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 anti-oxidant 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.