보체 유전자 다형성과 신이식 성적과의 연관성 연구

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Association of Complement 5 Genetic Polymorphism with Allograft Outcomes in Kidney Transplantation

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Background: Complements play important roles in both rejection and ischemia-reperfusion injury after transplantation. Complement 5 (C5) is one of pivotal complements, which initiate the assembly of the membrane attack complex, and mediate chemotaxis of various immune cells. We investigated impact of genetic variations in C5 and its receptor (C5aR) of both recipients and donors on the renal allograft outcomes.

Method: Seven single nucleotide polymorphisms (SNPs) in C5 (rs12237774; rs2159776; rs17611; rs25681; rs2241004; rs10985126; rs10818500) and one SNP (rs10404456) in C5aR gene were genotyped in 191 recipient-donor pairs. The association of the polymorphisms with allograft outcomes was determined.

Results: Three C5 SNPs (rs2159776; rs17611; rs25681) in recipients had a tendency of reduced glomerular filtration rate (GFR) at one year. There were four haplotypes in the H2 linkage disequilibrium block which was formed by four SNPs (rs2159776; rs17611; rs25681; rs2241004). The risk haplotypes (GGCG/ AGCA) in both recipients and donors were associated with lower GFR at one year (60.3±15.9 vs. 67.3±15.2 ml/minute/1.73m^2, p=0.003; 60.2±15.3 vs. 67.2±15.6 ml/minute/1.73m^2, p=0.003). The association sustained over 7 years after transplantation (p=0.001 in recipients; p=0.003 in donors). Presence of the risk haplotypes in recipients was associated with poorer graft survival (hazard ratio 3.154, p=0.038). However, C5 polymorphisms were not correlated with serum C5 level. C5aR polymorphism had no significant impact on the allograft outcomes.

Conclusions: The GGCG/AGCA haplotypes of complement 5 in both recipients and donors were associated with lower renal allograft function.

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