

The effective of ozone therapy on HBA1C levels and microcirculation in a diabetic patient

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Abstract

Diabetes mellitus is a serious disease with both micro and macrovascular complications. Ozone therapy has been used in the treatment of diabetes since 1902 as a complement to modern medicine. It has been used in our country since 1999. With ozone therapy (o₃), micro circulation improves arterial circulation by 20-60% and venous part by 10-40% in 12-14 days. It has been shown that type 2 diabetes reduces proinflammatory cytokines in soft tissue infections. In our case, HbA1c levels improved significantly. Significant improvement in blood values can be seen with both dietary regulation and major ozone autohomeopathy. 59-year-old male patient was 93 kg, 1.75m, BMI 31. She applied to the GETAT outpatient clinic with high blood sugar, Type 2 DM and obesity. In her examinations, her blood values were fasting blood glucose 229 mg / dl, HbA1c 9.4, creat 0.84, tg 211mg / dl, lower 28u / l, Na 135, K It was 4.5. 5 sessions of major autohomeopathy were programmed for the patient; Starting the first dose of 10 gamma (mcg / ml), the weekly sessions were gradually increased by 10 ar gamma (mcg / ml). At the end of the ozone therapy treatment, fasting blood glucose decreased to 120mg / dl, creatinine 0.79, triglyceride 179 mg / dl, HbA1c 5.8. The patient lost 5kg with a change in life. Since the patient's blood sugar regulation was provided by the endocrinology department, the insulin dose was discontinued because there was no need for insulin use. No hypoglycemia symptom was observed in the patient during the treatment.

This treatment method will provide significant benefits if used in addition to modern medicine.

Keywords; diabetes mellitus, HBA1c, ozone therapy

Introduction

The ozone molecule is a three-atom molecule, a cousin of oxygen. It is created by the generator current applied to the oxygen molecule. Ozone molecule is a very unstable molecule and can easily enter into chemical reactions and easily create a biological response. The mechanism of action of ozone doses is explained by the hormonal effect. It cannot be explained by pharmacological standards. Its anti-inflammatory, immune modulator, oxygenation, circulatory, oxidant-antioxidant effects.

With ozone therapy, the release of bradykinin and inflammatory prostaglandin synthesis inhibition are performed, thus reducing edema in tissues, and this effect provides an analgesic effect. Ozone increases the release of antagonists that neutralize pro-inflammatory cytokines such as IL-1,8,12,15 and TNF. Normalizes the release of immunosuppressive cytokines such as IL-10. Ozone promotes the synthesis of matrix proteins such as collagen and glucosamine. In a study, it was found that reactive oxygen radical levels decreased and serotonin levels increased with 10 sessions (30-60 mcgr / ml) of major autohemotherapy in fibromyalgia patients [11].

Although ozone therapy is a toxic gas for the respiratory tract, it allows treatment without damaging the skin due to its different structure from the respiratory mucosa. The moisture of the skin facilitates this effect. The superficial hydro-lipid layer on the epidermis surface and the structures from the peroxidic series resulting from the reaction of water and ozone are circulated through the widespread vascular network in the dermis and subdermis layer. Ozone gas reacts with water and sebum on the skin surface to form reactive oxygen compounds called ROS and LOPS [5,12].

1.1 Major autohomeopathy

In a single session: 50-300 cc, maximum 750 cc within 2 hours, maximum 3 liters of blood should be used in a day. Equal blood and gas volume is required for homogeneous mixing (It should be mixed at least 3-5 minutes, and reinfused for 20 (15-40) minutes on average).

The elasticity and deformability of erythrocytes increase, blood can circulate better in microcirculation, tissue oxygenation increases. A significant decrease was observed in the proinflammatory cytokines (IL-6,8,10, and Fibroblast growth factor levels of ozone therapy used in soft tissue infections of type 2 diabetes patients [9, 15].

1.2 Effect of ozone therapy on carbohydrates

Ozone (O₃); Glucose 6-Phosphate Dehydrogenase increases the cell membrane penetration of glucose by increasing the activity of the enzyme and by simulating the pentose phosphate cycle, aerobic glycolysis due to its effects on the hexose mono phosphate shunt, and decreases the blood glucose level [10]. Since ozone therapy improves hypoxia, it decreases the increased high affinity HbA1c levels. The use of non-oxidized products in carbohydrate metabolism in the formation of 2,3 DPG results in a decrease in blood pyruvate and lactate levels. It accelerates the Krebs cycle [13, 4].

With this clinical study, our aim is to discuss the use of ozone therapy in addition to medical therapy in the control of type 2 diabetes, demonstrating the effectiveness of ozone therapy in lowering patient blood HbA1c values.

Case

59-year-old male patient with a BMI of 93 kg, 1.75m was 31. She was admitted to the GETAT outpatient clinic with high blood sugar, Type 2 DM, and obesity. Insulin was started on 40 units of the patient, who was controlled by the endocrinology department in his history. In the examinations, blood values were 229 mg / dl, HbA1c 9.4, creat 0.84, tg

	Glucose(mg/dl)	HbA1c	Creatinine	Triglyceride(mg/dl)	(weight:Kg)	Insulin
Before ozone therapy	229	9.4	0.84	211	93	40
After ozone therapy	120	5.8	0.79	179	88	0

Discussion

In this study, we discussed the effects of ozone therapy on type 2 diabetes patients. When we look at the literature, it has been shown in the study of Valacchi and Bocci that the release of NO, which is a physiological vasodilator, thrombocyte-leukocyte aggregation inhibitor and an inhibitor of adhesion to the endothelium, increased during ozonotherapy [17]. Thus, the chronic oxidative load that occurs in diabetes can be significantly reduced by ozone therapy. In particular, the severity of microvascular circulatory disorders regresses, the incidence of complications decreases, and drug consumption decreases.

Studies have shown a significant decrease in the proinflammatory cytokines (IL-6,8,10, Fibroblastgrowth factor) levels of ozone therapy in soft tissue infections of patients with type 2 diabetes.

It has been shown that ozone optimizes peripheral circulation, increases tonus in arterioles, and opens non-functional capillaries [18]. Ozone therapy is also used to open the obliteration of small vessels that cannot be reached by surgery, to prevent restenosis in grade 2-3 cases, and to limit the amputated area in amputation cases. In a study, it is stated that ozone therapy can be used safely in reducing the cases of coronary restenosis [2]. Ozone therapy has also shown benefits such as oxygenation, microcirculation, increasing ATP production in the crebs cycle, and providing cell regeneration by allowing normal cells with anerobic metabolism to reproduce through peroxides [18].

The mechanism of action of ozonized oil provides skin oxygenation, increases microcirculation, triggers tissue repair and regeneration, and slows down the skin aging process. The omega3,6,9 s, which are in the content of ozonized oil, are anti-inflammatory. It reduces the dehydration of the skin [14].

With ozone therapy, the elasticity and deformability of erythrocytes increase, blood can circulate better in the microcirculation, tissue oxygenation increases [4]. Ozone therapy is used in the treatment of many diseases. Many diseases from regulation of circulation to non-surgical cases to non-healing wounds are among the indications for use [3].

211mg / dl, lower 28u / l, Na 135, K 4.5. 5 sessions of major autohomeopathy were programmed for the patient; The first dose was started with 10 gamma (mcg / ml) and gradually increased weekly sessions by 10 gamma (mcg / ml). At the same time, life changes were recommended to the patient. Obesity diet containing 1400 cal probiotic was given to the patient. Major autohomeopathy was performed by obtaining informed consent form from the patient.

To the patient iv through the cubital vein. The vascular access was opened and 200 cc of blood was drawn. Holimer ozone therapy device and ozone set were used. The blood was homogenized by starting 10 gamma in an ozone-resistant set, and the patient was reinfused within 20 minutes in the same set without hemolysis. During the weekly sessions, the dose was increased by 10 gamma. 40 gamma ozone therapy was applied in the last session of the patient who had a total of 5 sessions.

At the end of the ozone therapy treatment, fasting blood glucose decreased to 120mg / dl, creatinine 0.79, triglyceride 179 mg / dl, HbA1c 5.8. The patient lost 5kg with the change of life. Since the patient's blood sugar regulation was provided by the endocrinology department, the insulin dose was discontinued because there was no need for insulin use. No hypoglycemia symptom was observed in the patient during the treatment.

With the release of TGF-, wound healing, cartilage regeneration and matrix protein synthesis begin. With ozone therapy, the TGF- β level increases in direct proportion. One study has shown that ozonated oil in combination with ozonated water can be used as a disinfectant and a healing stimulant. In addition, O₂ - O₃ therapy can improve vascular endothelial growth factor (VEGF), transformation growth factor- β (TGF- β), and platelet-derived growth factor (PDGF) levels. O₃ causes platelets to aggregate as well as release certain growth factors (eg PDGF, TGF-and IL-8) that are known to rapidly heal wounds. O₃ eliminates pathogens and O₂ promotes the proliferation of fibroblasts. This helps rebuild the intercellular matrix and improves the surrounding space [16]. A study shows that ozonated water is effective in oral gingivitis cases and can be used effectively against bacteria [6].

O₂- produced in the mitochondrial electron transport chain due to hyperglycemia in diabetic patients is the most important agent causing oxidative damage. In addition to other factors, the weakening of the antioxidant defense system, deficiency of erythrocyte SOD and catalase, reduction of vitamin C in leukocytes and reduction of the radical scavenging capacity of plasma increase the effect [1]. In diabetes, especially the endometrial increased oxidant O₂ production combines with NO to form peroxynitrite. Increased vasoconstriction, thrombocyte activation and microvascular damage develop in the vessel. Several researchers reported an increase in strong antioxidant enzymes (G S H - P x, G S H - Rd, GSH-Tr, SOD and catalase) after ozone therapy [8, 7].

Conclusion

As a result, a significant decrease was achieved in the HbA1c levels of the patient with major autohomeopathy. Thanks to ozone therapy and life change, the crebs cycle was increased, glucose uptake was increased, and blood sugar and HbA1c levels were improved. Thus, ozone therapy has been used to effectively lower blood glucose in the treatment of type 2 diabetes.

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