

# The Frequency of HLA and Donor Specific Antibodies and Its Impact on Renal Graft in Long Term Renal Transplant Patients

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## OBJECTIVES

The role of HLA antibodies on early term renal damage was shown in the previous studies. However, the long term effects of HLA antibodies were not examined sufficiently. In this study, we aimed to examine the effects of HLA antibodies frequency and associated factors on renal graft survival among individuals with long term grafts (>5 years).

## METHODS

In this study, we examined 118 sequential outpatients with creatinine levels lower than 4 mg/dl, who had kidney transplantation from live donors between April 1993-December 2009. Clinical, laboratory, serological data of patients during transplantation period and data of donors were examined from medical records. Urea, creatinine levels and amount of proteinuria during the beginning of the study were recorded. HLA class-I and HLA class-II antibodies of patients were screened with luminex method. Presence of donor specific antibodies were examined with luminex methods on individuals with HLA antibodies.

## RESULTS

Demographic and clinical findings of the patients were shown on Table 1. The mean age of donors was  $51.0 \pm 10.6$ . The donor population consisted of mothers (48.3%), fathers (24.6%), siblings (16.1%), spouses (8.5%) and other relatives (2.5%). Nineteen patients (16.1%) had HLA antibody. Nine patients had HLA class-I antibody, 15 patients had HLA class-II antibody, 5 patients had both HLA class-I and HLA class-II antibodies. Demographic findings and laboratory data of HLA antibody (+), HLA antibody (-) and DSA (+), DSA (-) patients were shown on Table 2. Humoral rejection, chronic allograft nephropathy and acute rejections were higher in patients with positive DSA. Moreover, the use of cyclosporine was higher and the use of tacrolimus was lower in patients with HLA antibody.

**Table 1.** Demographic and clinical findings of renal transplant recipients.

n=118	
Age (year)	29.0±10.4
Male gender (%)	71
Post-transplant period (months)	124.3±40.6
Hemodialysis (%)	83.9
Peritoneal dialysis (%)	9.3
Preemptive (%)	5.1
Renal replacement time (months)	26.1±24.0
Missmatch sayısı (%)	0(11.9) 1(9.3) 2(29.7) 3(30.5) 4(11.0) 5(3.4) 6(3.4)
Body mass index (kg/m <sup>2</sup> )	23.0±4.1

**Table 2.** Demographic and laboratory findings of HLA antibody or DSA positive and negative patients

	HLA ab (+) n=19	HLA ab (-) n=99	P	DSA (+) n=11	DSA(-) n=107	P
Recipient age (year)	27.2±11.9	29.3±10.1	0.182	27.3±11.7	29.2±10.3	0.381
Donor age (year)	44.3±9.9	47.6±10.6	0.229	42.7±11.1	47.5±10.5	0.197
Gender (male) (%)	78.9	69.7	0.582	90.9	69.2	0.174
Post-transplant period (months)	132.3±41.1	122.7±40.5	0.423	119.5±47.1	124.8±40.1	0.681
Renal replacement time (months)	23.5±24.8	26.6±23.9	0.335	28.2±29.4	25.8±23.4	0.989
Delayed graft function (%)	11.8	8.6	0.654	10	9.1	1.000
Akut Rejection (%)	41.2	20.7	0.117	50	21.2	0.056
Humoral Rejection(%)	10.5	1.0	0.067	18.2	0.9	0.023
Chronic allograft nephropathy (%)	26.3	5.1	0.01	27.3	6.5	0.051
HLA mismatch	2.4±1.5	2.5±1.4	0.637	2.9±1.6	2.4±1.4	0.230
AB mismatch	1.5±1.0	1.6±1.0	0.536	1.9±1.0	1.5±1.0	0.227
DR mismatch	0.9±0.7	0.9±0.6	0.820	1.0±0.8	0.9±0.6	0.496
Tacrolimus use (%)	47.4	72.7	0.056	36.4	72.0	0.034
Cyclosporine use (%)	52.6	26.3	0.03	63.6	27.1	0.033
Mycophenolate sodium use (%)	26.3	32.3	0.789	45.5	29.9	0.317
Mycophenolate mofetil use (%)	31.6	48.5	0.214	27.3	47.7	0.223
Azathioprine use (%)	31.6	13.1	0.081	18.2	15.9	1.000
Post-transplant first year crea(mg/dL)	1.3±0.3	1.3±0.4	0.956	1.3±0.3	1.3±0.4	0.957
Post-transplant first year MDRD (mL/min/1.73 m <sup>2</sup> )	73.0±18.4	67.0±18.3	0.149	71.8±17.7	67.6±18.5	0.371
Post-transplant first year proteinuria (%)	11.1	7.4	0.634	20	6.8	0.181
During first study crea (mg/dL)	1.4±0.4	1.4±0.6	0.896	1.5±0.5	1.4±0.5	0.277
During first study MDRD (mL/min/1.73 m <sup>2</sup> )	61.0±16.2	60.6±20.5	0.960	57.5±16.8	60.9±20.1	0.481
During first study proteinuria (%)	27.8	18.6	0.353	27.8	18.6	0.353
First-year follow-up crea (mg/dL)	1.7±1.1	1.5±0.7	0.415	2.0±1.4	1.5±0.7	0.083
First-year follow-up MDRD (mL/min/1.73 m <sup>2</sup> )	57.8±23.0	62.1±23.2	0.441	54.4±25.5	62.1±23.0	0.440
First-year follow-up proteinuria (%)	46.7	25	0.119	50	26,3	0.216

## CONCLUSIONS

Positivity of HLA antibodies seems to be associated with chronic allograft nephropathy. Use of tacrolimus based immunosuppressive therapy may decrease presence of HLA antibody. Additionally, HLA antibodies seems to be associated with acute rejection episodes. Therefore, close follow-up of those patients is important.

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