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Effect of Desensitization Protocol According to the Degree of Antibody-Mediated Rejection Risk in Living Donor Liver Transplant; Retrospective Cohort Study

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Introduction: Graft failure associated with donor specific antibody (DSA) is rare but consistent in living donor liver transplant (LDLT). This study aims to analyze the outcomes of desensitization protocol according to the preoperative antibody mediate rejection (AMR) risk.

Methods: We reviewed 998 cases of LDLT between January 1, 2012 and December 31, 2021 retrospectively. The desensitization treatment was protocolized for three different risk groups based on crossmatching(CDC), flow cytometry cross-matching (FCXM), and single antigen DSA test results: Rituximab + plasma pheresis for high risk (all positive), Rituximab only for intermediate risk (CBC-, FCXM+, DSA+), no treatment for low risk (only DSA+). The graft and patient survival of those retrospective cohort were analyzed.

Results: From 640 ABO compatible cases there were 292(45.6%) and 348(54%) cases each before and after desensitization treatment was protocolized, with 2(0.7%) and 4(1.1%) incidents of AMR respectively. From 69 cases with DSA test results, 20(29.0%) received Rituximab + plasma pheresis, 17(24.6%) received Rituximab only, and 32(46.4%) received no treatment. Number of cases in higher AMR risk group increased after protocol initiation($p=10^{-8}$), while AMR risk did not show any significant difference($p=0.69$).

Conclusion: AMR incidence remaining relatively similar despite the significant increase in number of high-risk group recipients post protocol initiation, suggests that the desensitization treatment is effective. While we were not able to isolate the effects of treatments due to the limited number of patients with DSA test results, we were able to analyze various factors in relation to AMR. Studies including larger number of cases are needed to prove the necessity of desensitization protocol in clinical settings.