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OZONETHERAPY FOR CORONARY HEART DISEASE

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ABSRTACT

Ozone treatment refers to physiotherapeutic methods and, first of all, should contribute to the effectiveness of the main course of treatment. Ionized oxygen has a profound stabilizing effect on the metabolic processes in the tissues of the heart and blood vessels. With the help of ozone therapy sessions, it is possible to significantly improve the quality of life for a sick person. The problem of treating patients with coronary heart disease (CHD) is urgent due to the increasing frequency of the disease. CHD is a disease of the heart muscle caused by a violation of the balance between coronary blood flow and the metabolic needs of the heart muscle. In recent years, medical ozone has been used to normalize the oxygen supply of tissues. By changing the structure of membrane lipids, ozone increases the deformability of erythrocytes and thereby improves the rheological properties of blood. It has a vasodilating effect, significantly improves the oxygen output by oxyhemoglobin.

Keywords: coronary heart disease, ozone therapy, ozonated saline solution, rectal insufflation, sanatorium treatment.

INTRODUCTION

The main objectives of the rehabilitation treatment of patients with ischemic heart disease (CHD) are normalization of blood supply to ischemic areas of the myocardium, reduction of the degree of ischemic remodeling, cytoprotection of cardiomyocytes, prevention of endothelial coronary dysfunction, improvement of blood rheology and correction of lipid metabolism. In recent years, medical ozone has been used to normalize the oxygen supply of tissues. By changing the structure of membrane lipids, ozone increases the deformability of erythrocytes and thereby improves rheological properties of blood. It has a vasodilating effect, significantly improves the oxygen output by oxyhemoglobin. The above poses a task for clinicians to further study the effect of the ozone therapy method both in the form of mono- and as part of traditional therapy in patients with coronary heart disease. In addition, the high degree of allergization of the population, the need for long-term use of

medications fror combined diseases of the cardiovascular system in connection with the aging of the population serve as the basis for the search, development and introduction of new non-drug methods of their treatment. Such methods include ozone therapy. Medical ozone, being a natural non-drug physical factor, is able to resist oxidative stress due to stimulation of the antioxidant system, that is, it has an indirect antioxidant activity. The value of ozone in coronary heart disease is to improve oxygen delivery and metabolic processes, which affects the redox reactions occurring in the respiratory chain of mitochondria, improves the rheological properties of blood, reduces the total peripheral vascular resistance, normalizes lipid metabolism, improves microcirculation in tissues, increases nonspecific resistance of the body. In addition, it contributes to the better use of arterial oxygen in relieving hypoxic conditions and restoring cell functions.

Purpose of the Work

To study the clinical efficacy of ozone therapy at the stage of rehabilitation treatment of patients with coronary heart disease.

Materials and Methods

The study was open and randomized, duration — 12 days. The examination of 40 patients with coronary heart disease — angina pectoris of functional classes (FC) I and II aged 42 to 78 years (average age 57.8 ± 0.6 years) was carried out. There were men 51.0%, women — 49.0%. For a comparative assessment of the effectiveness of the therapeutic effect of OST, the first main group (MG-1) was allocated in the amount of 15 people, who were injected intravenously with an ozonated saline solution in the amount of 200 ml with an ozone concentration of 2.5–3.0 mg / l, obtained on a medical ozonizer of the Medozon company 2-3 times per week (7 procedures in total). The second main group (MG-2) is represented by 13 patients who received antianginal drugs and an ozone-oxygen mixture in the form of monotherapy in the same mode as patients of MG-1. The first control group (CG-1) consisted of 8 people who received conventional treatment without ozonetherapy. The second control group (CG-2) included 5 people who were prescribed the same treatment as the MG-1 patients, but only the ozonetherapy method was replaced by placebo (200 ml saline solution was administered intravenously). Prior to inclusion in the study, 6 (15.5%) patients did not take medications. The remaining patients (34 people — 84.5%) received basic drug therapy in an individually selected dose for arterial hypertension (AH) and coronary heart disease in the form of beta-blockers (6 people — 19.1%) or prolonged nitrates (5 people - 15.3%). Patients with coronary heart disease (stable angina

pectoris FC II) in the amount of 15 (45.0%) people with hypertension and left ventricular hypertrophy, angiotensin converting enzyme (ACE) inhibitors were taken. Combination of beta-blockers with ACE inhibitors were used by 7 (20.6%) people.

Results

During clinical observation of patients of the examined groups during treatment, attention was paid to the dynamics of the main feature of coronary heart disease — pain syndrome in the heart area. At the same time, its frequency, duration and severity were taken into account. By the end of treatment , anginal attacks in MG-1 in 9 (63.6%) patients, decreased in 5 (36.4%), and in the MG—2 group these indicators were 60.0 and 38.0%, respectively. In the control groups, anginal attacks stopped only in 3 (33.3%) people. The rate of cessation of anginal seizures in patients of the main groups compared with CG-1 was statistically significant. The inclusion of an ozone-oxygen mixture in the complex treatment of patients with coronary heart disease, as well as its use in the form of monotherapy, provided statistically there is also a significant positive effect on the frequency and duration of anginal attacks, especially in the first 5 days of treatment compared to the control. Antianginal efficacy in the examined individuals of the main and control groups was assessed by the tolerance of physical activity by determining the walking distance (in meters) on flat terrain at an average pace in patients with coronary artery disease (stable angina pectoris FC II) before the onset of angina pectoris at the beginning and end of the recovery period. It was noted that against the background of treatment with the use of OZT, a statistically significant increase in walking distance was determined in the main groups, respectively, by 33.0 and 23.2%, while in CG-1 it was only 10.3%. At the same time, the frequency of anginal attacks per week in MG-1 and in OG-2 by the end of treatment decreased from 4.3 ± 0.8 to 1.2 ±0.3 and from 4.6 ± 0.9 to 1.6 ± 0.5, respectively, which was statistically significant compared to CG-1 ($p < 0.001$).By the end of treatment, the cessation of angina seizures was observed only in 35.0% of patients receiving placebo, and in the group of examined individuals who received OZT in complex treatment, this indicator was higher — 63.6%, which indicated a statistically significant difference.

It should be noted that with the cessation of anginal seizures or with a decrease in their frequency and duration, it became possible to reduce the dose of antianginal drugs or their complete withdrawal in some of the examined patients. Positive dynamics of subjective and objective manifestations after 5 days and by the end of treatment (12 days) was noted in all four groups of patients. The frequency of positive

clinical effect between the control and main groups of patients by the end of treatment was $p < 0.001$, the differences are statistically significant.

ECG indicators in patients receiving ozonetherapy both in complex treatment (AH-1) and in the form of monotherapy (AH-2) indicated an improvement in the processes of myocardial repolarization (restoration of the amplitude of the T wave in patients with negative or two-phase T waves, an increase in the amplitude of the R wave), a decrease or complete disappearance of extrasystoles, a decrease in left ventricular overload. Moreover, the most pronounced positive dynamics was recorded in MG-1.

A positive therapeutic effect was obtained in patients of the main groups of coronary heart disease in combination with hypertension. The course of ozonetherapy in MG-1 contributed to statistically significant decrease in blood pressure (BP), both systolic (157.2 ± 2.85 — 136.9 ± 1.48 mmHg) and diastolic (95.6 ± 1.48 — 82.7±0.78 mm Hg). A significant statistically significant decrease in blood pressure by the end of treatment was also noted in MG-2. In CG-1 and in the group of patients receiving placebo (CG-2), blood pressure indicators remained unchanged. In during the treatment of these individuals, the target level was reached in 70.0% of cases. In patients with persistent hypertension, the use of ozonetherapy was effective only in combination with antihypertensive drugs, which in some cases were used in smaller doses.

When comparing the baseline parameters of the lipid spectrum of blood serum of patients with CHD with similar data of healthy individuals marked changes in lipid metabolism in the direction of improvement. The content of total cholesterol in the blood serum of patients with MG-1 after On day 12, it decreased statistically significantly — from 5.78 ± 0.21 to 4.9 ± 0.17 mmol/L. The concentration of low-density lipoprotein cholesterol decreased by the end of treatment from 3.70 ± 0.21 to 2.86 ± 0.11 mmol/l. In this group, there was also a statistically significant decrease in triglycerides. In the group of patients with monotherapy also revealed positive dynamics of all lipidogram indicators, which statistically significantly differed from those of patients treated with conventional methods. The average duration of remission in the main groups was approximately the same and amounted, respectively, 7.5 ± 0.5 and 6.8 ± 0.5 months, and in the control — 4.4 ± 0.7 months.

Discussion

The obtained research results indicate the high efficiency of the ozone therapy method as a training factor for increasing the functional reserves of the cardiovascular system. The adaptive capacity of the body in response to physical exertion under the influence of ozone therapy has increased in most patients, which is an important reserve in

increasing the effectiveness of their rehabilitation. A comprehensive clinical, laboratory and instrumental examination confirmed the concept that the use of ozone therapy for angina pectoris significantly increases the effectiveness of conventional treatment in a temperate continental climate Of the Republic of Uzbekistan by activating oxygen supply mechanisms, increasing the functional reserves of the cardiovascular system and stimulating adaptive systems.

Conclusion

1. The inclusion of ozone therapy in the restorative complex treatment of patients with coronary heart disease has a positive effect on the clinical manifestations of the disease and improves the blood lipid spectrum, which reduces the risk of cardiovascular complications.
2. Treatment with an ozone-oxygen mixture provides an antihypertensive effect, the average daily level of systolic and diastolic blood pressure significantly decreased in patients of the main group.
3. Parenteral administration technique the ozone-oxygen mixture expands the possibilities of treating patients with coronary heart disease with stable angina pectoris (FC I and II), including those with a high risk of complications and in the presence of concomitant diseases.
4. Ozone therapy is a highly effective and promising natural non-drug methods of restorative treatment of patients with coronary heart disease.

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