KSN 2019
Seoul, Korea · May 23 - 26

Abstract Type : Poster
Abstract Submission No. : PO-1362

Clinical Implication of Duration of Graft Function Recovery after Kidney Transplantation

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Objectives: Acute kidney injury is frequently detected as slow recovery of graft function (SGF) or delayed recovery of graft function (DGF) after kidney transplantation (KT). It is known as a risk factor of poor long-term graft survival, but definitions of SGF or DGF are various. In this study, we investigated the clinical effect of duration of graft function recovery on KT.

Methods: We retrospectively analyzed 150 kidney transplant recipients who took kidney from 127 living and 23 deceased donors (DDs). These cases were divided into four groups; the recovery of graft function within 3 days (Group A, n=54), 7 days (Group B, n=33), 14 days (Group C, n=22) after KT and the non-recovery of graft function within 14 days (Group D, n=41) according to allograft function assessed by the Modification of Diet in Renal Disease (MDRD) estimated glomerular filtration rate (60 mL/min/1.73 m^2). We compared the clinical outcomes such as acute rejection, allograft, and patient survival across those groups.

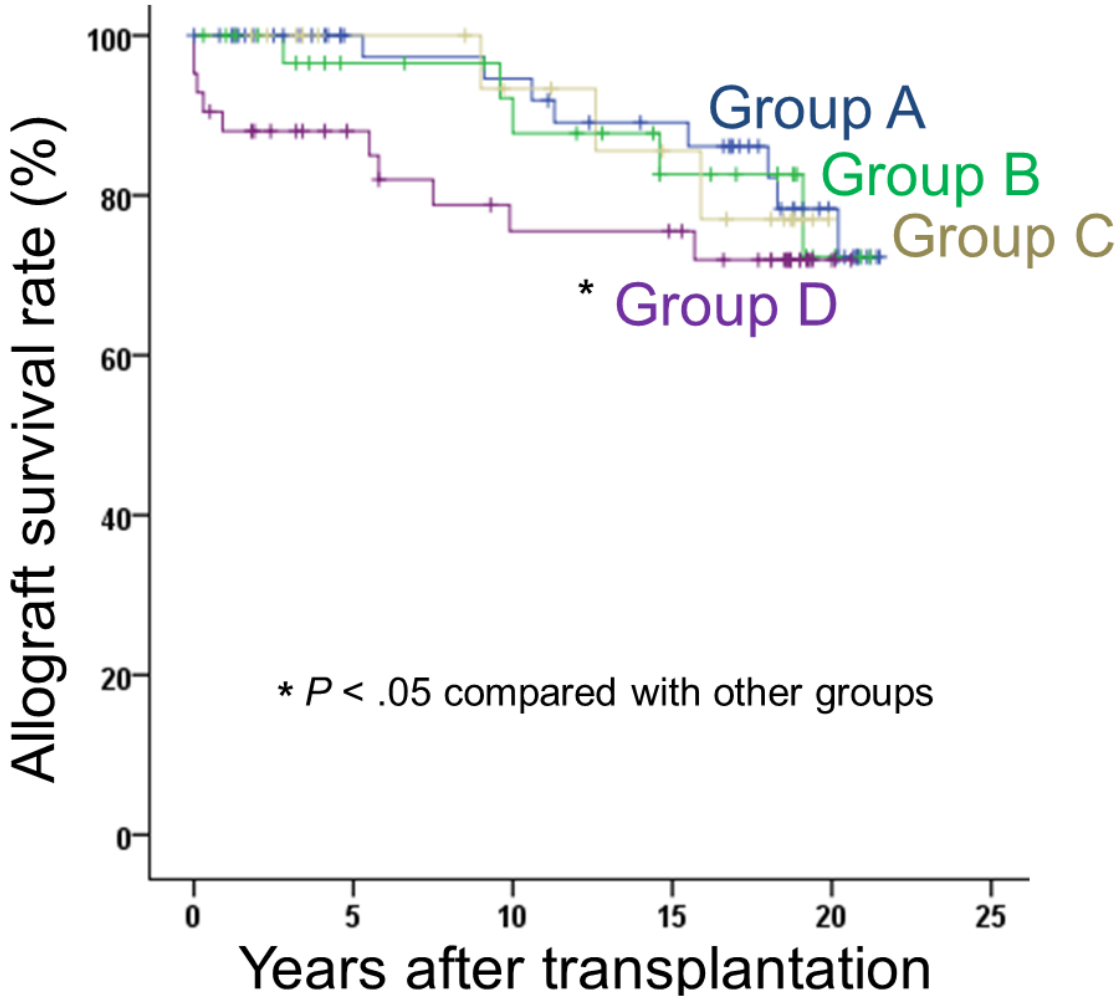
Results: The mean total ischemic time was longer in group C, D than A, B groups insignificantly (122.7±158.7, 109.6±94.5 vs. 72.4±65.5, 80.4±81.0, $p>0.05$). The DDKT rate was significantly higher in group C, D than group A (22.7%, 23.3% vs. 7.4%, $p<0.05$). The incidence of acute rejection was significantly higher in group B, D than group A, C (59.4%, 43.9% vs. 22.2%, 22.7%, $p<0.05$). The long-term graft survival rate was significantly lower in group D than the other groups, but not different among A, B, and C groups. The patient survival rate did not differ among the four groups.

Conclusions: Our study showed that the non-recovery of graft function within 14 days after KT might be associated with poor long-term allograft outcome.

Baseline characteristics of recipients

Characteristics	Group A (n=54)	Group B (n=33)	Group C (n=22)	Group D (n=43)	*P* value
Male, n (%)	31 (57.4)	27 (81.8)	16 (72.7)	25 (58.1)	.074
Age (years)	42.3 ± 13.2	43.2 ± 11.9	42.9 ± 13.6	42.0 ± 12.9	.536
KT from deceased donor, n (%)	4 (7.4%)	4 (12.1%)	**5 (22.7)**	**10 (23.3)**	.000
Re-transplant, n (%)	2 (3.7)	2 (6.1)	2 (9.1)	3 (7.0)	.811
BMI (kg/m^2)	21.6 ± 3.6	25.2 ± 2.3	24.0 ± 4.8	23.1 ± 4.9	.304
Primary renal disease, n (%)					
Diabetes mellitus	9 (16.7)	7 (21.2)	3 (13.6)	9 (20.9)	
Hypertension	9 (16.7)	8 (24.2)	2 (9.1)	8 (18.6)	.544
Glomerulonephritis	13 (24.1)	10 (30.3)	7 (31.8)	11 (25.6)	
Duration of dialysis (years)	1.9 ± 2.9	2.3 ± 2.3	2.0 ± 2.6	3.4 ± 4.8	.120
Panel reactive antibody (%)	11.5 ± 27.8	11.7 ± 24.0	12.8 ± 26.9	13.5 ± 29.1	.681
HLA mismatch number (n)	3.0 ± 1.5	3.0 ± 1.5	2.9 ±1.5	2.9 ±1.2	.918
Total ischemic time (minutes)	72.4 ± 65.5	80.4 ± 81.0	**122.7 ± 158.7**	**109.6 ± 94.5**	.173

Long-term allograft survival rate


Allograft survival rate (%)
100
80
60
40
20
0
0
5
10
15
20
25
Years after transplantation
Group A
Group B
Group C
* Group D
* P < .05 compared with other groups