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Association between Interleukin 3 Gene Polymorphisms and Acute Rejection following Kidney Transplantation

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Acute rejection (AR) after kidney transplantation resulting from alloimmune responses has a negative effect on graft survival. AR is mainly caused by T-cell immune responses in renal allograft and many cytokines contribute to the activation of T-cell. Interleukin (IL) 2, 4, and 7 are well known cytokines related to AR. Many reports showed that single nucleotide polymorphisms (SNPs) of these cytokines can affect the occurrence of AR. IL3, which is secreted by activated T cells, contributes to T-cell activation and can mediate AR in kidney transplantation. This study aimed to investigate the association between SNPs of IL3 and the occurrence of AR because there is no report about that. We analyzed three SNPs of IL3 (rs181781, rs2073506, and rs40401) among 330 renal recipients, 60 of whom had developed AR. SNPs of IL3 gene are one exonic SNP (rs40401) and two regulatory SNPs (thought to be the promoters, rs181781; rs2073506). The genotyping of the 60 AR patients and the 270 patients without AR demonstrated a significant relationship between genotype frequencies and the SNPs. The occurrence of AR was associated with rs181781 (p=.041, dominant model), rs2073506 (p=.009, codominant 1 model; p=.003, dominant model), and rs40401 (p=.014, recessive model). Among haplotypes, a haplotype (AAT) showed a significant association with AR (p=.0033). Our results suggest that IL3 gene polymorphisms are associated with the development of AR.

Key Words: Acute rejection, Single nucleotide polymorphisms, Interleukin 3