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Comparison of transplant outcomes for low-dose and standard-dose tacrolimus in kidney transplants

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Background: There are few studies that compare the effect of different dose of tacrolimus after kidney transplantation. We investigated transplant outcome of low-dose and standard-dose tacrolimus in the post-transplant period.

Methods: This study included 278 patients who underwent kidney transplantation between 2010 and 2014. All the patients received tacrolimus, mycophenolic acid, and steroid. Patients were divided into low-dose and standard-dose tacrolimus group (4-7 and 7-12 ng/ml for 0-2 months, 3-6 and 6-10 ng/ml for 3-6 months, 2-5 and 5-8 ng/ml for 7-12 months, respectively) by tacrolimus trough level at each period. We compared estimated glomerular filtration rate (eGFR), biopsy-proven acute rejection (BPAR), opportunistic infection and graft survival.

Results: There was no difference in baseline characteristics between two groups, except higher percentage of delayed graft function in low-dose group than standard-dose group in 0-2 months (10.1 vs 3.1%, P=0.03). Standard-dose group showed higher mean eGFR than low-dose group for 0-2 months (69.9 ± 17.2 vs 63.8 ± 19.2 ml/min/1.73m^2, p=0.006), while eGFR was not different by tacrolimus dose thereafter. Patients with persistently standard-dose tacrolimus for 12-months revealed significantly higher eGFR than those with persistently low-dose tacrolimus (65.9 ± 14.3 vs 58.2 ± 19.0 ml/min/1.73m^2, p=0.025). Incidence of BPAR was not different until 6 months, however, BPAR was significantly higher in low-dose group than standard dose group (3.9 vs 0.0%, P=0.039) for 7-12 months. Multivariate analysis showed that tacrolimus concentration was an independent risk factor for BPAR (odds ratio=0.31, 95% confidence interval=0.10-0.93, P=0.037). During mean follow-up of 31.9 ±

16.7 months, no significant differences of serious infections and graft survival were observed.

Conclusion: Standard-dose tacrolimus was associated with better graft function after kidney transplantation. Maintenance of proper tacrolimus level after 6 months could reduce acute rejection. However, dosing of tacrolimus did not have significant effect on graft survival in kidney transplants with tacrolimus-based triple therapy regimen.

Keywords: BPAR, Kidney transplantation, tacrolimus, TDM