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Risk Stratification for Optimized Utilization of Deceased Donor Kidneys with Acute Kidney Injury by KDIGO criteria

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Background: Deceased donor kidneys with acute kidney injury (AKI) raise fear of poor graft outcomes to the transplant clinicians and consequently are often discarded. However, the growing evidence has suggested that they may be a good solution to overcome disparity between organ supply and demand for kidney transplants. Although previous studies have focused on fair outcome of donor AKI, there is limited data regarding the factors affecting graft outcomes in patients received deceased donor kidneys with AKI.

Methods: We included all patients who received decreased donor kidney transplant from 2005 to 2011. We defined and stratified AKI by KDIGO criteria. We investigated demographic factors, history of diabetes or hypertension, cause of death, initial and terminal serum creatinine and their changing patterns during hospitalization from deceased donors. We obtained similar demographic and co-morbidities, cause of renal failure, duration of dialysis, immunologic phenotypes, and cold ischemia time from recipients. Outcomes included delayed graft function (DGF), 6 month, 1-, 3-, 5-year graft function, and 5-year survival of patients who received deceased donor kidneys with AKI.

Results: Among a total of 245 patients, 63 received kidneys from donors with AKI (AKI group) including 42 stage 1, 11 stage 2, and 10 stage 3.Severe donor AKI with terminal serum creatinine more than 2.0 mg/dL was 29 (46%). Other 182were received kidneys from donors without AKI (no AKI group).Demographic factors of both donors and recipients were not affected by donor AKI. Donor AKI was associated with more use of dobutamine and lower urine output. In the outcome measurement, DGF significantly increased in AKI group compared with no AKI group with adjusted relative risks of 2.67 (1.15-6.25).Graft functions measured by serum creatinine after 6 month, 1-, 3-, 5-year after transplantation were not different in AKI and no AKI group, as well as donor AKI severity or changes.Moreover,5-year graft and recipient survival were not statistically different in two groups. The risk of DGF development also increased in recipients with diabetes than those without(adjusted OR (95% CI), 3.28 (1.38-7.83)). In DM recipients, donor AKI and worsening pattern of donor creatinine level just before transplantation increased risk for DGF (adjusted OR, 4.67 (1.16-18.82); 1.41 (1.15-1.72), respectively. However, in recipients without DM, these factors did not increase risk for DGF.

Conclusion: In this study, we demonstrated that deceased donor AKI is morbid but reversible in allograft and recipients outcomes. However, clinicians should pay more attention to the risk of DGF in diabetic recipient and worsening AKI.

Keywords: Deceased Donor, delayed graft function