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**Combined Impact of Pre-sensitization and Delayed Graft Function on Allograft Outcome in Deceased Donor Kidney Transplantation: Nationwide Cohort Study**

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**Objectives:** Pre-sensitization to HLA has detrimental effect on allograft rejection, worse allograft function and survival. Delayed graft function (DGF) is associated with poor allograft outcome by ischemia-reperfusion injury. We undertook analysis to determine combined association of pre-sensitization to HLA and DGF on allograft outcome in deceased donor kidney transplantation (DDKT) and whether there is a synergistic effect.

**Methods:** In our prospective cohort study, between May 2014 and June 2019, 1370 deceased donor kidney transplants were assigned into 2 groups; pre-sensitized and non-pre-sensitized. Each group was divided into 2 subgroups according to DGF. Pre-sensitization was defined as the presence of donor specific antibodies (DSA) or the presence of panel-reactive antibody (PRA), combination with crossmatch positive. DGF was defined as the need for dialysis before discharge. We compared the clinical outcomes including allograft rejection, the change of allograft function, infectious and cardiovascular complication and allograft survival.

**Results:** Pre-sensitization group were 137 (10.0%) patients and others (n=1233, 90.0%) belonged to non-sensitized group. Pre-sensitization-DGF subgroup was 21 (15.3%) and pre-sensitization-non-DGF group was 116 (84.7%). Non-pre-sensitization-DGF subgroup was 133 (9.7%) and non-pre-sensitization-non-DGF group was 1100 (80.3%). In both pre-sensitization and non-pre-sensitization groups, allograft function using eGFR by CKD-EPI equation (mL/min/1.73m<sup>2</sup>) was lower in DGF subgroup than non-DGF subgroup. In contrast, allograft rejection rate showed no significant difference between DGF and non-DGF subgroup within non-pre-sensitization group (15.0% vs 12.9%, *p*=0.493). There was no significant difference between DGF and non-DGF subgroups in both groups in regard to allograft survival and patient survival.

**Conclusions:** DGF combined with pre-sensitization had much worse effect on allograft outcome in terms of allograft rejection. Therefore, we suggest more careful monitoring or surveillance for allograft rejection when DGF occurred in DDKT with pre-sensitization to HLA.