Ozone/oxygen mixture modifies the subcellular redistribution of Bax protein in renal tissue from rats treated with cisplatin

Aluet Borrego[1, CA], Zullyt Zamora[2], Ricardo González[2], Cheyla Romay[2], Silvia Menéndez[2], Frank Hernández[2], Jorge Berlanga[3] and Teresita Montero[4].

[1]National Laboratory for the Control of Drugs (CECMED), [2]Ozone Research Center, [3]Biomedical Investigations Branch (CIGB), [4]Histopathology Department "Dr. Luis Díaz Soto" Hospital.

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Abstract

Cellular events in cisplatin-mediated nephrotoxicity include apoptosis induction, decreased protein synthesis, changes in the subcellular redistribution of Bax mitochondrial dysfunction, DNA injury, increased lipid peroxidation, depletion of glutathione and decrease in enzimatic activity of renal antioxidant enzymes. In previous papers we have shown intra rectal ozone/oxygen mixture protected and induced a significant recovery from cisplatin induced renal damage related with a significant increase in the antioxidant system in renal tissue. This study was undertaken to examine the effect of the intra rectal applications of ozone/oxygen in the renal expression pattern of Bax proteins in rats treated with cisplatin. A group of male Sprague-Daweley rats were pretreated with fifteen intra rectal applications of ozone/oxygen (1.1 mg/kg) before intraperitoneal injection of cisplatin (6 mg/kg). Another group was treated with five intra rectal applications of ozone/oxygen mixture after cisplatin. Serum was analyzed five days after cisplatin treatment for creatinine. Subcellular distribution of Bax in renal tissue was analyzed by immunehistochemistry. Ozone pretreatment prevented the increase in serum creatinine levels and completely inhibited the acute tubular necrosis induced by cisplatin en renal tissue, diminishing the expression of Bax. Ozone treatment after cisplatin diminished the increase in serum creatinine levels and the renal necrosis, inducing a a lesser diminution of the Bax expression in cisplatin treated kidneys. Expression of Bax in renal tissue seems to play an important role in the protection and recovery from cisplatin nephrotoxicity achieved by ozone/oxygen.