

Impact of Baseline and Postoperative Isoagglutinin Titer on Clinical Outcomes in ABO-incompatible Living Donor Kidney Transplantation

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Background

ABO-incompatible (ABO-i) kidney transplantation (KT) has expanded in consequence of the development of desensitization protocol. However, the impact of baseline and postoperative isoagglutinin (IA) titer on clinical outcomes remains undetermined.

Methods

Between February 2009 and December 2013, 214 patients with end-stage renal disease underwent ABO-i KT at Asan Medical Center in Seoul, Korea. After excluding patients with positive cross-matching results by T-cell flow cytometry, data from 180 patients were retrospectively reviewed. These patients were divided into the 2 sets of groups according to the baseline isoagglutinin titer and the appearance of titer-rebound ($\geq 1:16$) within 2 weeks after KT; initial high titer ($\geq 1:256$) group (n=29) vs. low titer ($< 1:256$) group (n=151) and rebound group (n=41) vs. non-rebound group (n=139).

Results

Table 1. Comparison of the initial high titer vs. low titer group

	High titer (n = 29)	Low titer (n = 151)	p value
Follow-up period (m)	25 (3-63)	25 (2-58)	0.167
Age (y)	47 (21-59)	48 (20-72)	0.417
Sex (male, %)	16 (55.2)	104 (68.9)	0.152
Past medical history (%)			
Diabetes mellitus	5 (17.2)	29 (19.2)	0.805
Hypertension	16 (55.2)	94 (62.3)	0.474
Tuberculosis	2 (6.9)	10 (6.6)	1.000
Hepatitis	1 (3.4)	8 (5.3)	1.000
Cardiovascular disease	2 (6.9)	15 (9.9)	1.000
Malignancy	0 (0)	3 (2.0)	1.000
Cause of ESRD (%)			0.415
Chronic GN	7 (24.1)	43 (28.5)	
Diabetes mellitus	7 (24.1)	30 (19.9)	
Hypertension	4 (13.8)	32 (21.2)	
Polycystic kidney disease	3 (10.3)	6 (4.0)	
FSGS	1 (3.4)	4 (2.6)	
Unknown	4 (13.8)	10 (6.6)	
Duration of RRT (m)	5 (0-252)	10 (0-240)	0.993
Number of KT > 1 (%)	3 (10.3)	12 (7.9)	0.713
PRA $\geq 20\%$ (%)	6 (20.7)	10 (6.8)	0.029
Number of HLA mismatch	3 (0-6)	4 (0-6)	0.097
Interval between RTX and PP $\geq 7d$	21 (72.4)	104 (68.9)	0.705
IA titer (1:X) just before KT	2 (1-8)	2 (0-8)	0.002
No. of patients with rebound (%)	14 (48.3)	27 (17.9)	<0.001
No. of preoperative PP	6 (4-12)	4 (1-9)	<0.001
No. of postoperative PP	0 (0-20)	0 (0-6)	0.002
Acute rejection (%)	4 (13.8)	16 (10.6)	0.536

Infectious complications (%)	11 (37.9)	48 (31.8)	0.519
Medical complications (%)	7 (24.1)	26 (17.2)	0.378
Surgical complications (%)	3 (10.3)	12 (7.9)	0.713
Patient/graft survival (%)			0.44/0.22
1yr	29/28 (100/96.6)	149/151 (98.7/100)	
3yr	29/28 (100/96.6)	148/151 (97.9/100)	

Table 2. Comparison of the rebound vs. non-rebound group

	Rebound (n = 41)	Non-rebound (n = 139)	p value
Follow-up period (m)	37 (12-58)	22 (2-63)	<0.001
Age (y)	48.5 (20-64)	48 (20-72)	0.909
Sex (male, %)	31 (75.6)	89 (64.0)	0.167
Past medical history (%)			
Diabetes mellitus	5 (12.2)	29 (20.9)	0.213
Hypertension	15 (36.6)	95 (68.3)	<0.001
Tuberculosis	3 (7.3)	9 (6.5)	1.000
Hepatitis	2 (4.9)	7 (5.0)	1.000
Cardiovascular disease	4 (9.8)	13 (9.4)	1.000
Malignancy	0 (0)	3 (2.2)	1.000
Cause of ESRD (%)			0.087
Chronic GN	8 (19.5)	42 (30.2)	
Diabetes mellitus	8 (19.5)	29 (20.9)	
Hypertension	10 (24.4)	26 (18.7)	
Polycystic kidney disease	3 (7.3)	6 (4.3)	
FSGS	4 (9.8)	1 (0.7)	
Unknown	5 (12.2)	24 (17.3)	
Duration of RRT (m)	20 (0-252)	7 (0-240)	0.063
Number of KT > 1 (%)	7 (17.1)	8 (5.8)	0.047
PRA $\geq 20\%$ (%)	2 (5.0)	14 (10.3)	0.531
Number of HLA mismatch	3 (0-6)	4 (0-6)	0.075
Interval between RTX and PP $\geq 7d$	22 (53.7)	103 (74.1)	0.013
Initial IA titer (1:X)	128 (8-512)	64 (4-2048)	0.003
No. of preoperative PP	5 (1-12)	4 (1-9)	<0.001
No. of postoperative PP	1 (0-6)	0 (0-20)	<0.001
Acute rejection (%)	5 (12.2)	15 (10.8)	0.781
Infectious complications (%)	9 (22.0)	50 (36.0)	0.093
Medical complications (%)	6 (14.6)	27 (19.4)	0.486
Surgical complications (%)	5 (12.2)	10 (7.2)	0.337
Patient/graft survival (%)			0.33/0.56
1yr	41/40 (100/97.6)	137/139 (98.6/100)	
3yr	41/40 (100/97.6)	136/139 (97.7/100)	

Conclusions

With the development of desensitization protocol, ABO-i KT could be performed and managed safely regardless of initial isoagglutinin titer and titer-rebound within 2 weeks after KT.

