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The Impact of Intra-patient Tacrolimus Trough Level Variability Over 2 Years Post-Transplant on the Long-Term Allograft Outcomes in Kidney Transplant Recipients

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Objectives: The current study aimed to determine the impact of tacrolimus (TAC) trough level (C0) intra-patient variability (IPV) over 2 years after kidney transplantation (KT) on allograft outcomes.

Methods: In total, 1,143 patients with low immunologic risk were enrolled. The time-weighted coefficient variability (TWCV) of TAC-C0 was calculated, and patients were divided into tertile groups (T1: <24.6%, T2: 24.6–33.7%, T3: ≥33.7%) according to TAC-C0-TWCV until post-transplant 1st year. Moreover, they were classified into the low/low, low/high, high/low, and high/high groups based on a TAC-C0-TWCV value of 33.7% during post-transplant 0–1st and 1st–2nd years. We compared the allograft outcomes among the three tertile and four TAC-C0-TWCV groups.

Results: The T3 group had the highest rate of death-censored allograft loss (DCGL), and T3 itself was an independent risk factor for DCGL (Adjusted hazard ratio (HR) 1.853, P = 0.029). In addition, sustained TWCV ≥33.7% until 2 years after KT showed the highest risk for DCGL (HR 2.395, P = 0.013). Moreover, the changes in TWCV during the 1st–2nd post-transplant year significantly affect to DCGL occurrence (HR of low/high 2.086, P = 0.045, HR of high/low 1.813, P = 0.021). Patients with an average TAC-C0 of ≥5 ng/mL in the high/high group were at highest risk for DCGL as well.

Conclusions: In conclusion, TAC-IPV is an important factor that can significantly affect comprehensive allograft outcomes. TAC-IPV after 1st year of KT was also considered an important factor for allograft outcomes. Moreover, TAC-IPV can significantly affect allograft outcomes even with a high average TAC-C0.

Figure 1. Kaplan–Meier survival analysis of allograft survival according to TAC-C0-TWCV tertiles until post-transplant 1st year

Figure 1.

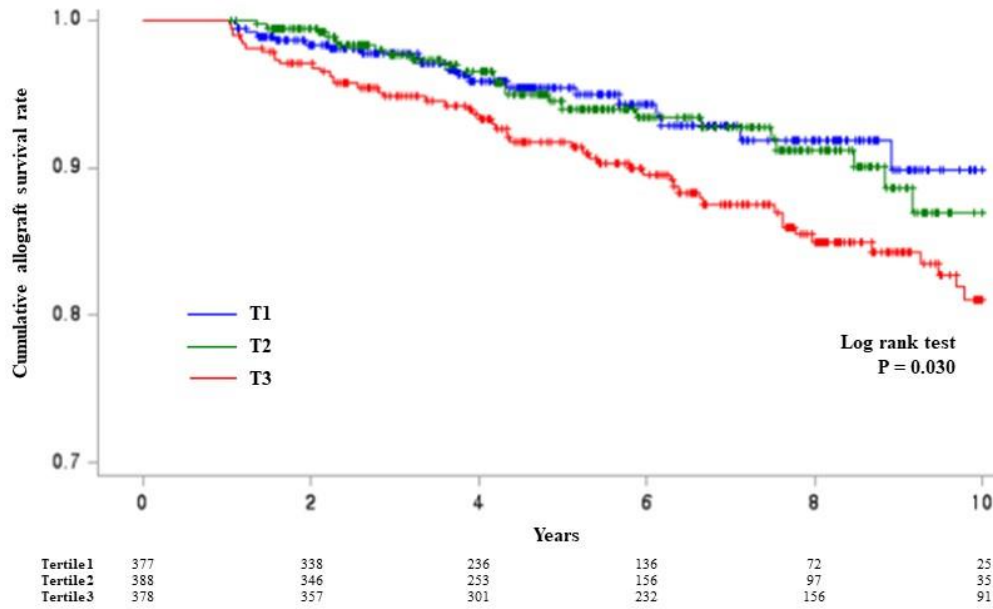


Figure 2. Kaplan–Meier survival analysis of allograft survival according to TAC-C0-TWCV during post-transplant 0–1st and 1st–2nd years

Figure 2.

