عنوان مقاله:

Nephroprotective effect of remote ischemic conditioning on type ۲ diabetic rats

محل انتشار:

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خلاصه مقاله:

Objective(s): Diabetic nephropathy is one of the main causes of kidney failure in the end stage of diabetes worldwide. The present study was conducted with the aim of using the remote ischemic conditioning (RIC) method to prevent diabetic nephropathy.Materials and Methods: Diabetes was induced by high-fat diet (۶۰%) and streptozotocin injection (۳۵ mg/kg) in rats. RIC was performed by tightening a tourniquet around the upper thigh and releasing it for three cycles of ۵ min of ischemia and ۵ min of reperfusion daily for an ۸-week duration. At the end of the experiment, serum and urine parameters were examined. Anti-oxidant enzymes and lipid peroxidation levels in the kidney were also determined along with histological examination. The expression levels of tumor necrosis factor-alpha and transforming growth factor beta genes were also evaluated. Results: Glucose, cholesterol, triglyceride, and HbA۱c concentrations were not significantly reduced in the RIC group. On the other hand, serum creatinine, urea, and albumin levels decreased and increased in urine. Anti-oxidant enzymes did improve in the kidney significantly and the expression of tumor necrosis factor-alpha and transforming growth factor beta genes decreased significantly. Histopathological examination also showed that necrosis, epithelial damage, and leukocyte infiltration increased in the diabetic group and improved in the treatment group. Conclusion: The results of biochemical analysis, and enzymatic and histological examinations showed that although RIC could not reduce blood glucose and lipids, nevertheless it may delay the progression of diabetic nephropathy due to the presence of anti-inflammatory and anti-oxidant activities.

کلمات کلیدی:

Diabetes Mellitus, Kidney Injury, Ischemic conditioning, Oxidative stress, Inflammation