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Effect of HLA-DQ epitope mismatch on Development of De Novo Donor-Specific HLA Antibodies after Kidney Transplantation

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Objectives: De novo donor-specific antibodies (dnDSA) are well-recognized risk factors for graft failure in kidney transplantation (KT). Here, we investigated donor-recipient HLA epitope matching and their predictability for incidence of dnDSA after KT.

Methods: Among patients who received KT at Ulsan University Hospital from June 2014 to December 2017, 71 patients with available four-digit HLA A, B, DR and DQ type were included this analysis. HLA epitope mismatches were determined by the HLAMatchmaker.

Results: Median follow-up was 20 months. Mean numbers of epitope mismatches were 11.6, 9.1, and 8.6 for HLA-A/B, -DR, and –DQ, respectively. During follow-up, HLA class I and class II dsDSA developed for 2 and 4 patients, respectively. One patient experienced chronic active antibody-mediated rejection at 9 months after KT, whose numbers of HLA-DR and –DQ epitope mismatches were 28 and 20, respectively. The number of HLA-DQ epitope mismatches was higher in patients with class II HLA dnDSA than without, but not statistically significant (17 vs. 8, $p = 0.074$). Log-rank test showed that the incidence of HLA class II dnDSA was significantly higher in the recipients of more than 13 HLA-DQ epitope mismatches.

Conclusions: HLA-DQ epitope mismatches might be helpful for predicting the incidence of HLA class II dnDSA. Further studies are needed for more patients to confirm the effect of HLA epitope mismatch on the long-term outcome of kidney transplantation.