Renoprotective activity of telmisartan versus pioglitazone on ischemia/reperfusion induced renal damage in diabetic rats.

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Source

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Abstract

OBJECTIVES:

Diabetes mellitus (DM) causes organ dysfunction and increases the sensitivity of organs to damages. To test this hypothesis, we used renal ischemia/reperfusion (I/R) experiment to evaluate the renoprotective activity of telmisartan versus pioglitazone on I/R induced renal damage in diabetic rats.

MATERIALS AND METHODS:

Renal I/R was performed in both normal and diabetic rats. The protocol comprised ischemia for 45 minutes followed by the reperfusion for 24 hours and a treatment period of two weeks before induction of ischemia.

RESULTS:

Renal I/R in both control and diabetic rats induced marked renal dysfunction associated with a significant increase in the arterial pressure, tumor necrosis factor alpha (TNF-alpha) levels, and the malondialdehyde formation (MDA). The activities of the antioxidant enzymes such as reduced glutathione (GSH), superoxide dismutase (SOD) and catalase (CAT) were found to be decreased significantly compared to control rats. Diabetic animals that underwent renal I/R exhibited a significant increase in all the studied parameters with a reduction in the anti-oxidant enzymes as compared to non-diabetic rats. Histo-pathological studies confirm these results. Treatment with pioglitazone or telmisartan demonstrated a significant improvement in the reperfusion-induced renal injury in comparison with diabetic I/R group, without difference between the two treated groups. Therefore, the treatment with pioglitazone or telmisartan have the same corrective effect.

CONCLUSIONS:

Type 2 diabetes had exaggerated renal I/R injury in STZ-NAD induced diabetes. Telmisartan treatment is equieffective as pioglitazone in attenuating acute I/R-induced renal injury in diabetic rats by a modification in the oxidative stress and the inflammation.