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NADH/NADPH oxidase p22 phox 유전자와 eNOS intron 4a/b VNTR유전자 다형성이 이식신 생존에 미치는 영향

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The Genetic Polymorphisms of NADH/NADPH Oxidase p22 phox and eNOS Intron 4a/b VNTR and the Long Term Outcome of Kidney Allograft

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Objective : In addition to immune responses, non-immunological factors such as endothelial dysfunction and oxidative stress may play a role in the long-term kidney allograft survival. Thus, the activities of NADH/NADPH oxidase and eNOS affecting superoxide and NO production may influence the long-term renal graft function. The aim of our study was to determine the donor-recipient pattern of genetic polymorphisms of NADH/NADPH oxidase and eNOS on the long-term kidney allograft dysfunction.

Methods and Results : We investigated NADH/NADPH oxidase p22 phox C242T polymorphism and the 27 bp tandem repeat polymorphism in intron 4 of the eNOS gene in 197 transplant donors and 210 recipients. The genetic and clinical patterns were analyzed between the recipients with biopsy-proven chronic allograft nephropathy (CAN) and normal recipients (serum creatinine <1.6 mg/dL and no proteinuria during follow-up). Also, the long-term allograft function was evaluated according to the genetic polymorphisms of these genes. There were no differences in allele and genotype frequencies of both genes between patients with CAN and normal recipients. Recipients who have grafts possessing a allele of eNOS gene 4a/b VNTR, denote the higher final serum creatinine level than the other subgroups (donor 4ab, 4aa vs. 4bb, 3.5±4.24 mg/dL vs. 2.28±2.87 mg/dL, $p<0.01$), while the eNOS 4a/b VNTR polymorphism of recipients themselves had no association with long-term allograft outcomes. Although NADH/NADPH oxidase p22 phox C242T polymorphism of both recipients and donors was not associated with the development of biopsy proven CAN, the allograft recipients who carried T allele of NADH/NADPH oxidase p22 phox gene by themselves showed the highest final serum creatinine level compared to other groups when they received the grafts possessing T allele of p22 phox gene ($p<0.05$).

Conclusion : Although there were no association NADH/NADPH oxidase and eNOS gene polymorphism with histologically documented CAN, the last serum Creatinine levels during follow up were influenced by these genes polymorphism.