

Abstract Submission No. : 2088

Expansion and Characterization of Regulatory T cell Populations from Korean Kidney Transplant Recipients

Jinhyuk Baek¹, Youngchan Park², Ye Na Kim², Ho Sik Shin², Yeonsoon Jung², Hark Rim²

¹Department of Internal Medicine-Nephrology, Keimyung University Dongsan Medical Center, Korea, Republic of

²Department of Internal Medicine-Nephrology, Kosin University Gospel Hospital, Korea, Republic of

Objectives: The development of immunosuppressants has enabled remarkable progress in kidney transplantation (KT). However, current immunosuppressants cannot achieve induction of immune tolerance and their nonspecific immunosuppressive effects result in many adverse effects. Regulatory T cells (Tregs) play crucial roles in controlling allospecific immune responses. This study evaluated the distribution of Tregs and their effects on kidney allograft function in Korean KT recipients.

Methods: We enrolled 144 KT recipients with stable graft function between 1989 and 2018. Differentiation and expansion of Tregs were studied by flow cytometry to compare the Tregs subpopulations. Tregs were defined as CD4⁺CD25^{high}CD127^{low}/-FoxP3⁺ cells.

Results: Among the 144 patients, 75 patients (65.8%) were males and mean follow-up period was 144.3 ± 111.5 months. All patients received calcineurin inhibitors as maintenance immunosuppressants. Patients with follow-up period more than 144.3 months tended to have more gating Tregs numbers than that in shorter follow-up period (92.3 ± 142.4 vs. 50.1 ± 76.4, p = 0.061, respectively). There were no significant differences in Tregs subpopulations between patients with serum creatinine more than 1.5 mg/dL and patients with serum creatinine less than 1.5 mg/dL. In terms of the number of Tregs, when the trough level of tacrolimus was at an appropriate level, the number of Tregs tended to be higher than that of Tregs when the trough level of tacrolimus was low or high, and the organ function of the transplant was also stable.

Conclusions: Tregs counts may be associated with transplant outcomes considering that there is a relationship between these cells and kidney graft function.

Table1. Regulatory T cell subpopulation according to the patient's characteristics



KSN 2021
FULLY VIRTUAL MEETING
 September 02 (Thu) - 05 (Sun)

	Gating cell number	P value	Gated (%)	P value
Male (n=73)	76.7 ± 129.5	0.295	29.1 ± 22.4	0.078
vs. Female (n=40)	vs. 56.6 ± 73.5		vs. 37.6 ± 27.1	
LDKT (n=85)	75.6 ± 121.5	0.113	32.0 ± 24.1	0.640
vs. DDKT (n=23)	vs. 44.5 ± 72.1		vs. 34.7 ± 26.7	
Follow-up duration ≤ 147.5 months (n=57)	50.6 ± 76.9	0.073	36.4 ± 27.9	0.060
vs. Follow-up duration > 147.5 months (n=56)	vs. 89.0 ± 138.5		vs. 27.8 ± 19.5	
Tacrolimus (n=70)	49.3 ± 69.4	0.095	34.3 ± 26.2	0.378
vs. Cyclosporine (n=39)	vs. 94.7 ± 158.1		vs. 29.9 ± 21.4	
MMF (n=73)	65.0 ± 121.7	0.558	33.2 ± 25.3	0.515
vs. No MMF (n=40)	vs. 78.1 ± 95.8		vs. 30.1 ± 22.8	
PDN (n=79)	58.1 ± 89.6	0.181	34.1 ± 25.8	0.194
vs. No PDN (n=34)	vs. 96.3 ± 152.4		vs. 27.6 ± 20.3	
Tacrolimus/MMF/PDN (n=49)	44.0 ± 66.4	0.427	36.8 ± 26.8	0.459
vs. Cyclosporine/MMF/PDN (n=9)	vs. 88.9 ± 158.8		vs. 29.7 ± 20.7	
Median tacrolimus level ≤ 5.7 ng/ml (n=35)	56.9 ± 72.7	0.363	31.7 ± 21.4	0.530
vs. Median Tacrolimus level > 5.7 ng/ml (n=35)	vs. 41.7 ± 66.1		vs. 36.8 ± 30.5	
Mean tacrolimus level ≤ 5.8 ng/ml (n=39)	57.6 ± 73.3	0.266	30.9 ± 20.6	0.053
vs. Mean Tacrolimus level > 5.8 ng/ml (n=31)	vs. 38.9 ± 63.8		vs. 38.5 ± 31.9	
Median tacrolimus dose ≤ 2.5 mg (n=36)	46.6 ± 62.5	0.963	37.6 ± 25.7	0.614
vs. Median tacrolimus dose > 2.5 mg (n=22)	vs. 45.7 ± 80.2		vs. 33.9 ± 30.1	
Mean tacrolimus dose ≤ 2.6 mg (n=36)	46.6 ± 62.5	0.963	37.6 ± 25.7	0.614
vs. Mean tacrolimus dose > 2.6 mg (n=22)	vs. 45.7 ± 80.2		vs. 33.9 ± 30.1	
Median cyclosporine level ≤ 87.7 ng/ml (n=20)	53.5 ± 111.1	0.095	32.0 ± 22.8	0.530
vs. Median cyclosporine level > 87.7 ng/ml (n=19)	vs. 138.1 ± 189.3		vs. 27.7 ± 20.3	
Mean cyclosporine level ≤ 98.1 ng/ml (n=23)	52.9 ± 105.5	0.078	30.7 ± 21.9	0.776
vs. Mean cyclosporine level > 98.1 ng/ml (n=16)	vs. 154.8 ± 201.1		vs. 28.7 ± 21.4	
Median cyclosporine dose ≤ 100 mg (n=18)	119.8 ± 197.7	0.401	36.3 ± 21.6	0.010
vs. Median cyclosporine dose > 100 mg (n=12)	vs. 66.2 ± 110.5		vs. 17.0 ± 12.7	
Mean cyclosporine dose ≤ 106.7 mg (n=18)	119.8 ± 197.7	0.401	36.3 ± 21.6	0.010
vs. Mean cyclosporine dose > 106.7 mg (n=12)	vs. 66.2 ± 110.5		vs. 17.0 ± 12.7	
Creatinine ≤ 1.2 mg/dl (n=79)	65.2 ± 111.3	0.527	32.4 ± 24.1	0.856
vs. Creatinine > 1.2 mg/dl (n=34)	vs. 79.9 ± 117.6		vs. 31.5 ± 25.5	
Creatinine ≤ 1.5 mg/dl (n=96)	67.6 ± 111.9	0.647	33.0 ± 24.6	0.382
vs. Creatinine > 1.5 mg/dl (n=17)	vs. 81.2 ± 121.1		vs. 27.3 ± 23.3	
Total cholesterol ≤ 172.8 mg/dl (n=53)	90.6 ± 140.6	0.044	32.3 ± 25.1	0.886
vs. Total cholesterol > 172.8 mg/dl (n=52)	vs. 45.8 ± 74.8		vs. 33.0 ± 24.9	
Non-HBV (n=95)	72.8 ± 117.0	< 0.001	30.8 ± 23.1	0.134
vs. HBV (n=7)	vs. 12.4 ± 13.0		vs. 55.2 ± 37.0	