ANTI-HLA ANTIBODY-MEDIATED REJECTION IN ABO-INCOMPATIBLE KIDNEY TRANSPLANT PATIENTS

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OBJECTIVES

- Antibody mediated rejection(AMR) in ABO-incompatible(ABOi) living donor kidney transplant(KT) patients can either be due to donor-specific anti-HLA antibody(DSA) or anti-blood group antibody(anti-ABO).

- The relative frequency and possible differential clinical features of these two types of AMR in ABOi KT patients is unknown.

METHODS

- Among 78 ABOi KT patients between 2007 and 2015 in our center, 9(11.5%) patients developed clinical (with an increase in serum creatinine) acute AMR.

- Since there is no histologic distinction between DSA- and anti-ABO-induced AMR, we assumed the causative antibody in each cases on the basis of anti-ABO level and DSA measured in serum collected at the time of AMR.

- DSA was determined by luminex panel reactive antibody (PRA) phenotype assay, followed by single antigen beads assay if PRA was positive. The ABO titer was measured by the saline method for IgM and indirect Coombs' test for IgG.

RESULTS

- Among the 9 cases of acute AMR, 5 anti-ABO-induced AMR (ABO-AMR) and 4 DSA-induced AMR(DSA-AMR) were identified based on the antibody status at the time of AMR.
  - 5 cases of AMR with anti-ABO ≥ 16 and no detectable DSA were regarded as ABO-AMR.
  - 2 AMR with detectable DSA and low(4 and 8) anti-ABO as DSA-AMR.
  - 2 AMR with no detectable DSA and low(2 and 2) anti-ABO were also regarded as DSA-AMR; since this low level of anti-ABO is unlikely to cause rejection, and in ABO-compatible KTs, cases of AMR with no detectable DSA in serum probably due to the adsorption of antibody on the graft are not infrequently observed.

- No patient or graft loss.

- Between ABO- and DSA-AMR, no significant difference in onset day of AMR or anti-ABO titer before desensitization (table).
  Pre-KT PRA was positive in 3 of 4 patients with DSA-AMR but none of 5 ABO-AMR(p= 0.204 by Fisher's exact test)

Comparison of ABO- and DSA-AMR

	ABO-AMR (n=5)	DSA-AMR (n=4)	P
Onset of AMR (day)*	5.8±4.2	4.3±2.8	NS
Peak serum creatinine during AMR(mg/dl)*	3.7±4.1	4.9±1.0	NS
Number of plasmapheresis for treatment of AMR	8±4.7	10.8±8.3	NS
Anti-ABO titer before desensitization**	128(64-4096)	160(16-256)	NS
Anti-ABO titer at the time of AMR**	16(16-32)	3(2-8)	0.012†
Positive PRA before KT	0	3 (75%)	0.204‡

ABO-AMR anti-ABO antibody-induced acute AMR, DSA-AMR donor specific anti-HLA antibody-induced acute AMR, * Mean±SD, ** Median(range), † two sample T test, ‡ Fisher's exact test

CONCLUSIONS

A significant proportion of AMR in ABOi KT are caused by DSA, and clinical features and possible differential therapeutic approach of these 2 types of AMR needs to be explored by further studies.

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