Prognostic value of postoperative proteinuria for predicting early renal outcome after kidney transplantation

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Background: Proteinuria in kidney transplant recipients (KTRs) was reported to predict poor clinical outcomes. In this single center retrospective cohort study, we investigated the prognostic value of spot urine protein to creatinine ratio (PCR) or albumin to creatinine ratio (ACR) during early postoperative period.

Methods: A total of 353 KTRs with urine PCR or ACR data within postoperative day 7 after KT between 2014 and 2017 were included in the final analyses. PCR and ACR were serially followed up during the immediate postoperative period (within postoperative day 7), before discharge (postoperative 2–3 weeks), and at postoperative 3–6 months. Primary and secondary outcomes were estimated glomerular filtration rate (eGFR) at 1 year after KT and the incidence of delayed graft function (DGF), respectively.

Results: After adjusting for sex, age, donor status, and acute rejection within 3 months, KTRs with higher PCR (β coefficient=-8.66, $P=0.01$) or ACR (β coefficient=-6.97, $P<0.001$) at postoperative 3–6 months showed lower eGFR at 1 year after KT. Deceased donor kidney transplantation (DDKT) recipients with immediate postoperative PCR ≥ 3 mg/mg showed higher incidence of DGF (PCR <3 mg/mg vs. PCR ≥ 3 mg/mg, 12% vs. 39%; $P<0.001$) and lower eGFR before discharge (64.2 [range, 49.7–85.4] vs. 49.6 [range, 35.8–66.5]; $P=0.001$) compared to KTRs with immediate postoperative PCR <3 mg/mg.

Conclusions: Proteinuria at postoperative 3–6 months was identified as a potential surrogate marker predicting early renal outcome after KT. Heavy proteinuria during the immediate postoperative period may be a potential predictor of DGF in DDKT recipients. Our study suggests that early postoperative proteinuria may be a useful biomarker for predicting early renal outcome after KT.

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