SUMMARY

Aim: Diabetic nephropathy is one of the common complications of diabetes mellitus and among the most common causes of renal failure. Hence, efforts to prevent development of diabetic nephropathy is going on intensively. Oxidative stress plays important role in development and progression of diabetic complications such as DN. Anti-oxidant and anti-inflammatory effects of thiazolidinedione, a PPARγ receptor activator, has been demonstrated in some studies. The current study aimed to prevent development of diabetic nephropathy with pioglitazone treatment and to measure tissue levels of oxidative stress markers in this process.

Method: In the present study, some rats made diabetic by streptozocine received pioglitazone (either 10 mg/kg or 30 mg/kg). Renal tissues of 30 rats completing 4-weeks of study were sacrified for evaluation of related parameters and pathological examination.

Results: Significant difference was found in glomerular focal necrosis, tubular dilatation and thickening on vascular wall between the control and diabetic groups. Significant difference was found in necrosis in tubular epithelium, thickening on vascular wall, and glomerular focal necrosis between the diabetic control group and the group receiving 10 mg of drug. Significant difference was found in tubular dilatation and thickening on vascular wall between the diabetic group and the group receiving 30 mg of drug. Significant difference was found in tubular dilatation, necrosis in tubular epithelium, glomerular focal necrosis and thickening on vascular wall between the diabetic control group and the group receiving pioglitazone. No difference was found in blood glucose between the diabetic control group and the groups receiving drug. No difference was found in averages of malonyldialdehyde, TNF-α, superoxide dismutase, catalase, glutathione, nitric oxide and IL-6 between the diabetic control group and the groups receiving drug.

Conclusion: It was found that pioglitazone led to regression in such lesions as glomerular focal necrosis, necrosis on tubular epithelium, tubular dilatation, and thickening of vascular wall independent of its anti-glycemic effect in diabetic rats. However, no positive effect was found of pioglitazone on oxidant parameters at the tissue level. In the view of this conclusion, it can be suggested that pioglitazone may have protective effect on development of diabetic nephropathy but further studies are needed to to reveal through which mechanisms this effect occurs.

Key Words: Pioglitazone, antioxidant, diabetic nephropathy

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