The assessment and outcomes of human leukocyte antigen mismatches of lung transplantation in Korean patients

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Background: The human leukocyte antigen (HLA) system is an important determinant in solid organ transplantation for allocation. In lung transplantation, HLA compatibility is not included in the lung allocation score system and is not considered when placing donor allografts for lung transplantation. However, multiple studies have suggested that HLA matching affect the outcomes of lung transplantation. This study evaluated the current status of assessment, prevalence, and effects of HLA cross-matches in lung transplantation in Korean patients using nationwide multicenter registry data.

Methods: Two hundred and twenty patients who received lung transplantation at six tertiary hospitals in South Korea between March 2015 and December 2019 are retrospectively reviewed.

Results: Complement-dependent cytotoxic crossmatch (CDC-XM) for T-lymphocyte was performed in 208 patients (94.5%) and for B-lymphocyte was performed in 154 patients (70.0%). The flow-cytometric crossmatch for T-lymphocyte was performed in 125 patients (56.8%) and for B-lymphocyte was performed in 124 patients (56.4%). Among them, nine patients (4.1%) showed T-cell and/or B-cell mismatches. The incidences of postoperative complications in mismatched patients including primary graft dysfunction, acute rejection, and bronchiolitis obliterans were not significant compared to patients without mismatches. Meanwhile, Kaplan-Meier analyses showed poorer overall survival in patients with mismatch in CDC-XM for T-lymphocyte ($P=0.037$) and for B-lymphocyte ($P=0.085$) compared to patients without mismatches. The median follow-up was 246.8 days for patients without mismatches and 73.3 days for patients with mismatches.

Conclusions: HLA compatibility is important determinants of lung transplant survival, even with the small number of mismatched patients with relatively short follow-up period. HLA crossmatch should be treated considerably in lung transplantation.

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