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신이식 환자에서 급성 거부반응과 CYP2E1 유전자 다형성과의 관계

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Association Studies of Cytochrome P450, Family 2, Subfamily E, Polypeptide 1 (CYP2E1) Gene Polymorphisms with Acute Rejection in Kidney Transplantation Recipients

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Background: Recent studies have shown that single nucleotide polymorphisms (SNPs) are associated with allograft rejection in kidney transplantation recipients. It is reported that the oxidative stress plays an important role of adverse outcome in the course of renal transplantation. Many researchers indicated the oxidative stress-related diseases are associated with polymorphisms in cytochrome P450, family 2, subfamily E, polypeptide 1 (CYP2E1) gene. We evaluated the possible association between SNPs of CYP2E1 gene and acute rejection among renal transplant patients in Korean population.

Methods: In total of 347 patients, who underwent kidney transplantation, two groups were divided according to acute kidney rejection. We conducted case-control association study in 63 acute rejection (AR) and 284 non-AR of kidney transplant recipients.

Results: Genotype and allele frequencies of the three SNPs in the CYP2E1 gene were analyzed in both control group and the kidney transplantation recipient group. There were no significant differences in recipient age, causal diseases of renal failure, the number of HLA mismatches, or previous history of kidney transplantation between two groups. But there were differences in recipient gender (p=0.023), and the use of tacrolimus and MMF, and antibody induction therapy, which were used much more frequently in the non-AR group than in the AR group. (Tacrolimus (p=0.017), MMF (p=0.03), IL-2 (p=0.0006)). Multiple logistic regression models (codominant, dominant, recessive, and log-additive models) adjusted by gender, use of immunsuppressant were applied to determine odds ratios (OR), 95% confidence interval (CI), and p values. The rs2515641 of CYP2E1 showed significant differences between AR patient group and non-AR group (p=0.002, OR=2.61, 95% CI=1.42-4.79 in codominant 1 (C/C vs. C/T); p=0.0014, OR=2.63, 95% CI= 1.46-4.74 in dominant (C/C vs. C/T and T/T); p=0.0025, OR=2.15, 95% CI=1.32-3.49 in log-additive models (C/C vs. C/T vs. T/T). And the allelic distribution of the rs2515641 SNP also showed a significant association in kidney transplantation recipients (C vs. T, OR=1.99, 95% CI=1.24-3.21, p=0.004).

Conclusion: This study suggests that CYP2E1 polymorphism may be related to development of AR in Korean kidney transplantation recipients.

Key Words: CYP2E1, 급성거부, 다형성, 신이식, 관련성
CYP2E1, Acute rejection, Polymorphism, kidney transplantation