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Impact of Low Dose Donor Specific Anti-HLA Antibodies between Living Donor Versus Deceased Donor Kidney Transplantation

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Objectives: Presence of donor specific anti-HLA antibody (HLA-DSA) has significant impact on the short term and long term allograft outcomes after kidney transplantation. However, the impact of low dose HLA-DSA has not been fully investigated yet. The aim of this study is to investigate the impact of low dose HLA-DSA between living donor transplantation (LDKT) versus deceased donor kidney transplantation (DDKT).

Methods: From January 2010 to December 2018, total 1178 Kidney transplantation recipients at Seoul St. Mary's Hospital and Dongsan Medical Center were enrolled. The low dose HLA-DSA was defined as positive DSAs and negative crossmatch. The primary outcome was the development of biopsy proven acute antibody mediated rejection (BP-ABMR) and the secondary outcomes were change of allograft function, death-censored graft loss rate and patient mortality.

Results: Of total 627 living donor kidney transplant recipients, 567 patients were negative HLA-DSA group and 60 patients were low dose HLA-DSA group. Of total 551 deceased donor kidney transplant recipients, 512 patients were negative HLA-DSA group and 39 patients were low dose HLA-DSA group. In LDKT, BP-ABMR was increased in the low dose HLA-DSA group than negative HLA-DSA group significantly. In multivariate analysis, the odds ratio of positive HLA-DSA class II in the low dose HLA-DSA group was 8.179 (2.916-22.945) but positive HLA-DSA class I and positive total HLA-DSA were not significant. In DDKT, BP-ABMR tended to increase in the low dose HLA-DSA group but was not significant. Change of allograft function, death-censored graft loss rate and patient mortality were not significantly different between the low dose HLA-DSA group and the negative HLA-DSA group in both LDKT and DDKT.

Conclusions: Low dose HLA-DSA may be associated with increased BP-ABMR in LDKT. In low dose HLA-DSA, HLA-DSA class II may be an important role in increased BP-ABMR. However, the impact of low dose HLA-DSA is unclear in DDKT.