ARE THE OXIDOREDUCTASES (ENDOTHELIAL NO SYNTHASE, CATALASE, GLUTATHIONE PEROXIDASE, SUPEROXIDE DISMUTASES) GENES POLYMORPHISMS IMPLICATED IN THE EARLY PHASE AFTER KIDNEY TRANSPLANTATION?

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OBJECTIVES

Enhanced oxidative stress has been implicated in the development of complications after organ transplantations, especially ischemia-reperfusion injury, delayed graft function (DGF) and acute rejection. It can therefore be hypothesized that genetic variability of antioxidant enzymes may play a role in the development of these complications. Endothelial NO synthase (eNOS) is seen as a protective enzyme. Catalase plays a significant role in the development of tolerance to oxidative stress in the adaptive response of organism. The glutathione peroxidase (GPX) is a major defense in oxidative stress. The superoxide dismutases (SODs) are involved in the defense against reactive oxygen species. The aim of the study was to examine the impact of oxidoreductases genes polymorphisms on the early phase after kidney transplantation.

METHODS

187 recipients of kidney allografts were included in the study (59% males, aged 17-75 years, mean: 43.1 years, duration of allograft: 2-11 years, mean: 5.8 years). The histories of the patients were analyzed taking into the account early phase after kidney transplantation. Complications such as DGF (defined as the need for hemodialysis within the first 7 days after transplantation) and episodes of acute rejection (defined by clinical diagnosis - elevated serum creatinine in the absence of other pathology, including infection, urinary tract obstruction, allograft artery stenosis, or cyclosporine toxicity, and confirmed by positive biopsy) were evaluated. All biopsies were reviewed by a renal pathologist and the Banff working classification criteria were used in the histological analysis of the biopsies. All studied polymorphisms were analyzed using the PCR-RFLP method.

RESULTS

NOS intron 4 VNTR polymorphism was associated with delayed graft function (p=0.012). The risk of DGF was lower among T allele carriers of the catalse gene -262C/T polymorphism (p=0.001). There were no significant correlation between the other studied oxidoreductases genes polymorphisms and DGF. There were no significant associations between NOS3, catalase, glutathione peroxidase, SOD1 and SOD2 genes polymorphisms and acute kidney allograft rejection.

CONCLUSIONS

The results of our study suggest that NOS3 intron 4 VNTR and the catalase gene polymorphisms have an impact on the early phase after kidney transplantation. Glutathione peroxidase, SOD1 and SOD2 genes polymorphisms have no influence on the early phase after kidney transplantation.

REFERENCES: