Evaluation of the current post-transplantation HLA antibody screening in pediatric transplant recipients.

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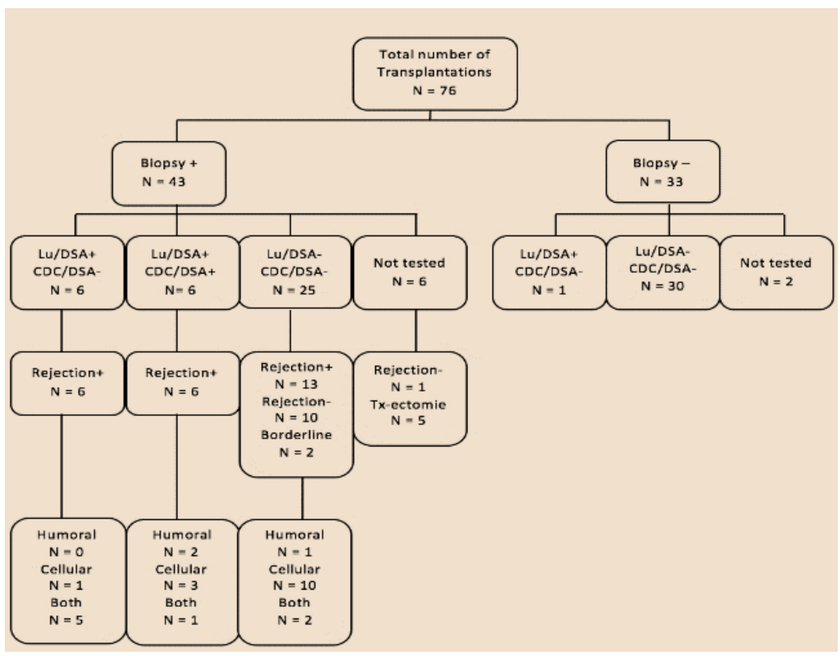
Introduction: The necessity of post-transplant monitoring for donor-specific antibodies (DSAs) is unclear. This study evaluates the clinical relevance of post-transplantation donor-specific HLA antibodies in pediatric renal transplant recipients, aiming at better stratification of patients at risk of graft dysfunction and better recommendations for post-transplant monitoring.

Methods: A cohort of 68 pediatric kidney recipients, involving 76 transplantations between 2004-2014, was studied retrospectively. All patients were screened for HLA antibodies at 1,3,6 and 12 months after transplantation and yearly thereafter (CDC and Luminex). A renal biopsy was performed on clinical indication. We assessed the effect of post-transplant DSA on clinical outcome, including antibody-mediated acute rejection and GFR decrease.

Results: The prevalence of DSA was 19% (13/68 transplantations). Most patients with HLA antibodies after transplantation were DSA-positive (76%; 13/17). A clear association between DSA and subsequent rejection was found. At the end of the study period, a significnatly lower GFR was found in patients with DSA (DSA+ 24.4 ±17.4 ml/min/1.73m^2 vs DSA- 61.1 ±18.8 ml/min/1.73 m^2, p<0.001). Statistical analyses were performed using IBM SPSS Statics 25.0. P-values < 0.05 were considered to be statistically significant.

Flowchart total cohort.



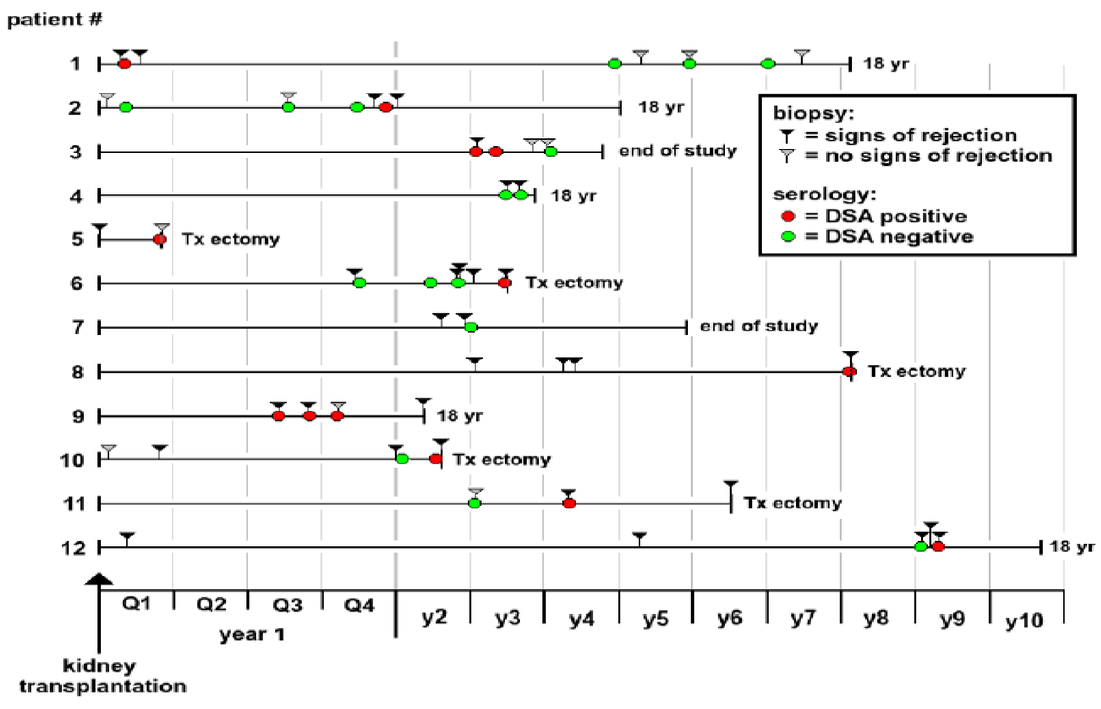
Characteristics of HLA DSAs.

Patient no	Pre-Tx CDC PRA (%)	Pre-Tx Lu I/Lu II	Time to DSA (mo)	HLA I/II	Specificity CDC	Specificity Lu
1	0	Neg/neg	1	Pos/pos	None	A2, DQ3
2	3	Neg/neg	12	Pos/pos	A2, A24	DQ3
3	6	Neg/neg	24	Pos/pos	None	A2, B7
4	0	Neg/neg	32	Neg/pos	None	DR51
5	50	Not tested	2	Pos/pos	B13	B18
6	0	Neg/neg	29	Pos/pos	DQ3	DQ3
7	6	Pos/pos	24	Neg/pos	None	DQ9
8	0	Not tested	86	Pos/pos	A28	A28, DQ1
9	64	Pos/pos	7	Pos/pos	None	Cw7, DQ2
10	74	Not tested	18	Pos/pos	A24	A24, B55
11	2	Not tested	40	Pos/pos	A2, B14	A2, DQ5
12	18	Not tested	85	Neg/pos	None	DQ1
13	0	Not tested	100	Neg/pos	None	DQ3

Baseline characteristics of study population.

	Total cohort (N = 76)	Biopsy (N = 43)	No biopsy (N = 33)	P-value
Age at transplantation (y)				
Median (range)	11.0 (2.4-17.8)	11.7 (3.2-17.8)	7.5 (2.4-17.0)	0.005
Mean ± SD	10.1 ± 4.8	11.4 ± 4.5	8.4 ± 4.6	
Donor type				
LRD/DD	36/40	17/26	19/14	0.118
No. of HLA-A, HLA-B, and HLA-DR mism				
Median (range)	3 (0-5)	3 (1-4)	2 (0-5)	0.183
Mean ± SD	2.6 ± 1.0	2.7 ± 1.0	2.4 ± 1.0	
Follow-up (y)				
Median (range)	3.1 (0.0-12.9)	2.4 (0.0-11.9)	3.9 (0.0-12.9)	0.082
Mean ± SD	4.1 ± 3.5	3.4 ± 3.1	4.9 ± 3.8	
Time to first biopsy (y)				
Median (range)	–	0.20 (0.0-11.2)	–	–
Mean ± SD		0.98 ± 2.0		

Serial results of biopsies and DSA testing.



Conclusion: Based on our observations, we recommend routine post-transplantation screening for HLA and DSA. The presence of DSA justifies a renal biopsy even in the absence of clinical sings of rejection.