

Abstract Type : Poster Only

Abstract Submission No. : F-004114

Outcomes of ABO-incompatible living donor kidney transplantation compared to waiting or deceased donor kidney transplantation

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Introduction:

ABO-incompatible (ABOi) living donor kidney transplantation (LDKT) is one of efforts to overcome organ shortage for end stage kidney disease (ESRD) patients. However, it is unclear whether ABOi LDKT has better outcomes compared to remaining on dialysis while waiting for ABO-compatible (ABOc) deceased donor kidney transplantation (DDKT).

Methods:

We performed a retrospective study with propensity matching. Four hundred twenty-six patients underwent ABOi LDKT between 2010 and 2020 in Seoul National University Hospital and Severance Hospital in Korea. We compared outcomes between ABOi LDKT group and the matched control groups (ABOc LDKT group, n = 426; waiting-list-only group, n = 1278; waiting-list-or-ABOc-DDKT group, n = 1278). The matched controls were derived from 3,053 adult waiting lists for first-time KT, 426 ABOc DDKT and 1366 ABOc LDKT patients.

Results: Patient survival rates of the ABOi LDKT group were significantly lower than those of the ABOc LDKT group at 1 year (97.9% vs. 99.8%, respectively) and 8 years (95.2% vs. 97.2%), respectively ($P = 0.032$). Furthermore, ABOi LDKT group showed significantly lower death-censored graft survival rate compared to ABOc LDKT group ($P=0.032$). Interestingly, ABOi LDKT with a low baseline anti-ABO titer (1:32) also showed lower patient and death-censored graft survival rate compared to ABOc LDKT group ($P=0.011$, $P=0.005$, respectively). Next, we compared outcomes of ABOi LDKT compared to those of waiting-list-only group and waiting-list-or-ABOc-DDKT group. Patient survival rates at 1- and 8-years in the waiting-list-only group were 97.8%, and 89.1%, respectively, and those in the waiting-list-or-ABOc-DDKT group were 97.7% and 89.3%, respectively. ABOi LDKT group showed significantly better patient survival rate compared to waiting-list-only group ($P=0.015$) and waiting-list-or-ABOc-DDKT group ($P=0.018$).

Conclusion:

ABOi LDKT is a better choice for end stage kidney disease patients without potential ABOc living donors, especially in Asian countries with a long waiting time for DDKT.