

EFFECT OF MEDICAL OZONE THERAPY ON DIABETES-INDUCED CARDIAC DYSFUNCTION

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ABSTRACT

Background / Aim: Diabetic metabolic dysregulation is accompanied by oxidative stress that could possibly lead to dysfunction in cardiac myocytes. The aim of this study was to elucidate the effect of controlled medical ozone therapy to diabetic rats on ischemia reperfusion insult in isolated rat hearts.

Materials and Methods: Both long-term (12 weeks duration) and short-term (20 days duration) treatment were investigated. Rats of each duration were divided into non-diabetic control group and streptozotocin-induced diabetic group, the latter group being further divided into two subgroups, namely, a group receiving medical ozone and the other remaining untreated. Long-term groups were studied for the cardiac responses before and after ischemia reperfusion. Short-term groups were used to assess the degree of leukocytic adhesion to coronary endothelium. In both durations, serum levels of CPK and TNF- α were determined.

Results: Long-term ozone therapy to diabetic rats improved myocardial depression before and after ischemia reperfusion, with reduction in ischemia reperfusion injury. Short-term therapy resulted in an attenuating effect on leukocyte adherence to coronary vascular endothelial cells after ischemia-reperfusion.

Conclusion: The present data show the cardioprotective effect of medical ozone therapy on ischemia reperfusion injury in diabetic rats. The reduction in TNF-alpha may represent a mechanism for such protection. Prohibiting leukocyte-endothelial adhesion and transmigration may be useful in decreasing leukocyte-dependent post-reperfusion injury.

Keywords: Medical ozone therapy; Diabetes mellitus; Ischemia-reperfusion injury; leukocyte adherence.