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Impact of pancreas donor risk index on pancreas graft survival after simultaneous pancreas and kidney transplantation

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Introduction: Simultaneous pancreas and kidney transplantation (SPK) has become an established treatment for diabetic patients with end-stage renal disease. However, organ shortage and restrictive selection criteria for pancreas allograft are major obstacles pancreas transplantation. Pancreas donor risk index (PDRI) was introduced to predict suitability of pancreas donors but true reliability of the index was not determined. Therefore, we investigated the reliability of PDRI and factors that affect transplantation outcomes.

Methods: This is a retrospective cohort study including 163 patients who underwent SPK from 2006 to 2021 at Asan Medical Center. Donor and recipient characteristics were collected and the PDRI score for each donor was calculated. Clinical outcomes were compared between high PDRI (≥ 1.5) group (n=61) and low PDRI (< 1.5) group (n=102). Also, the impact of high body mass index (BMI) ($\geq 25\text{kg/m}^2$), old age ($\geq 40\text{yr}$) and other factors of each donor were analyzed.

Results: There was no significant difference in recipient characteristics between high PDRI and low PDRI groups. There was no significant difference in pancreas graft survival between the two groups (P= 0.396). A pancreas allograft from an old donor (>40 years) had comparable to an allograft from a younger donor (<40 years) in terms of graft survival (P= 0.243). Also, higher BMI ($\geq 25\text{kg/m}^2$) did not show a significant impact on long term graft survival (P=0.776). Multivariate logistic regression analysis revealed that cold ischemic time and presence of donor-specific antibody were significantly associated with pancreas graft failure

Conclusion: This study suggests that PDRI did not reflect long-term pancreas allograft survival after SPK. Pancreas from donors with old age (≥ 40 years) and higher BMI ($\geq 25\text{kg/m}^2$) did not have inferior outcomes in terms of pancreas graft survival.