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Impact of 1-year Post-transplant Tacrolimus Trough Levels on Long-term Renal and Cardiovascular Outcomes in Kidney Transplant Recipients

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Objectives: Little is known regarding optimal tacrolimus (TAC) trough levels after 1-year post-transplant in stable kidney transplant recipients (KTRs). This study aimed to investigate the impact of 1-year post-transplant TAC trough levels on renal and cardiovascular outcomes in KTRs.

Methods: KTRs receiving TAC and mycophenolate-based immunosuppression who have never experienced renal or cardiovascular events within 1-year post-transplant were included from a multicenter observational cohort study. Renal outcome was defined as a composite of biopsy-proven acute rejection, interstitial fibrosis and tubular atrophy, and death censored graft loss. Cardiovascular outcome was defined as a composite of de novo cardiomegaly, left ventricular hypertrophy, and cardiovascular events.

Results: A total of 603 eligible KTRs were divided into low-level (LL) and high-level (HL) TAC based on the median TAC level at 1-year post-transplant of 5.9 ng/mL (range 1.3-14.3). During the mean follow-up of 38.2 ± 13.0 months, 27 and 166 episodes of renal and cardiovascular outcomes occurred, respectively. In multivariate Cox regression analysis, LL-TAC and HL-TAC were not independent risk factors for renal and cardiovascular outcomes, respectively. Instead, deceased donor KT (adjusted hazard ratio [AHR], 2.52; 95% confidence interval [CI], 1.10–6.01; P = 0.037) and male (AHR, 1.62; 95% CI, 1.06–2.47; P = 0.025) were independent risk factors for renal and cardiovascular outcomes, respectively.

Conclusions: TAC trough levels after 1-year post-transplant were not directly related to long-term renal and cardiovascular events in KTRs. There might be no need to insist higher TAC trough levels after 1-year post-transplant in KTRs with stable post-transplant clinical course.