

Distribution of Human Leukocyte Antigen Antibodies Among Renal Transplant Recipients: Single-Center Experience

Servet Uluer Biçeroğlu¹ , Aygöl Çeltik² , Zeynep Deveci¹ , Salime Seda Altan¹ , Gülay Aşçı² ,
Ayhan Dönmez¹ 

¹Ege University Faculty of Medicine, Tissue Typing Laboratory, İzmir, Türkiye; ²Ege University Faculty of Medicine, Department of Nephrology, İzmir, Türkiye

Abstract

Objective: Single antigen bead (SAB) tests on Luminex platform are widely used for donor-specific antibody (DSA) detection. This study aimed to evaluate the frequency of anti-HLA antibody profiles based on SAB test results.

Materials and Methods: A total of 317 SAB tests that were performed between January 2022 and September 2025 were included in the retrospective analysis. For patients under follow-up, only the most recent results were evaluated. Antibodies against HLA-A, HLA-B, HLA-DRB1, and HLA-DQB1 with a mean fluorescence intensity (MFI) $\geq 10,000$ were analyzed.

Results: Among 145 SAB-positive patients with MFI $\geq 10,000$, 63 (43.4%) were positive for Class I, 42 (29%) for Class II, and 40 (27.6%) for both Class I and Class II antibodies. A total of 1,440 Class I antibodies were detected (anti-HLA-A: 541, anti-HLA-B: 899). For Class II, a total of 740 antibodies were identified (anti-DQB1: 524 [78.8%], anti-DRB1: 216 [29.1%]). The most frequent antibodies were as follows: HLA-A: A2 (12.2%), A68 (9.2%), A24 (8.9); HLA-B: B57 (6.2%), B51 (5.0%), B27 (4.8); HLA-DRB1: DR4 (27.3%), DR9 (14.3%), DR15 (7.9); HLA-DQB1: DQ6 (25.6%), DQ7 (17.2%), DQ4 (16.9).

Conclusion: The distribution of detected antibodies was consistent with HLA allele frequencies reported in the Turkish population. Among Class II antibodies, the high prevalence of anti-DQB1 antibodies was particularly noteworthy. Accumulating evidence in the literature suggests that DQB1 antibodies may play a significant role in graft rejection. These findings indicate that the HLA-DQB1 locus should be included in pre-transplant compatibility assessment, especially for re-transplant candidates.

Keywords: Single antigen bead assay, HLA antibody, donor specific antibody

OP-08

Correspondence

Servet Uluer Biçeroğlu

E-mail

servetuluer@hotmail.com

Published

July 13, 2026

DOI

10.36519/tji.2026.op8



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