

## DSA Detected by ELISA-PRA is associated with High Risk for Development of AMR in Stable Kidney Transplant Recipients

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**Background:** Donor specific anti-HLA antibodies (DSA) are a major cause of antibody mediated rejection (AMR) and allograft loss, determining how to monitor patients for DSA and how to treat them is important. The purpose of this study was to evaluate the incidence of presence of DSA and the associations of DSA levels and development of AMR in stable kidney transplant recipients (KTRs).

**Methods:** We screened 208 stable KTRs by HLA-specific ELISA-PRA (panel reactive antibody) for DSA from July 2013 to June 2014. We compared the incidence of AMR, histopathologic finding and clinical parameters between Group 1 (DSA-positive, n=13) and Group2 (DSA-negative, n=14).

**Results:** Time to biopsy after transplantation was 74.3 (6-154.6) months. The median age of recipient and donor was 37.5 (24-59) years and 39 (20-64) years, respectively. 55% were female. Median serum creatinine level at the time of biopsy was 1.25 (0.6-2.3) mg/dl and FK level 5.9 (4.5-8.1) ng/mL. 27 (12.9%) had positive ELISA-PRA and were biopsied. Median PRA level was 7.5% (2.5-47.5). In Group 1, 13 had DSAs [class I (n=6), class II (n=5) and class 1&2 (n=2)]. Group 1 had a significantly higher risk for development of AMR than Group 2 [10 (76.9%) of 13 patients vs. 1 (7.1%) of 14 patients, p<0.001]. After patients with AMR were treated with plasmapheresis (PP) with IVIG (4 (4-7)) and anti-CD20 antibody, anti-class I PRA level reduced by -7.1% (-28.5~-3.6) and class II PRA level was reduced by 0% (-16.7~33.3). Class I DSA is more effectively removed than class II [class I DSA persisted in 2 (40%) of 5 patients vs. class II DSA persisted in 6 (85.7%) of 7 patients]. All 27 patients had stable graft function and serum creatinine level at last visit was 1.2 (0.7-2.3) mg/dL.

**Conclusions:** Our study demonstrated that DSA detected by ELISA-PRA is associated with high risk for development of AMR in stable KTRs. Routine monitoring of DSA with ELISA-PRA and subsequent allograft biopsy may be useful method to recognize development of AMR. Class II DSA seems to be more resistant to treatment of AMR than class I DSA, however, long term effect of PP, IVIG and anti-CD20 antibody on AMR to remove DSA still remains unknown.

**Key Words:** Donor specific antibody, Acute antibody mediated rejection