High tacrolimus clearance is a risk factor for acute rejection early after renal transplantation

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Background: This study aimed to investigate if high tacrolimus clearance is a risk factor for acute rejection after renal transplantation.

Methods: The association between estimated tacrolimus clearance ([daily tacrolimus dose]/[trough concentration]) and biopsy-proven acute rejection (BPAR) the first 90 days post-transplantation were retrospectively investigated in both standard- and high immunological risk transplanted patients treated with tacrolimus at our center between 2009 and 2013

Results: In total, 655 patients treated with tacrolimus were included in the analysis. Eighty-eight (13.4%) patients experienced BPAR. Patients were divided into four groups according to their estimated clearance, and the patients in the high clearance group had significant higher incidence of BPAR (22.2%) compared to the other groups (log-rank; \( P=0.00014 \)). Estimated clearance had a hazard ratio of 1.95 (95% CI; 1.57-2.42) after adjusting for other risk factors. The highest positive predictive value of BPAR was 45.7% at a clearance cut-off of 2.07 mg \( \mu g^-1 L^-1 \), identifying 24 (3.6%) patients.

Conclusion: High estimated clearance is significantly associated with increased risk of BPAR the first 90 days post-transplantation. Setting a cut-off at about 2 mg \( \mu g^-1 L^-1 \) has the potential to serve as a predictor of increased risk of BPAR in the early phase following renal transplantation.