish the level of cell and humoral immunity, has considerably accelerated the reduction of inflammation processes by developing of certain compensatory-adaptive reactions in tissues.

INFUSIONS OF OZONIZED SOLUTIONS AND ULTRA -VIOLET RADIATION OF BLOOD AT INTENSIVE THERAPY OF PATIENTS WITH TRAUMA

M.S.Akulov, A.N.Medvedinski, L.V.Malanjeva

N.Novgorod

Ozonotherapy and ultraviolet radiation were applied for the treatment of patients with traumas.

The positive dynamics on the part of the contents of average molecules, and earlier sanction of pneumonia were marked.

No complications from the use of ozonetherapy were marked. Thus, on the basis of small experience (12 patients) it can be assumed, that ozone together with UVR can find wider application after the detailed study.

OZONETHERAPY IN SURGERY OF THE WIDESPREAD FORMS OF GENITAL ENDOMETRIOSIS

A.Ishenco, I.Baburina, M.Botvin, V.Zuev, T.Djibladze

Moscow

Endometriosis is one of the most widespread diseases of women. The heaviest clinical displays are characteristic to the widespread forms of genital endometriosis.

The conservative treatment at overwhelming number of these patients is inefficiently, and the leading method of treatment is surgical.

Our experience is based on more than 1500 operative laparoscopies of patients with genital endometriosis.

With the purpose of restoration of immunologic balance and local tissue respiration, infringed at patients with endometriosis, ozonotherapy in a kind of saturation of peritonial liquid and intravenous infusions was conducted.

Thus, the perfection of technology of laparoscopic operations at surgical treatment of patients with the widespread forms of genital endometriosis with application of ozonetherapy during the operations and in the postoperative period permits considerably to improve the rehabilitation of patients and to conduct the preventive maintenance of infectional complications in postoperative period.

THE USE OF OZONE FOR THE PREVENTION OF INFLAMMATORY COMPLICATIONS AFTER MYOMECTOMY

M.Botvin, N.Pobedinsky, V.Zuev, D.Krasnikov, A.Ishenco, T.Djibladze

Moscow

A study of 23 patients of reproductive age undergone conservative myomectomy is presented in the submitted work.

For the prevention of inflammatory complications within and after surgery ozone has been used, with intravenous and intraperitonial way of administration.

The majority of patients showed higher efficiency in recovery after general anestesia and no inflammatory complications were observed.

THE DYNAMICS OF IMMUNOLOGIC STATUS IN PATIENTS WITH GENITAL VIRAL INFECTION ON THE BACKGROUND OF OZONETHERAPY

V.Zuev, T.Djibladze, A.Simonova, D.Krasnicov

Moscow

Ozonetherapy was used for the treatment of 87 patients with genital viral infection. Up to and after the treatment immunologic investigation of patients was made: definition of leukocytes quantity, total number of T-lymphocytes, quantity of T-helpers, T-supressors and blood examination.

In all the surveyed patients reduction of absolute number of T-helpers, B-lymphocytes natural killers and high contents of zero cells was marked.

The ozonetherapy was conducted in a kind of intravenous and local applications.

Ozonized physiological solution (concentration 1,5-2 mg / l) was intravenously injected.

The local ozone therapy was conducted by ozonids with peroxide number 800.

The repeated immunologic investigation was conducted after the treatment: positive dynamics of immunologic status - increase of the general contents of leukocytes and lymphocytes, increase of the number of T-lymphocytes for the account of T-helpers, increase of the contents of B-lymphocytes and natural killers, as well as reduction of quantity of zero cells was marked.

THE OZONETHERAPY OF PUERPERAL ENDOMYOMETRITIS

L.Cygancova, G.Beznostchenko, A.Kataev

Omsk

Puerperal endomyometritis is the most frequent form of purulent-septic infection. In the group of patients with the "clean" form of subinvolution of uterus, puerperal and postoperative endomyometritis irrigations of uterus cavity by ozonized solutions were applied.

40 persons formed the main group and there were 20 patients in control group, in which the used solutions were not ozonized.

The data of conducted supervision have found out, that the involution of uterus was marked 2,3 times faster in the main group; cytochemical researches, have found out the ex-pressed tendency to the normalization of parameters.

The given study of products also testified to activation of processes in the system of antioxidizing protection of organism.

The positive effect of this treatment method was proved by the facts of clinical and laboratory investigations, cytochemistry, peroxidation of lipids and microbiological tests.

THE CONDITION OF LIPID PEROXIDATION AND ANTIOXIDANT SYSTEMS OF ORGANISM IN APPLICATION OF OZONETHERAPY IN COMPLEX TREATMENT OF GESTOSIS

T.S.Kachalina, K.N.Kontorshchikova, O.N.Usachiova, T.G.Shcherbatjuk
N.Novgorod

One of the main pathologies in obstetrics is late gestoses of the pregnant. From 11% to 16,6% of the pregnant women suffer from the disease.

The research is dedicated to the study of the influence of ozonetherapy on the process of different forms of late gestoses of the pregnant.

The method of ozone injection is the intravenous infusion of ozonised 0,9% NaCl. It is stated that the patients who have gone through the above mentioned treatment suffer much less from gestosis.

The biochemical test have shown that in patients undergoing the treatment the normalization of the index of lipid peroxidation and enzyme antioxidant activation takes place.

THE EXPERIENCE OF TREATMENT OF ANDEXIS PYOM INFLAMMATION BY LAPAROSCOPY AND OZONETHERAPY

A.Ishenco, I.Baburina, M.Botvin, V.Zuev, T.Djibladse

Moscow

Inflammatory diseases of appendages of uterus remain the most widespread women diseases. Ozone therapy and laparoscopy was used for the treatment of 16 patients.

The operative laparoscopy with the use of ozone therapy is in a number of cases an alternative to laparotomy at treatment of purulent diseases of uterus appendages, that is especially important in patients of young age. Adequate postoperative management of patients with application of intravenous ozonetherapy promotes the success of the operation.

THE VALUE OF OZONETHERAPY IN COMPLEX TREATMENT SPONTANEOUS ABORTIUS

V.Zuev, N.Pobedinsky, T.Djibladze, D.Krasnikov, O.Blinova

Moscow

For the treatment of patients, suffering from genital herpes and cytomegalia, we used the method of ozonetherapy. Investigation and treatment of 68 women was made.

Immunologic investigation has revealed reduction of immunity parameters, in particular, attributes of insufficiency of antiviral protection.

The ozonotherapy was conducted in a kind of intravenous injections of ozonized physiological solution (concentration 1,5-2,5 mg /l), the procedures were conducted in a day.

At clinical displays of genital herpes local applications of ozonids with peroxide number 800 were applied.

A control virusologic and immunologic investigation was made after the treatment.
Positive changes of all immunologic parameters were marked.

Thus, the ozonetherapy is an effective method of treatment of women, suffering from sponteneous abortions.

OZONOTHERAPY EFFECT ON THE CONTENT OF VARIABLE VALENCY METALS IN SERUM

C.N.Kontorshchikova, T.K.Shcherbatyuk

N.Novgorod

Bringing of ozonetherapy methods into medical practice requires a profound investigation of ozone interaction with different pro-/antioxidant systems of the organism. The effect of the parenteral introduction of ozonized saline on the ions level II-valency ferrum and I-valency cuprum in serum of 47 pregnant women with late toxicosis was studied.

By the end of the treatment course a valid decrease of nonhemine II-valency ferrum (to 41,5 %) and I-valency cuprum (to 19,7 %) was revealed.

EFFECT OF OZONETHERAPY ON COAGULATION BLOOD SYSTEM IN COMPLEX TREATMENT OF GESTOSIS

T.S.Kachalina, C.N.Kontorshchikova, O.N.Usachova, I.E.Okrut

N.Novgorod

The pathogenesis of late toxicosis is connected with the increased agregation capacity of blood cells, and spasm impairments of arteriole. The effect of ozonetherapy was studied on different forms of late gestosis in pregnant women.

Tromboelastogramm data of 40 women treated with ozone have shown hypercoagulation returned to normal level in 70% cases.The decrease of coagulation was observed in 37% cases in the group where the patients were not treated with ozonetherapy.

EFFECT OF OZONETHERAPY ON CELL AND HUMORAL IMMUNITY IN COMPLEX TREATMENT OF GESTOSISES

T.S.Kachalina, K.N.Kontorshchikova, O.N.Usachova, N.I.Kubusheva

N.Novgorod

The present research is devoted to study of the effect of ozonotherapy on immune system of pregnant women with late toxicosis. The complex treatment included parenteral introduction of ozonized solution. In 50 % of patients of main group the parameters of cell and humoral immunity were normalized. The control data showed pathological changes in 80% of patients.

OZONOTHERAPY OF ANEMIA DURING PREGNANCY

M.K.Shakutina

N.Novgorod

The frequency of iron deficiency anaemia fluctuates from 15 to 99%. One of causes of iron deficiency anaemia is peroxyde distruction of erytrocytes' membranes. We have elaborated and applied the new method of treatment of anaemia by utilization of ozone.

After ozonetherapy the increase of hemoglobin to 22% was marked, after traditional therapy hemoglobin increased to 11%. The secretion of placenta after ozonotherapy was normal (87%), after traditional therapy (42%).

Correlation between LP/AOS after ozonotherapy was normal (98%), without ozone (56%).

After ozonotherapy the period of the treatment was shortened by 1,67 without damage of therapy effect. Ozone is the active medicine for the treatment of anaemia.

THE INFLUENCE OF OZONETHERAPY IN LIPOPEROXIDATIONAL PROCESSES AND THE STATE OF ANTIOXIDATIVE SYSTEM OF DEFENS IN PATIENTS WITH A TREATENED MISCARRIAGE

G.O.Grechkanev, T.S.Kachalina, C.N.Kontorshchikova

N.Novgorod

Intravenous infusions of ozonized physiological salt solution in the course dosage of 200 mg were used in the treatment of 40 patients with a treatened miscarriage.

The study of lipoperoxidational processes in blood on the background of ozonetherapy has shown the descrease of the levels of the primary molecular products by 50 % and secondary- by 51,5 % when compared with the initial ones.

The average 22,1 % increase of general antioxidative plasma activity was simultaneously noted.

The conventional treatment has failed to correct the processes of lipoperoxidational in patients.

THE INFLUENCE OF MEDICAL OZONE TO HORMONEPRODUCTIVE FUNCTION OF FETOPLACENTAL COMPLEX IN PATIENTS WITH THREATENED ABORTION

G.O.Grechkanev, T.S.Kachalina, S.P.Peretyagin

N.Novgorod

Ozonetherapy was used for the treatment of 90 patients with threatened abortion.

Taking into account the positive influence of ozonetherapy to the function of placenta, the complex of treatment intravenous infusions of ozonized saline (course doze of ozone - 200 mkg) was done.

The control over the changes in the number of hormones in ozonetherapy has shown, that patients, receiving ozonetherapy, had an average week gain of progesteron level by 3,3 times, placental lactogen by 2,4-3,6 times higher, than in patients treated with traditional methods.

It may be related to the improvement of blood microcirculation in placenta under the influence of ozone.

THE VAGINAL USE OF OZONIZED SOLUTIONS IN THE PREVENTIVE TREATMENT OF NEONATAL ILLNESS

G.Beznostchenko, L.Cygankova, G.Krivchick

Omsk

The investigation of the effectiveness of vaginal irrigations of ozonized solutions done 2-3 weeks before the labor in pregnant women was made.

The positive effect of this procedure on the reduction of pyoseptic newborns illness was proved by the facts of clinical and lipid peroxidation investigations.

APPLICATION OF OZONE -OXYGEN MIXTURE IN PATIENTS WITH SICKLE -CELL ANEMIA

M.Gomez, E.Espinoza, I.A.Caplan

Cuba, USA

Sickle-cell anemia is a genetic disease characterized by the sickled shape of erythrocytes in blood deficient in oxygen, where a modified hemoglobin, HbS, exists due to a single point-genetic mutation, substituting valine at that position for glutamic acid which occurs in HbA, cause deoxy HbS molecules to form polymers.

The crystallization, or intracellular polymerization of the molecules of HbS, occurs when these cells are deprived of oxygen, when oxygen- partial pressure (pO 2) falls below the threshold level at which sickling occurs.

In this condition, the erythrocytes lose their normal elasticity and shape, increasing blood viscosity and aggregation, and impeding blood flow, and further reducing the availability of oxygen to the erythrocytes, producing vessel occlusive crises, infarctions, abdominal and muscular pains, ulcers, etc.

This process is reversible in the early stages, for when the HbS molecule is reoxygenated the cell distortion disappears and the cell resumes its normal shape.

The longer the period of time necessary for the reoxygenation of the molecules of HbS, the greater number of red cells die. Therefore, the partial pressure of oxygen and the promptness with which it is normalized are the determining factors for the symptoms to diminish and to disappear.

Currently, outside of Cuba (based, in part, on the results of this study), there is no effective treatment for this condition. There was no effective treatment for significantly raising blood pO 2 without undesirable side effects, so it remained an unsolved problem.

On the basis of some of the therapeutic properties of ozone (when introduced into the human body in other than the respiratory tract), particularly its ability to achieve rapid and significant increments in blood oxygen partial pressure, due to the enhancement of the erythrocytes capacity for oxygen absorption and delivery, allowing improvement in the rheological properties of blood at tolerable and nontoxic doses, an evaluation of the effectiveness of ozone/oxygen treatment for the timely resolution and/or the prevention of the vasoocclusive crisis was made.

Firstly, the enhancement of blood p0 2 in ozone/oxygen treated samples above those treated with oxygen (neat) was demonstrated "in vitro" in normal blood - bank blood.

Secondly, for the controlled clinical trial, 55 adult sickle cell anemia patients entering the hospital in crisis were studied. In comparison to the control group (N=25), the test group (N=30) demonstrated significant objective increases in arterial blood pO 2 , as well as reduction in the time for the resolution of crisis.

During the six month follow-up, in which the test group was prophylactically treated with ozone once every two weeks, these patients suffered a much lower frequency of crisis. Those crises that occurred during this period were less severe in comparison to those of the control group.

This treatment for sickle cell anemia crisis was approved by the Cuban Ministry of Health in November of 1990.

OZONETHERAPY IN THE FUNCTIONAL RECOVERY FROM DISEASES INVOLVING DAMAGE TO CENTRAL NERVOUS SYSTEM CELLS

Manuel Gomes Moraleda

Spain

Ozone has been applied in many diseases caused by peripheric circulatory disturbances reducing the oxygen supply to tissues, infections, alterations of the immune system, esthetics, etc., but less attention has been paid to nerve cells damage produced by degenerative and ischemic diseases of the central nervous system.

On the basis of personal experience in preclinical and clinical experiments, sets of results are presented, concerning the treatment of different groups of subjects suffering from various diseases which involve degenerative or ischemic damage of central nervous system cells (Senile Dementia, Cerebrovascula Ischemia, Hipoacusia, Optic Nerve Dysfunctions, Sequels of Glaucoma, Retinitis Pigmentosa and Maculopathies).

Regarding previously mentioned results, a whole group of inter-related hypothesis are formulated to explain the different effects afforded in functional recovery of patients with the ozone therapy.

These are based in some of the already known effects of ozone on living cells, so as in the cells physiology of those subsystems of the central nervous system involved in each disease. Graphics and tables of results are included to support the rationale so as schemes about the ozone effects on the system involved.

THE ABILITIES OF OZONETHERAPY IN COMPLEX TREATMENT OF HYPERTENSION

E.O.Obuhova, V.M.Levanov, P.I.Ryhtic

N.Novgorod

This work was aimed at investigating the influence of ozonized saline on hemodynamics, LP activity, on some data of vascular thrombocity hemostazic. We have examined 42 patients.

Saline was ozonized by "barbotage" in standard vitroses; the rate of gas flow 1 l/min and ozone concentration in gas mixture was 500-600 mcg/l. The time of saturation was 10-12 minutes. Then the solition was infused into peripherial vein.

During the course of treatment 5 procedures were made. In complex treatment group drug therapy was used simultaniously with ozonization: corinfar (30 mg per day). In control group only drug therapy was used.

OZONETHERAPY EFFECT IN PATIENTS WITH ARITHMIA

A.A.Obuchova, G.N.Zueva, C.N.Kontorshchikova, L.N.Dmitrieva, I.A.Kopeikina

N.Novgorod

In the submitted work the evaluation of opportunities of ozonetherapy method for improvement of results of treatment of patients with arithmia is conducted.

31 patiens were under our observation (average age - 54,3 years). The ozonized solution of 5 % glucose (200,0 ml) was injected intravenously in a day.

After the treatment the condition of the patients improved. Thus, ozonetherapy is a perspective method of treatment of patients with arithmia.

THE TREATMENT BY OZONE OF TROPHIC ULCERS OF LOWER LIMBS

S.P.Alechina, G.M.Picalova, S.N.Gorbunov

N.Novgorod

In the clinic a technique of treatment of trophic ulcers of lower limbs with application of medical ozone was developed.

The treatment during 1993-94 of 35 persons with trophic ulcers of legs and foots of various genesis was made. The age of our patients was 60-78 years.

Treatment, which we applied in clinic, included the following kinds of ozonetherapy: outside processing by ozone; hypodermic injections of ozone; the parenteral introduction of ozonesaturated physiological solution.

Therapeutic tactics for each patient defined character and size of ulcers, their genesis. In significant part of patients (20) there were small ulcers (10 cm 2), 5 patients had extensive numerous ulcers (7-10 cm in a diameter).

In small ulcers a patient was administered outside application of ozone in a plastic bag with redundant pressure, at first daily, and then 2-3 times a week; and hypodermic introduction of ozone around the ulcer.

In intervals between sessions of ozonetherapy the trophic ulcer was processed by antiseptics and was closed with bandages with ozonized oil.

SUBSTANTATION OF APPLICATION OF OZONIZED MINERAL WATER "GORKOVSKAYA N 2" IN PATIENTS WITH GASTRODUODENITIS, DUODENAL AND GASTRIC ULCER

V.A.Krylov, K.N.Kontorshchycova,V.N.Mocina, A.V.Katysheva

N.Novgorod

Chemical analysis of the mineral water "Gorkovskaya N 2" has been carried out to define existence of metalls chlororganic substances, anions before and after ozonization.

Concentration of the later has not been changed after the experiment.

The number of free radicals and intencity of lihgting chemiluminescence had a direct dependence on the concentration.

OZONE IN THE TREATMENT OF DUODENAL ULCER

V.A.Maksimov, S.D.Karataev, A.L.Chernyshov, V.I.Zaicev

Moscow

The method of ozonetherapy (OT) was used in the treatment of ulcer disease of duodenum in ninety five people.

Ozonetherapy was used as intravenous administration of ozonized solution isotonici NaCl three times a day with the doses of ozone 3 mg/l and administration of ozonized water (200 ml) once a day with the dose of ozone 7 mg/l.

During the treatment we have seen the processes of reparation which were manifestated by increasing of the hight of epithelial cells of mucous of stomach and duodenum, by decrease of infiltration of mucous of stomach and duodenum, by neutrophile granulocyte and plasmocytes.

Association of ozone therapy and bismut preparations leads to the stimulation of reparative processes and antihelycobacter effect which appeared in 87% and 89% of cases. But the use of denol and bismofalk without OT results in its dissapearance in 35-40% of cases.

And therefore the use of OT is effective in the treatment of ulcer disease of duodenum.

It is necessary to study the influence of different methods of OT during ulcer disease.

TREATMENT BY MEDICAL OZONE OF OBLITERATED ATHEROSCLEROSIS OF VESSELS OF LOWER EXTREMITIES

S.P.Alechina, G.M.Pikalova, N.D.Mironov

N.Novgorod

For a period from February 1995 to February 1995 285 persons with given pathology at the age of 60 - 84 years were under our observation. Taking into account a stage of disease, accompanying pathology patients were devided into groups depending on a kind of administered ozonetherapy.

The clinical and laboratory effect was observed in all groups of patients.

The period of improvement lasts on the average after the first seance for 2-3 months, after the repeated one for 4-6 months (at some to a year).

All this gives the basis to make a conclusion, that at present ozonotherapy may be widely used for the treatment of obliterated vessels of lower extremities.

TREATMENT OF PATIENTS WITH CHRONIC GASTRITIS AND ULCERATED DISEASE WITH OZONOTHERAPY

S.V.Andosov, N.I.Nicolaev, B.V.Sarancev, O.V.Maslennicov

N.Novgorod

There were treated 30 patiens (10 men and 20 women) at the age from 20 up to 71 years, from which 13 persons had chronic gastritis of B type, antral form, 10 persons with diffuse chronic gastritis of B type and 7 persons with ulcerated disease; the duration of disease was from 2 to 30 years.

The treatment consisted of daily reception of ozonized water and ozonized oil, intravenous injection of ozonized physiological solution and realizations of small autohaemotherapy by ozonized blood.

By the end of 3-4-weeks of treatment the improvement at all the patients was marked.

The clinical improvement was confirmed by dynamic endoscopic and cytomorphological investigation.

Thus, the first results of application of ozone have shown, that it is rather effective method of treatment of patients with chronic gastritis and ulcerated disease.

THE OZONETHERAPY OF STOMACH AND DUODENAL ULCER

S.A.Kasumjan, A.D.Lelyanov, V.Y.Smirnov, E.D.Guseva

Smolensk

The effectiveness of the ozonetherapy has been studied in complex treatment of 52 patients with stomach and duodenal ulcer. The mixture of ozone and oxygen (OOM) and the distilled water, enriched by ozone (O 3) were used in their treatment.

The intragastric method of injecting of OOM was used during 3-5 days, at first every day, then in 1-2 days till the forming of the cicatrice. The patients were also given the O3.

In 3-5 days of the treatment the aches abated.

In 6-8 days the contamination of helicobacter in the stomach mucous considerably decreased, morphologically there was a sharp decrease of neutrophyl degenerative changes in the bioptates of the ulcer and the proliferation of the fibroblasts increased.

The ozonetherapy was contributed to the shortening of the treatment course of the ulcer disease.

OZONOTHERAPY IN COMPLEX TREATMENT OF TOXICAL DIPHTHERIA IN CHILDREN

V.V.Krasnov, I.V.Orlov, S.S.Markova

N.Novgorod

65 children in the age from 1 to 13 years with toxical diphtheria were under our obser-vation. On being admitted the patients received a specific antidiphtherial serum (AS). The first introduction of AS was done by a combined way - 50-75 % intravenously with the purpose of fast neutralization of toxin and remaining quantity - intramuscularly.

To small children intravenous injection of the preparation was done during whole course of treatment. In 18 patients the treatment was supplemented by intravenous injection of ozonized physiological solutions, glucose.

The ozonization was conducted with the help of device "Ozone-M-5" with concentration of ozone 600-800 mcg/l during 15-20 minutes. On a background of the therapy the decrease of intoxication level, improvement of microcirculation on laboratory data was marked.

The weight of specific complications of diphtheria was reduced.

CYTOMORPHOLOGICAL ASPECTS OF OZONETHERAPY IN THE TREATMENT OF CHRONIC GASTRITIS

B.V.Sarancev, N.I.Nicolaev, S.V.Andosov, O.V.Maslennicov

N.Novgorod

A group of patients (20 persons) was treated with ozonetherapy. The recieved results showed that ozonetherapy resulted in decrease of inflammatory process activity in patients with gastritis. At the same time the direct connection between clinical results of ozonetherapy and

the degree of Helicobacter pylori was not found. There was also no evident connection between the results of ozonetherapy and parameters of local immunity which was evaluated by the character of infiltration.

METABOLIC CHANGES IN BLOOD OF PATIENTS WITH CORONARY DISEASE AFTER GROUP INHALATION OZONETHERAPY

Z.I.Mikashinovich, V.P.Terentjev, S.V.Shlyck, I.U.Stus, A.V.Ivanova

Rostov

Ghanges in gastransport function were revealed in blood of patients with myocardial ishemia after 12-14 days of inhalational ozonetherapy. These changes entailed improvement of tissue oxygenation processes.

The patients condition became better after ozonetherapy. No complications after the use of ozonetherapy were revealed.

THE EXPERIENCE OF OZONE /OXYGEN MIX APPLICATION IN COMPLEX TREATMENT OF PATIENTS WITH DISCIRCULATORY ENCEPHALOPATHY

A.A.Smirnov, A.V.Gustov, C.N.Kontorshchikova

N.Novgorod

Observation and treatment of 112 patients of I, II, III stage with accomponying atherosclerosis of cerebral, coronary vessels, hypertensive disease or their combination, mellitus diabetes, were performed. Positive clinical effect was revealed in the majority of patients (85 %).

APPLICATION OF OZONETHERAPY IN THE TREATMENT OF PERIFERAL NERVOUS SYSTEM DISEASES

J.P.Potekhina, S.P.Peretyagin, A.V.Gustov

N.Novgorod

Due to its ability to increase the blood microcirculation and the tissue oxygenation, ozone has found wide medical use in the treatment of several diseases. Ischemia has an important role in pathogenesis of periferal nervous system diseases (tunnel neuropathies, neurological anifestations of osteochondrosis).

Patients suffering from these diseases were submitted to the ozonetherapy in the form of the intravenous introduction of ozonized physiologic solution and the minor autohaemotherapy with ozone. Positive results were obtained in majority of patients.

CLINICAL AND EXPERIMENTAL ASSESMENT OF OZONIZED SOLUTION IN PROPHYLAXIS OF VEGETATIVE CRISIS

S.A.Kotov, A.V.Gustov, C.N.Kontorshchikova

N.Novgorod

Anxyolitic properties of ozonized solutions were studied on nonlinear rats. Panic attack pattern was created by intraabdominal injection of Na-lactate in the dosis of 600 mg/kg. Prophylactic injections of ozonized solution prevented the development of anxiety in rats. The effect of ozonised solution on emotional state and vegetative findings in animals were similar to that of Seduccenum. The further clinical tests confirmed ozonized solution efficiency in prophylaxis of panics attacs.

THE APPLICATION OF MEDICAL OZONE IN THERAPY OF THE RETINAL AND OPTIC NERVE PATHOLOGY

N.L.Malanova, A.A.Murzin, S.P.Peretjagin

N.Novgorod

Ozonetherapy was performed on the patients with different forms of retinal dystrophia and with optic nerve's pathology. The highest increase of visual acuity was revealed in primary stages of the optic nerve atrophy, retrobulbar neuritis and retinal dystrophia of the I and II stages.

OZONETHERAPY IN THE CRANYALOGY

V.M.Belopukhov, E.A.Chilap, N.D.Chichirova, O.A.Guryanov, J.V.Yurkevich, E.Z.Bikmukhametov, E.F.Mikhaylova, N.E.Pavlova, S.S.Flegontova, F.M.Rakhimov

Kazan

89 patients in the age group from 25 up to 65 years with neurologic diseases complicated by cranyalgy were treated by ozonetherapy. The ozonetherapy was prescribed when there were no effects from the traditional methods of treatment. Having recieved ozonetherapy the most part of patients showed good results. The mechanism of action and the influence of ozonetherapy is in detail study now.

APPLICATION OF OZONIZED INFUSION SOLUTIONS IN THE COMPLEX OF INTENSIVE THERAPY OF INFECTIONAL PATHOLOGY

V.V.Krasnov, M.Z.Chonin, V.F.Susanova, V.V.Moshkin

N.Novgorod

Considering arising pathologic changes, we have included the intravenous injection of ozonized solutions in the intensive therapy of infectional diseases. The basis of treatment was made by etiotropic preparations (antibacterial or antiviral) and detoxicational therapy, including infusion solutions and means of pathogenetic direction. The performed treatment resulted in the improvement of patients condition, the reduction of attributes of intoxication were marked.

THE PREVENTIVE MAINTENANCE OF EARLY COMPLICATIONS AT DAMAGES OF EYESIGHT WITH THE HELP OF OZONETHERAPY

N.L.Malanova, A.R.Zhanbaev, S.I.Miroshin

N.Novgorod

At processing of damages of eyesight, taking into account experience of a large surgery, we have included ozonetherapy in a complex system of processing the patients with damages of eyesight.

The result of treatment of 100 war victims with different methods of application of ozonetherapy is presented in the submitted work. The considerable decrease of incidence and severity of early infection complications is noted.

SYSTEMIC INFUSION OF DISSOLVED OZONE IN TREATMENT OF PATIENTS WITH DIABETES MELLITUS ACCOMPONIED BY PULMONARY TUBERCULOSIS

I.I.Belyanin

Moscow

2 groups of patients with mellitus diabetes on a background of longterm proceeding progressing destructive pulmonary tuberculosis extracorporal treatment have been conducted.

In both groups during 3 weeks indemnification of mellitus diabetes has taken place.

The question of action of the dissolved ozone injected intravenously which except bacteriostatic has the effect competitive in relation to insuline on membrane receptors, realizing effects through cyclic AMF, as well as the abilities of ozone to increase the concentration of insuline of blood and to eliminate the bias of regulating hormonal background.

OZONE AND GEMOCARBOPERFUSION IN TREATMENT OF PATIENTS WITH PROGRESSING PULMONARY TUBERCULOSIS

I.I.Belyanin

Moscow

In a case of steady progressing of tuberculosis with the absence of effect from reception during more than 4 months of 3-4 antituberculous preparations and immunostimulative therapy, gemocarboperfusion (GCP) with processing of blood by ozone, cycles on 3 (GCP) with 6-7 days interval was used.

In patients, where ozone and GCP were used in all the cases the stabilization of specific process was achieved.

The use of ozone without chemotherapy was less effective and extended the terms of stabilization of process and resulted in 2-3 months the further progressing.

A technique stabilizing the specific process by the use of 1/3 doses of antituberculous preparations is developed.

The used way does not increase peroxide oxidation of lipids and does not induce the weakening of antioxydant system.

IMMUNITY STATUS IN OZONETHERAPY PATIENTS WITH NEURODERMITIS

T.A.Glavinskaya, O.A.Ivanova, V.D.Komarova

N.Novgorod

Ozonetherapy by means of minor autohemoozone therapy and rectal insufflations was used for treating of 78 neurodermitis patients. Twenty six patients demonstrated clinical remission, 39 patients showed significant improvement, and 13 patients had small improvement.

Immunity status disturbance mainly demonstrated itself by decreasing of T-lymphocitis and T-supressors figures, and by increasing of IgG, IgM and fibronectin.

Immunity status figures and clinical picture dynamics have one-directional positive trend, and testify to the fact that pathogenetic effect of ozone is absolutely absent when the above- mentioned therapy methods are used.

OZONETHERAPY OF ALOPECIA AREATA

V.N.Zavadski, E.V.Glasirina

Yaroslavl

Oxygen tension of the skin was studied in 106 patients with alopecia areata in patches of alopecia and forehead skin by oxymanometric method.

Reduced oxygen tension in skin arterioles and capillaries in foci of alopecia and forehead skin were revealed. It refers to all the forms of disease (patchy, ophiasis, subtotalis, totalis).

Parallel oxygen in the hair on the verge with baldness zone was defined in same patients by the method of gas analysis which showed a sharp deficiency of oxygen especially with ophiasis and totalis forms of baldness.

After several courses of ozonization of the scalp a considerable raise of oxygen tension in the skin and significant increasing - in the hair was fixed in the patients with patchy and subtotalis alopecia.

The positive dynamics of the oxygen strain was noticed in the patients with ophiasis and total baldness, but it was lower that in the previous group.

Ozonetherapy was more effective than the traditional methods: the rate of patients with hair regrowth was higher and the effect came earlier.

THE CHANGES OF THE FUNGAL CELLS UNDER THE INFLUENCE OF ORGANIC OZONIDES (THE SCANNING ELECTRON MICROSCOPY)

G.I.Sukolin, W.W.Delektorskij, A.B.Yakovlev

Moscow

The investigation of the cells of T.rubrum and T.ment-agrophytes var. interdigitale with scanning Electron Microscopy was performed.

The following changes of the fungal cell wall: the defects of wall (their amount depends from the concentration of ozonides), the hilliness, the lack of alive macroconidia, the collaps of Hyphae wall, the breaching of the pipelike structure of the hyphae, the septas disappearing were revealed.

The ozonides show the effect first of all on the cell wall and then - on the inner structures. The results of the investigation confirm high antifungal efficacy of the ozonides.

OZONETHERAPY IN TREATMENT OF DISEASES OF ORAL CAVITY

I.N.Chuprunova, N.M.Shakchova

N.Novgorod

The present investigation concerns the study of ozonetherapy effect on course of the number of rare diseases of mouth cavity.

The traditional methods are not effective, the recurrences of disease are frequent.

The doctors faces the problem of search of optimal methods of treatment.

The methods of ozonetherapy presented by intravenous infusions of ozonized NaCI, saline and local applications of ozonized furacillini. The course of treatment was about 5-7 days.

The effectiveness of the treatment was evaluated according to the results of clinical observation and the number of laboratory data as well.

USE OF OZONETHERAPY IN DERMATOLOGY PRACTICE

I.R.Rasnatovsky, N.N.Tretiakova, G.L.Spichkin, S.V.Starostin, E.K.Chistov

St.Petersburg

At the St.Petersburg Medical University the ozone unit consisting of power supply, ozone generator, microcompressor and ozone decomposition block, mechanically united in one block and some aeration chambers was used for external antiseptic therapy.

Extremities affected with infectious skin process were placed into aeration chamber provided with sealing cuff. Ozone concentration in chamber - 1-3 g/m 3 , time of sitting – 30 min, number of sittings - 10-15.

For all the patients well marked positive effect in the form of failing infectious affection of skin was obtained. Endurability of ozonetherapy is good, no complications and side effects were observed.

CLINICAL EXPERIENCE OF OUTSIDE APPLICATION OF ORGANIC OZONIDES FOR THE TREATMENT OF DIFFERENT SKIN DISEASES

A.B.Yakovlev, Mochamad Shikari-Yadzi, Mochamed Yusuf, V.G.Posdneev, G.I.Sukolin

Organic ozonide is peroxide of unsaturated fatty acid with nonspecific fungi-, bacteria, and virulicidal action.

The preparation has the properties of a tissue biostimulator, promotes fast recovery of wounds and trophic ulcers.

Organic ozonides were applied for the treatment of trophic ulcers (2), bacteritic eczema (4), simple herpes (15), acnes (3), chronic ulcerated pyoderma (3), skin candidiasis (3) and candidiasis of mouth cavity and some other diseases.

In all the patients positive effect was marked. The best results were received in patients with chronic pyoderma, trophic ulcers, herpes. Thus, the clinical supervision showed high efficiency of preparations of organic ozonides at a rather wide spectrum of a dermatological pathology.

OZONETHERAPY IN SKIN DISEASES

S.L.Krivatkin, E.V.Krivatkina

N.Novgorod

Ozonetherapy was carried out in 452 out-patients suffered from acne and rosacea (73), Alopecia (33), tinea pedis (15), eczema (63), herpes (95), lichen planus (24), neurodermatitis (26), psoriasis (37) and arthritis (2), pyoderma (67), localized scleroderma (5), venous leg ulcers (12).

The next therapeutical results were obtained: disappearance of clinical picture and considerable improvement - in all the patients with herpes and tinea pedis, 95% of the patients with pyoderma, 75% with eczema, 40% - acne and rosacea, 2/3 - alopecia, lichen planus and neurodermatitis, 3/5 - psoriasis, in 2 out of 5 with scleroderma and 5 out of 12 with venous leg ulcers

OZONETHERAPY IN COSMETOLOGIST'S PRACTICE

E.V.Krivatkina, S.L.Krivatkin

N.Novgorod

61 patients suffered from acne vulgaris (52, 28 - papular and 22 indurative forms), acne conglobata (2) and classic form of rosacea (9) were treated with the use of ozonetherapy (autochemotherapy minor) under the observation of dermatologist-cosmetologist.

Disappearance of clinical picture was registered in 5 cases (10%), considerable improvement in 15 (29%), improvement in 26 (50%), no positive effect in 6 (11%).

The group of comparison (the same 10 patients treated with routine autochemotherapy before) showed the same degree of therapeutical results in, respectively, 0, 1, 4 and 5 cases.

Part 3:

Sanitary and Hygiene Aspects of Ozone Use

PROPHYLAXIS OF HOSPITAL INFECTION BY OZONE

A.P.Medvedev, A.N.Monachov, A.B.Gamsaev, V.A.Chiginov, I.A.Gomosova, V.V.Sokolov, E.S.Sargina, O.N.Vorobjova

N.Novgorod

One of the most important reasons of increase of purulent - septic complications in cardiosurgical hospital is the formation of vari-ous conditional - pathogenic bacterias.

The formation of them is promoted by the organization of large hospital complexes, in which favorable conditions for wide circulation of conditional - pathogenic microflora are developed, the use of complex therapeutic and diagnostic equipment, the increase of operative activity of patients with infectional endocarditis with gemodynamic and septic polyorganic insufficiency.

The modern means of preventive maintenance of hospital infection and struggle against it give satisfactory results only at careful observance of the whole complex of known measures.

The opportunities existing at present are improved by active introduction of technical achievement of survey of new ways of suppression of pathogenic activators and increase of antibacteritic resistance of the organism.

With the purpose of preventive maintenance and treatment of purulent - septic complications in hospital period since 1992 in the branch of bought defects of heart, the engaging surgical treatment of infectional endocarditis, applies method of ozoneoxygen processing of chambers and isolator, where the patients with postoperative infection were.

The efficiency of the method was evaluated on on the change of bacterial pollution of air, the frequency of postoperative purulent - septic complications currence and the results of their treatment.

The decrease of bacterial pollution of air was achieved on the background of regular ozonization application of surgical chambers.

Among patients with heavy postoperative purulent - septic infection induced by Ps.aeruginosae, on the background of ozone application in all observable cases the termination progressing of osteomielitic process of breast and edges, maintenance of the sterility of wounds and their complete recovery has achieved.

Thus, the use of ozoneoxygen mixtures in the complex of hospital and antiepidemic measures promoted the decrease of purulent - septic complications in postoperative period and the improvement of results of their treatment.

OZONE TREATMENT AS THE MOST EFFICIENT TECHNIQUE FOR IMPROVING SANITARY CHARACTERISTICS OF WATER QUALITY

A.L.Vasilyev, L.A.Vasilyev

N.Novgorod

This technology is proposed for drinking water treatment, where primary ozone treatment is combined with application of some devices based on self-purification capacity of water bodies, thus radically reducing the need to apply chemicals. The technology has passed the tests and is introduced in a number of water treatment facilities.

NOTES ON QUALITY OF DRINKING WATER

V.V.Naidenko, L.A.Vasilyev, A.L.Vasilyev, M.M.Vasilyeva

N.Novgorod

It is noted that increasing manmade impact on water sources has resulted the failure of existing water treatment facilities to act as a reliable barrier in microbial contamination and virus infection control. It is concluded that reducing the application of chemicals in drinking water treatment processes is an urgent need.

THE STRUCTURE OF AIR MEDIUM MICROFLORA AT OZONATION OF THE ROOM OF THE TEXTILE ENTERPRISE

V.I.Seguru, O.Yu.Kuznetsov

Ivanovo

The using of the ozonation measures at the textile enteprise is very important and complex problem because the ozonation influences at microorganizms and macroorganizms of the workers at the same time. The change of the air structure of medium microflora was investigated.

Ozone passed in the room of the textile enterprise through the conditional system and the results showed the active structure change of the active structure of air microflora.

The increasing of the fungi growing after the influence of the little concentration of ozon was found.

THE EFFECT OF OZONIZATION OF AIR ENVIRONMENT ON STUDENTS' MOBILITY AND CAPACITY TO WORK

V.Deputatov

Shuya

During 3 months researches were held to find out the direct effect of ozonization of air environment on students' mobidity and productivity of work using 1/3 doze of ozone concentration permitted.

The results are the following: deminuation of microbe pollution in the air environment, 9-fold decrease of the relatively pathogenetic flora, absence of gemolitic microflora. The testified students showed the raise of productivity and capacity for work.

The number of students liable to catar rahal diseases was 2-fold less than common to all people of the town and 2,8-fold less than common to all students.

THE USE OF OZONE FOR DISINFECTION OF MEDICAL ARTICLES

E.P.Bel'kov, A.A.Vargauzin, V.G.Konovalov, V.I.Lagoiko, G.L.Spichkin, S.V.Starostin, E.K.Chistov

St.Petersburg

The use of ozone as disinfectant is extremely effective, as it allows to sterilize at room temperature. Base model of ozone sterilizer of 10 litres in volume and ozone working concentration - 5-7 g/m 3 was designed. Investigation of efficiency of ozone action to stable spore test-culture has revealed that even intricate articles with joints and ribs can be sterilized by ozone.

DISINFECTION AND STERILIZATION WITH OZONE AT THE GAS PHASE

Y.L.Spiridonov, N.M.Sidorov, M.A.Pyanzin

Ivanovo

For disinfection indoors with ozone at the gas phase the family of ozonizers with production of 17,25 or 50 g O 3 per hour has been developed. The ozonizers have passed the test to satisfaction to apply for health service, agriculture, food industry and transport. There is economical, social and ecological effiency of ozone disinfection method.

THE USE OF OZONATION FOR THE INCREASE OF IMMUNISED REACTIVITY OF SPINNERS

E.V.Garasko

Ivanovo

Artificial ozonation of recirculating air in the conditioning system of sprinning production was used. As a sanitation measure ozonation increased the barrier function of frontier tissues and supported organism reactivity of spinners at the high level

DISINFECTION OF CHICKENS EGGS BY OZONIZED AIR

S.A.Rudelev, O.E.Bulatov, V.G.Nasarov, I.A.Poncrashov

Ryasan

Ozone has found wide application in industry during the last twenty years. During three years in Ryasan the disinfection of eggs by ozone-air mix has been carried out before the incubation.

The simultaneous processing of 25 thousand of eggs in plastic boxes was executed in a tight chamber in volume 36 м 3. A digit block of the ozonator with the productivity 15 g of ozone in a hour was strengthened above the chamber, supply unit and managements were placed behind its limits.

After inclusion of the ozonator the concentration of ozone grew up to 250-300 mg/m 3 , the uniformity of distribution of ozone was provided with the speed of ozonized air more than 1,5 m/s. The offered circuit of ozonization excluded the necessity of preliminary preparation of air and does not require water cooling.

From 192 procedures, executed in 1994, in 177 cases after the hour of ozonization the microflora on the shell was completely destroyed.

APPLICATION OF OZONE FOR DISINFECTION MUNICIPAL SEWAGE

V.Z.Klochikhin

The most optimal dose on ozone expenditure and stable bactericidal effect is the dose of 5,0-7,5 mg O 3 /l for disinfictation of biologically refined sewage at the station of recleaning.

Part IV:

Ozone Devices

And Equipment

MEDICO -TECHNICAL ASPECTS OF OZONETHERAPEUTIC METHODS

A.V.Ivanova, V.P.Terentjev, S.V.Shlyck, Z.I.Mickashinovich

Rostov

We have made apparatuses for ozonetherapy, which permit to make necessary concentration of ozone on the outlet of the ozonator (individual inhalational ozonetherapy) and in the air of the ward with taking into account its real capacity (group inhalational ozonetherapy) with regard to the background of ozone in concrete region.

PRINCIPLES OF EXPERIMENTAL EFFICIENCY ASSESSMENT OF DIFFERENT MEDICAL OZONATORS

T.M.Gassanov, I.S.Bogatova, L.S.Puchkova, V.O.Tsvetkov

Moscow

The paper deals with the description of the original method of determination of the ozone bactericidal - efficient concentration and exposition for the most impotant microbes of an experimental pathogenic microflora.

The studies have shown that the application of the new method allows to reveal ozone optimal parameters (concentration and exposition) as well as to evaluate the efficiency level of different medical ozonators.

SOME PROSPECTS AND TENDENCES OF DEVELOPMENT OF OZONATORS FOR THE MEDICAL PURPOSES

V.I.Karelin

Arzamas-16

The analysis of the tendencies of development and the forecast of the main directions of development of the ozonetherapeutic equipment is given.

The potentially possible level of technical realization of medical ozonators and service instruments, developed on modern physical principles and element base. The results of researches, directed on creation of ozone therapeutic instruments are indicated.

IMPULSE-PERIODIC SYSTEMS OF OPERATING OF OZONE BY THE CATEGERY OF MICROSECUND DURATION AT FREQUENCES OF RECURRENCE UP TO 50 KGC

S.N.Buranov, V.V.Gorochov, V.I.Karelin, P.B.Repin

Arzamas-16

The results of researches on creation of impulse-periodic discharge systems of operating of ozone for the medical purposes are submitted.

It is shown, that for maintenance of a wide range of target concentration of O 3 it is expediently to adjust the frequency of digit pulses at rigidly fixed energy contribution to each pulse and flow of gas.

The application of semi-conductor converters and cores on the basis of amorphous alloys has allowed to develop the impulse-periodic highly stable power supplies of ozonators, working with frequency of reccurences of pulses in a range 0-50 Kgc at a target voltage up to 20 kv and a duration of energy contribution 0,1-5 mks.

The stabily of energy parameters of pulses is not less then 3 %. The sources were used for creation of medical ozonators with the target concentration of O 3 .

OZONE GENERATOR -BUILDING PROBLEM SOLVING IN OZONE PRODACTION AND APPLICATION IN HEALTH PROTECTION AND MEDICINE

V.N.Vigdorovich, Yu.A.Ispravnikov, V.G.Lavrik, E.A.Nizhade-Gavgani

Moscow

In elaborations, intended for biology and medicine, the ozone generator builders take into consideration non-selectivity of ozone action on chemical substances and living organisms, and also non-complete selectivity of ozone production from oxygen in the air.

Taking into consideration that with ozone treatment, the chemical aspect is connected with considerable relative separation, and unattainability of absolute separation, and in biological aspect – with absolute sanitary measures or reanimation.

In modern ozone generators, the extra-absorbtion or destruction of unused ozone is envisaged.

Ozone generators of "Ozonit"- type provide for precision ozone - air mixture production with ozone concentration from 8 to 30 mg/l and ozone production from 10 to 3000 g/h.

NON -SELECTIVITY OVERCOMING OF THE CHEMICAL AND BIOLOGICAL OZONE ACTION BY COMPLEX ARRANGEMENT OF ITS PRODUCTION AND APPLICATION

V.N.Vigdorovich, M.A.Karimbekov

Shatura

The realization of the ozone selective action on chemical substances and organisms is in combination of ozone technology ones.

The scientific and practical progress in this trend. Is seen in the creation methodology of the successive scale row for ozone production (scale of differences, scale of order, scale of intervals, and scale of relations) and the establishing of their accordance with scales of wishes for ozone production.

It is shown that the theory of oddness set is unwarrently complex the empiric way with the regressive analysis application is simpler, practically enough, but theoretically not deep

THE SMALL - SIZED DIMENSIONED OZONE GENERATOR "AIROZONE" FOR ROOM STERILIZATION

D.V.Gorburov, V.A.Zhukov, V.V.Panjushkin

Moscow

The characteristics of small ozone generator "Airozone" are given in the submitted work. The opportunities of its usage for air enviroment sterilization of medical establishments are indicated (productivity on ozone is 0,2 g/h, on air 100m 3).

COMPACT HIGH-FREQUENCY OZONATORS FOR SANITATION AND DESINFECTION

S.W.Shapiro

Ufa

The compact high-frequency ozonators (productivity 10-50 g/hour). Ozonator's gabarits are 0,25/0,4/0,5 m, mass 12 kg., concentration of ozone - 0,5-10 g/m 3 .

COMPLETING COMPONENTS FOR OZONETHERAPY FROM CONSUMER AND MEDICAL GOODS

A.A.Kostyaev, V.I.Panteleev

Kirov

The most important place in the development and installation of ozonetherapy is occupied by the completing components.

The authors worked out and made from plastic bottles for soft drinks, containers for the storage of blood and its components, ceramic pulverizers of gas.

In the liquid, medical runners, the completing components for the most often used methods of Ozonetherapy.

Positive references were received from the specialists and the patients.

They marked the simplicity of making, low prices, safety and effective ness of the original projects in their use in the specialized medical institutions and at home.

OZONATOR FOR THE MEDICAL PURPOSES

S.N.Buranov, V.V.Gorochov, V.I.Karelin, P.B.Repin

Arzamas-16

Description and characteristics of the portable medical ozonator intended for realization of therapeutic procedures with the use of ozone-oxygen mixes with the concentration of ozone from 1 up to 5000 mkg/l and preparation of ozonesaturated solutions is submitted.

Besides a wide range of target concentration of ozone, features of a design of the instrument is the presence of a filter of a source flow of oxygen, a tight plug for a fence of ozone in syringe and the pump, ensuring the opportunity of realization of processing the skin surface with ozone-oxygen mixes at lowered pressure.

The instrument has a built-in timer, digital indication of given concentration of ozone and time of realization of a procedure, light and sound indication of modes of operations.

ELASTIC TRANSPARENT MATERIALS AND GOODS FOR OZONETHERAPY

Yu.V.Ovtchinnikov, V.N.Malyshev

Dzerginsk

The spectral characteristics of materials permit to use them in contact with ozone in any climatic conditions (closed & opened apartments, field, high solar radiation) without the destruction of O3.

On the basis of these materials design of elastic covers for the ozone treatment of hands, feet, body as well as elastic transparent pipes, used fo the supply of O 3 from ozonato to covers is developed.

THE MEDICAL OZONE GENERATOR

V.I.Panteleev, A.K.Panteleeva, J.P.Rasuvaev, J.L.Toropov

Kirov

The submitted work includes the results of the joint work in the creation of portable ozone generators for scientific researches and medical application. The work with this mount is simple and reliable in hospitals.

NEW OPPORTUNITIES OF ANALITIC INSTRUMENTS WITH OPTICAL AND CHEMILUMINESCENT SENSORS (OZONOMETRY)

V.P.Chelibanov, A.Y.Bryukchanov, V.A.Polischyuk

St.Petersburg

An examination of current developments of ozone analysers designed on the basis or ultraviolet absorbtion and hetereous chemiluminescence is presented. The main technical characteristics such as selectivity, sensitivity, dynamic range, response time and service life of instruments are compared.

The results of presented examination are given in the form of recommendation for applications of each type of sensors. The metrology problems of developed sensors and instruments designed on their basis are discussed.

OZONE - SORBTION INSTALLATION FOR PERFECT PURIFICATION OF DRINKING WATER "AQUOZONE"

D.V.Gorbunov, V.A.Zhukov, V.V.Panjushkin, A.V.Petrov

Moscow

The technological circuit, the characteristics and the field of application of "Aquozone" installation for drinking water treatment are indicated in the submitted work.

The installation provides the clearing of water. The base model of installation is designed for preparation of 5 м 3 of drinking water in a day.

APPLICATION OF "MICROZONE" AND "AEROZONE" DEVICES IN THE MEDICINE

M.F.Zarivtchatski, I.M.Kirko, G.E.Kirko, I.N.Mugotarov, I.V.Popova

Perm

The devices like "Microzon" and "Aerozon" in which the ozone generator is executed in the form of flat packet of electrodes and dielectrical plates using for the treatment of infected wounds of different kinds and also for the sterilization of the suture, drainages and some surgical instruments have been worked out.

ACOUSTICAL METHOD AND APPARATUS FOR STATE CONTROL OF PATIENT DURING OZONETHERAPY

V.A.Klemin

N.Novgorod

New acoustical method of serum blood and saliva analyses and apparatus for its realization have been worked out. The method is based on mesurements of acoustical parameters of natural and modified serum blood and saliva of patients. Apparatus is a computerised system which automatically carries out the calibration and measurements of serum blood and saliva acoustical parameters.

Method and apparatus are applicated for state control of patients during ozonetherapy that have shown the dependance of acoustical parameters of investigated media and patient state.