



DR53 Antibody Positivity Study: 50% of 0% cPRA

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AIM

UNOS organ allocation system allows the listing of unacceptable antigens for a listed candidate due to the presence of specific anti-HLA antibodies. HLA-DR53 antibody has been seen as a positive specificity without an associated HLA DR antibody positivity, which results in a cPRA of 50% if called “Unacceptable”. Therefore, we proposed DR53 antibody only may cause some candidates to lose 50% opportunity for organ offers. This can also have an impact on the transplant immunotherapy drugs that are chosen at the time of transplant for patients of 0% vs 50% cPRA. This study is mainly focused on the reality of HLA DR53 antibody’s activity on live cells and solid phase detection in order to reduce negative impact of organ offers to candidates who only have DR53 antibody positive.

Materials and Methods

Cases and anti-HLA DR53 detection: 10 Patients’ sera with reported only HLA DR53 antibodies positive by solid phrase assay (Luminex Single Antigen Beads-One Lambda)-OL SAB, and cutoff of positive is 1,000 MFI; these sera’ DR53 antibody were tested by Immucor single antigen beads (SAB) as well, see table.

Crossmatch Test: Three color B cell crossmatches were performed by CytoFlex Flow cytometer -Beckman Coulter. The surrogate cells with known DR53 expression were used to crossmatch. The cutoff of B cell crossmatch is 70 Median Channel Shift (MCS).

Results

There were 10 cases with DR53 antibody positive only (mean: 7,608 MFI) detected by OL SAB and 7 of 10 were confirmed positive (mean: 4,701 MFI) by Immucor SAB. SAB tests indicate that the sensitivity of OL SAB (100%) is higher than Immucor SAB (70%) but specificity needs to further study.

Table 1. DR53 antibody test with two different vendors		
Case	MFI (OL)	MFI (Immucor)
1	1,441	389
2	11,092	13,029
3	11,126	4,684
4	12,783	15,748
5	15,169	6,663
6	2,560	1,335
7	3,658	1,472
8	5,585	1,969
9	5,820	989
10	6,842	730
Mean	7,608	4,701

Results (continue..)

Surrogate B cell crossmatch results indicate that three out four positive crossmatch sera have DSA-DR53 >10,000 MFI. DR53 antibody from B cell crossmatch negative within this group was at 11,092 MFI. Only one B cell crossmatch positive with DSA-DR53 <10,000MFI. Overall, there are 40% B cell crossmatch positive with DR53 antibody positive and mean MCS of 10 crossmatches is 42.

Table 2. Cases with DR53 antibody over 10,000 MFI crossmatches with surrogate B Cells		
Case	MFI (OL)	B cell Crossmatch (MCS)
2	11,092	Neg (-40)
3	11,126	Pos (121)
4	12,783	Pos (158)
5	15,169	Pos (127)

Table 3. Cases with DR53 antibody under 10,000 MFI crossmatches with surrogate B Cells		
Case	MFI (OL)	B cell Crossmatch (MCS)
1	1,441	Neg (-43)
6	2,560	Pos (70)
7	3,658	Neg (42)
8	5,585	Neg (28)
9	5,820	Neg (-2)
10	6,842,	Neg (-44)

Based on our transplant program criteria for crossmatch acceptance, all of 10 pairs’ crossmatches are considered to be transplantable. So, based on this study, all patient with only DR53 antibody positive could have chance to acceptable the organ offers if DR53 is not listed as unacceptable HLA antigen to UNOS.

Conclusions

This study suggests that if the patient has DR53 antibody positive without any associated DR antigens, it is better not to list as an unacceptable HLA antigen to UNOS and give the transplant candidates 50% opportunity of deceased donor offers. However, if the patient has higher MFI of DR53 antibody, a surrogate crossmatch should be considered, before deciding to list as unacceptable.

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