Ozone Therapy Mode for the Treatment of Diabetes Mellitus

Oleg V. Maslennikov, Vladimir F. Bolgov, Olga A. Bolgova, Irina A. Gribkoba, Elena E. Pavlovskaya-Terry

Department of New Medical Technologies, Nizhny Novgorod State Medical Academy, 6-Nartova str., Nizhny Novgorod, 603104, Russia - info@ozonetherapy.dtn.ru

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Abstract

Ozone therapy has become an effective treatment for the patients with diabetes mellitus. At the same time the problems of the treatment optimization are still actual. Therefore this paper proposes an ozone therapy mode for the treatment of diabetes mellitus, which includes: intravenous infusions of the ozonated saline; minor autohaemotherapy; subcutaneous injections of gas mixtures into trigger points; injections of gas mixtures into biologically active points; flowing gassing in plastic camera. The course of the treatment is intended for 3 weeks.

We supervised the group of 94 patients suffering from insulin-dependent and insulin-independent diabetes.

The positive effective of the treatment was obtained for 92% of the insulin-dependent and 88% of the insulin-independent patients. It appeared in the decrease of the hyperglycemia, diminish of the thirst, disappearance of the polyuria, skin itch, weakness and etc.

After the ozone therapy course their average level of the hyperglycemia was decreased by 26%. The dose of the insulin was diminished by 16% for the 1/3 of the patients. The dose of the oral sugar-reducing remedies was reduced by 32% for the 1/4 of the patients with insulin-independent diabetes.

The intravenous infusions of the ozonated saline were found out to be effective for the elimination of the tissues hypoxia, because patients with diabetes mellitus have a prevalence of the glycated hemoglobin, which has a strong bond with oxygen. We observed the diminish of the glycated hemoglobin for all treated patients. The application of the ozonated saline is particularly recommended for the patients with complications in the form of the diabetic foot with purulent-necrotic and other inflammatory lesions, as it reliably diminishes endogenous intoxication. If the minor autohaemotherapy is prescribed, it is necessary to consider its immunomodulatory action. Subcutaneous injections of gas mixtures into trigger points are used for the removal of the pain syndrome under the diabetic polyneuropathy. Injections of ozone-oxygen gas mixtures into biologically active points are aimed to improve the microcirculation for the prevention and treatment of the angiopathies. Flowing gassing in plastic camera is applied if the pyoinflammatory complications are present for the patients with diabetic foot.

The intravenous infusions of the 200 ml of the ozonated saline with ozone concentration of 1-3 mg/l are made every other day. The minor autohaemotherapy is applied 2 times a week. Subcutaneous injections of gas mixtures into trigger and biologically active points and flowing gassing in plastic camera are done, if necessary, every other day.

One of the main indicators of the effective diabetes mellitus treatment is the achievement of the compensated status, which was obtained for the most of the patients. In accordance with the acquired data the number of the compensated patients increased in almost 4 times and the number of the patients with the decompensated status decreased in 5 times.

The positive effect of the conducted ozone therapy course lasted from 3 to 6 months.

Introduction

Diabetes mellitus is the serious illness which is widely spread. The number of the patients with diabetes is constantly increasing. In 1996 there were 135 million diabetics of the 2nd type in the world. It is suggested that their number will increase up to 300 million in 2025. The long-term increase of the glucose level in the blood leads to the irreversible changes in the blood vessels, kidneys, nervous system, eye structures. After 15 years of the disease 2 % of the patients become blind and 10 % have progressive visual impairments. The diabetic foot syndrome is observed for 30-80% of the patients.

Ozone therapy has become an effective treatment for the patients with diabetes mellitus. It is due to the ozone action which leads to the decrease of the glucose level in the blood, reduction of the tissues hypoxia, improvement of the microcirculation and rheology of the blood. The ozone therapy effectively prevents and struggles the complications of the diabetes mellitus such as a diabetic foot. The immunomodulatory action of the ozone is also very important.

At the same time the problems of the treatment optimization are still actual. Therefore this paper proposes an ozone therapy mode for the treatment of diabetes mellitus.

Material and methods

We supervised the group of 94 patients suffering from insulin-dependent and insulin- independent diabetes. The different methods of ozone introduction were used. The treatment of diabetes mellitus included:

- intravenous infusions of the ozonated saline;
- minor autohaemotherapy;
- subcutaneous injections of gas mixtures into trigger points;
- injections of gas mixtures into biologically active points;
- flowing gassing in plastic camera;

The intravenous infusions of the 200 ml of the ozonated saline with ozone concentration of 1-3 mg/l are made every other day. The minor autohaemotherapy is applied 2 times a week. Subcutaneous injections of gas mixtures into trigger and biologically active points and flowing gassing in plastic camera are done, if necessary, every other day.

The course of the treatment was intended for 3 weeks.

Results and discussion

The results of the proposed above treatment mode for 94 patients suffering from insulin-dependent and insulin-independent diabetes are given in the tables below.

Table 1

Ozone Therapy Effect in Patients with Insulin-dependent Diabetes

Severity of Disease	Number of Patients	Results of Treatment		
		Good	Satisfactory	Unsatisfactory
Mild	-	-	-	-
Moderate	17	15	2	-
Severe	10	10	-	-
%		92 %	8 %	-

Table 2

Ozone Therapy Effect in Patients with Insulin-independent Diabetes

Severity of Disease	Number of Patients	Results of Treatment		
		Good	Satisfactory	Unsatisfactory
Mild	14	14	-	-
Moderate	47	40	-	7
Severe	6	5	-	1
%		88 %	-	12 %

It can be seen from the tables above that the positive effective of the treatment was obtained for both insulin-dependent and insulin-independent patients. It appeared in the decrease of the hyperglycemia, diminish of the thirst, disappearance of the polyuria, skin itch, weakness and etc.

After the ozone therapy course their average level of the hyperglycemia was decreased by 26%. The dose of the insulin was diminished by 16% for the 1/3 of the patients. The dose of the oral sugar-reducing remedies was reduced by 32% for the 1/4 of the patients with insulin-independent diabetes.

Figure 1 shows the dynamics of the glucose level in the blood during the ozone therapy treatment.

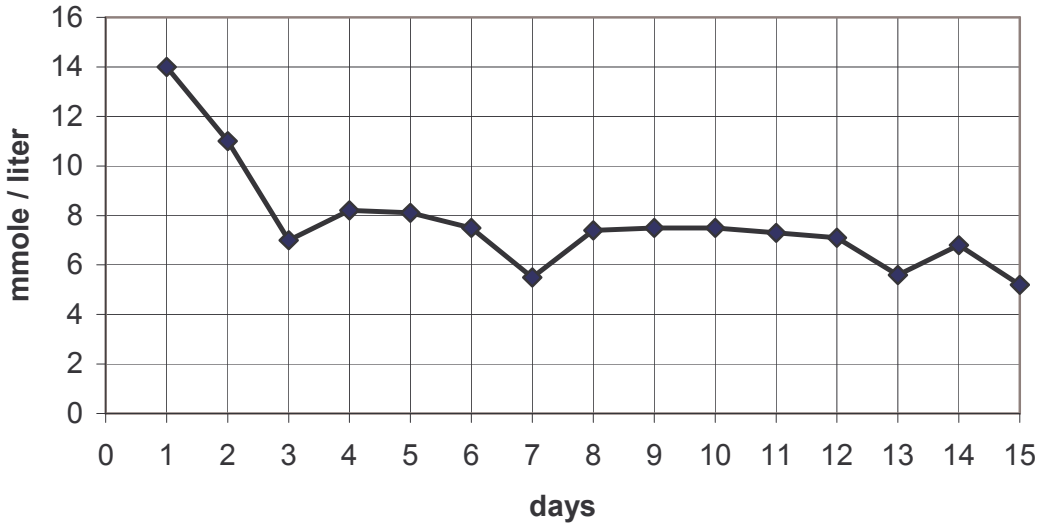

Figure 1. Dynamics of the glucose level in the blood of the patient (50 year old) with insulin independent diabetus

The intravenous infusions of the ozonated saline were found out to be effective for the elimination of the tissues hypoxia, because patients with diabetes mellitus have a prevalence of the glycated hemoglobin, which has a strong bond with oxygen. The glucose exchange activation under the ozone action leads to the intensification of the 2,3-diphosphoglycerate generation which facilitates the oxygen entry in the tissues.

We observed the diminish of the glycated hemoglobin for all treated patients. The 70% decrease of the glycated hemoglobin concentration for the decompensated patients was observed by N.N.Atyasov and I.A.Gazin (Атясов Н.И., Газин И.К. [1]).

Different antihypoxic actions of the ozonated saline were shown for the patients with diabetic foot by N.I. Atyasov [2]. In that work the 4 groups of patients were investigated. The patients of the first group had the saline infusions where saline had been enriched with pure oxygen only. The patients of the second group had the intravenous infusions of the ozonated saline. The third group of the patients had the intra-arterial injections of the ozonated saline. The fourth group of patients had the intraosseous introduction of the ozonated saline into the calcaneum. The oxygen tension results for the skin of the affected extremity obtained during that study are shown in the Table 3.

Table 3

The oxygen tension in the skin of the affected extremity under different methods of the ozone therapy

Groups of patients	Before ozone therapy	At the end of the ozone therapy procedure	In one hour after procedure	After the treatment course
1st group (n=20)	38,40±1,5	-	-	40,52±1,12 P<0,05
2nd group (n=20)	38,00±1,72	44,02±0,92 P<0,05	40,62±1,10 P<0,05	43,91±1,07 P<0,05
3rd group (n=10)	37,20±0,90	50,69±1,15 P<0,05	45,93±1,12 P<0,05	49,71±1,51 P<0,05
4th group (n=10)	37,95±0,89	52,01±0,99 P<0,05	50,00±1,18 P<0,05	51,52±1,72 P<0,05

The results presented in the Table 3 indicate the different increase of the tissues oxygenation.

The positive effect of the ozonated saline on the lipidic metabolism was registered. This effect appeared in the decrease of the β-lipoprotein level by 14,8% and the triglyceride level by 12,4%.

The application of the ozonated saline is particularly recommended for the patients with complications in the form of the diabetic foot with purulent-necrotic and other inflammatory lesions, as it reliably diminishes endogenous intoxication. It was managed to decrease the concentration of the average mass molecules by 19,9 – 21,3% and the concentration of the malon dialdehyde by 38%. The leukocytic index of the intoxication was reduced by 58,1%. (Газин И.К., [3]).

The use of ozonated saline was found to accelerate blood flow rate through arterioles and venules by 30% and to significantly reduce erythrocyte aggregation [4].

When observing the patients with tuberculosis I.I. Belanin *et al* [5] determined that the intravenous infusions of the ozonated saline give not only the glucose level reduction but also leads to a significant decrease of the intoxication. Thus the ozone therapy removes the resistance to the antituberculous medicaments and improves the status of patients.

If the minor autohaemotherapy is prescribed, it is necessary to consider its immunomodulatory action. This is especially important for the insulin-dependent type, where the cytotoxic reaction leads to the destruction of β-cells due to antigens and antibodies under the autoimmune and virus induced disease type.

For insulin-independent diabetes the immunity suppression is typical, which conditions a susceptibility to persistent infections (pyelonephritis), pustular lesions (furunculosis).

Subcutaneous injections of gas mixtures into trigger points are used for the removal of the pain syndrome under the diabetic polyneuropathy.

Injections of ozone-oxygen gas mixtures into biologically active points are aimed to improve the microcirculation for the prevention and treatment of the angiopathies.

Flowing gassing in plastic camera is applied if the pyoinflammatory complications are present for the patients with diabetic foot.

One of the main indicators of the effective diabetes mellitus treatment is the achievement of the compensated status, which was obtained for the most of the patients. In accordance with the acquired data the number of the compensated patients increased in almost 4 times and the number of the patients with the decompensated status decreased in 5 times
(E.E. Pavlovskaya et al [6], Масленников О.В., Конторщикова К.Н., [7]). This statement is illustrated by the

Figure 2.

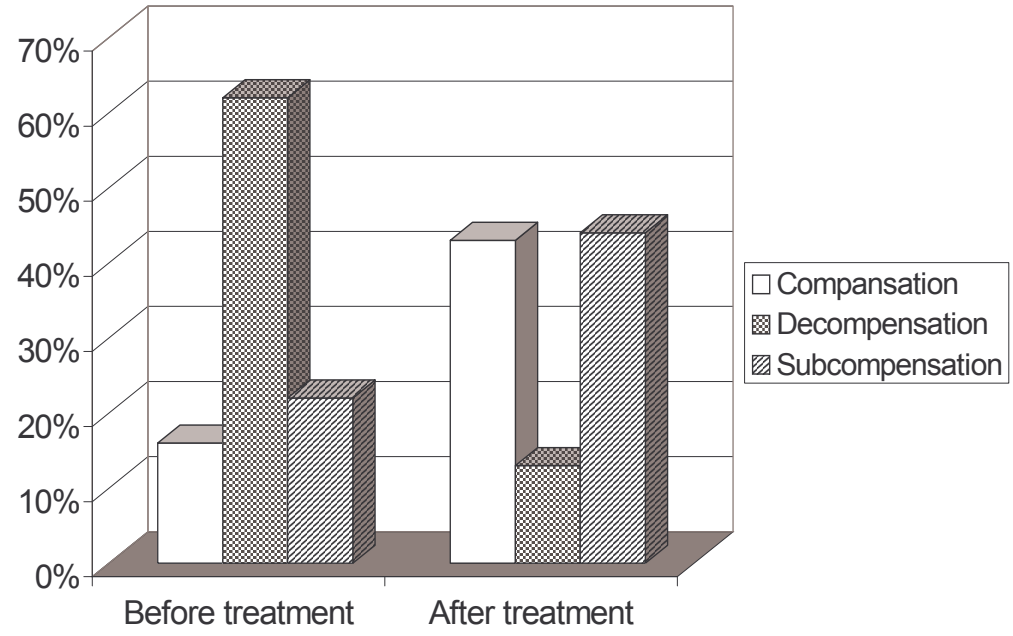

Figure 2. The ozone therapy effect for the patients with diabetes

The positive effect of the conducted ozone therapy course lasted from 3 to 6 months.

Conclusion

The paper considers the ozone therapy treatment for the patients with diabetes mellitus. The treatment mode is suggested which includes intravenous infusions of the ozonated saline, minor autohaemotherapy, subcutaneous injections of gas mixtures into trigger points, injections of gas mixtures into biologically active points and flowing gassing in plastic camera. The course of the treatment is intended for 3 weeks. The results for the 94 patients are presented. It is shown that the suggested ozone therapy mode is effective for diabetics with different forms. It is demonstrated that the ozone therapy intensifies the action of the glucose reduction medicaments, facilitates the disease symptom removal, decreases the hyperglycemia, eliminates hypoxia and endogenous intoxication. The given treatment results prove that the ozone therapy may be used for the noncomplicated disease as well as for the complicated diabetes.

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