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Impact of Acute Kidney Injury and Renal Recovery in Deceased Donor to Kidney Transplant Outcome: Report from Thai Transplant Registry

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Introduction: Influence of acute kidney injury (AKI) in deceased donor (DD) on long term kidney transplant (KT) outcome is still conflicted. Effect of renal recovery after AKI to transplant outcome in developing country is not previously elucidated.

Methods: Our retrospective cohort study included all DDKT performed in Thailand between 2001 and 2018. AKI was diagnosed according to KDIGO criteria. Renal recovery was defined if DD had improvement of AKI to normal or lower stage. All outcome was determined until end of 2020. The Kaplan-Meier analysis was used to evaluated impact of AKI and transplant survival.

Results: This study enrolled 4,234 KT recipients from 2,203 DD, of whom 2,969 (70.1%) recipients received kidneys from 1,545 (70.1%) DD with AKI. Recovery from AKI before procurement was observed in 36.2% (559/1,545) of DD with AKI. Incidence of DGF in no AKI and AKI with recovery group is comparable (34.5% vs 33.2%; $p = 0.52$). Multivariate analysis revealed association between delayed graft function (DGF) and donor AKI (adjusted odd ratio [OR] 1.39, 95% CI 1.21 1.61) and more significant with persistent AKI (without recovery) (OR 1.77, 95% CI 1.55 2.02). Compared to no AKI and AKI with recovery group, recipients of donor with persistent AKI had significantly inferior one- and five-year graft survival ($p = 0.041$ and 0.034 , respectively), and inferior one-, five- and ten-year patient survival ($p = 0.048$, 0.035 and 0.047 , respectively). However, after adjustment for donor, recipient and transplant factors, there was no association between donor AKI and its recovery to graft and patient survival.

Conclusion: Outcome of KT from donor AKI with renal recovery is comparable to donor without AKI, including of DGF. However, AKI in DD did not affect long term transplant outcome. Utilization of kidneys from DD with AKI should be reasonable way to expand donor pool.