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## The Effect Of Donor Dominant One-way HLA Mismatch On Liver Transplantation Outcomes: An Analysis Of Korean Organ Transplantation Registry (KOTRY) Database

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**Background** : Human leukocyte antigen (HLA) compatibility, especially donor dominant one-way HLA mismatch (D→R one-way HLA MM) seemed strongly associated with graft-versus-host disease (GVHD).

The aim of this study is to investigate the relevance of D→R one-way HLA MM in outcome of liver transplantation by analyzing Korean Organ Transplantation Registry (KOTRY) database.

**Methods** : We retrospectively analyzed 2670 patients with HLA type data who underwent LT between April 2014 and December 2020 in KOTRY database. The patients were categorized into two groups whether D→R one-way HLA MM at 3 loci or not and evaluated the outcomes of LT between the two groups.

**Results** : Among 2670 LT recipients, 18 patients were found to be D→R one-way HLA MM. In D→R one-way HLA MM group, a higher proportion of donors were offspring of recipients compared to the control group (47.7% vs 83.3%,  $p = 0.002$ ). The incidence of GVHD (0.3% vs 22.2%,  $p < 0.001$ ) and mortality rate (11.6% vs 38.9%,  $p = 0.003$ ) was much higher in D→R one-way HLA MM group compared to the control group.

Logistic regression analysis showed that D→R one-way HLA MM at 3 loci was seemed to be strongly associated with the incidence of GVHD (OR=163.3,  $p < 0.001$ , multivariate). According to Cox regression multivariate analysis, D→R one-way HLA MM at 3 loci (HR=12.75,  $p < 0.001$ ) was found to be the strongest risk factor for patient death. Patients with D→R one-way HLA MM at 3 loci showed significantly lower overall survival ( $p < 0.001$ ) but there were no significant differences in rejection-free survival and death-censored graft survival between the two groups.

**Conclusions** : D→R one-way HLA MM at 3 loci not only affects the overall survival of LT patients but also the incidence of GVHD.

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