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Effect of pre-transplant or post-transplant diabetes mellitus on allograft rejection in kidney transplant recipients

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Objectives: In previous studies, the presence of diabetes mellitus (DM) and the occurrence of allograft rejection are controversial. The present study aimed to investigate the effects of pre-transplant DM or post-transplant DM (PTDM) on allograft rejection in kidney transplant patients using the Korean Organ Transplantation Registry (KOTRY) database.

Methods: Analysis was performed on 6589 patients whose outcomes were tracked in 7,682 patients who underwent kidney transplantation from 2014 to 2020. Allograft rejection was defined as combined of biopsy-proven rejection, biopsy-proven borderline, and clinical rejection, and both acute and chronic rejection were included. The primary outcome was the first allograft rejection. 6-month landmark cohort analysis was conducted to evaluate the effect of PTDM on allograft rejection.

Results: The mean age of 6589 patients was 49.4 ± 11.6 years, and 3960 (60.1%) were male. There were 2059 (31.2%) patients with pre-transplant DM. Allograft rejection occurred in 1,542 (23.4%) patients during the follow-up period (29.1 ± 19.6 months). There was no significant difference in rejection outcomes in patients with or without pre-transplant DM (adjusted hazard ratio [HR]:1.02; 95% confidence interval [CI]: 0.90–1.14, $P = 0.781$). In the biopsy-proven acute rejection, acute T-cell-mediated rejection and acute antibody-mediated rejection rates were similar according to the presence or absence of pre-transplant DM. Among 4530 patients without pre-transplant DM, 637 (14.1%) patients developed PTDM. Acute T-cell-mediated rejection and acute antibody-mediated rejection rates were similar according to the presence or absence of PTDM. Incidence of acute or chronic rejection was similar according to the presence or absence of PTDM. In the 6-month landmark cohort, 354 patients developed PTDM and 3246 patients did not develop PTDM within 6 months. PTDM developed within 6 months significantly increased allograft rejection (adjusted HR:1.39; 95% CI: 1.01–1.93, $P = 0.048$).

Conclusions: In patients who develop PTDM, attention should be paid to the occurrence of allograft rejection.