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Impact of acute kidney injury in marginal deceased donors on the clinical outcomes of corresponding kidney transplant recipients

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Objectives : The impact of acute kidney injury (AKI) on the long-term renal outcomes largely depends on the underlying status of native kidney. However, whether AKI has also differential impact on the long-term allograft outcomes according to the baseline status of kidney of deceased donor (DD) has not been established yet. In this study, we investigated the impact of AKI on the long term allograft outcomes of kidney transplantation (KT) from marginal donor (MD) who were suspected to have chronic kidney disease in comparison with KT from standard donor (SD).

Methods : Four hundred and twenty four DDs and their corresponding 509 KTRs were included from three transplant centers (Seoul St. Mary's hospital, Keimyung University hospital and Uijeongbu St. Mary's hospital) in this study. We defined MD as aged over 60 years or 50-59 years with hypertension, diabetes mellitus or cerebrovascular accident and the others belonged to SD. We further divided MD or SD into AKI and non-AKI group according to the development of AKI by KDIGO criteria. We investigated the impact of AKI on the clinical outcomes such as allograft biopsy findings, change of allograft function, allograft and patient survivals in MD or SD-KT respectively.

Results : The number of MD defined above was 100 (23.6%) Hence, their corresponding 130 (25.5%) KT recipients belonged to MD-KT group and the other 379 (74.5%) KT recipients were SD-KT group. There were no significant differences in the cold ischemic time, HLA mismatch number, induction and maintenance immunosuppressants between the two groups. The incidence of AKI was 303 (59.5%) in total donor group and there was no significant difference between the two groups (81/130, 62.3%, 222/379, 58.6%, P =

0.470) as well. In allograft biopsy finding within 3 months from KT, MD-KT group showed significantly higher the glomerulosclerosis score number than SD-KT group (P = 0.001). Within both MD-KT and SD-KT group, allograft function showed deteriorating pattern in patients with AKI since 2 days after KT MD-KT with AKI group showed significantly lower in graft survival and patient survival than MD-KT without AKI (P = 0.013, P = 0.020), but within SD-KT group, there were no significant differences in graft survival and patient survival between AKI and non-AKI group. In multivariate analysis, AKI was an independent risk factor for graft failure in MDKT group, but it was not in SDKT group.

Conclusions : Our study showed that AKI developed in DD showed significant impact on long term allograft outcome especially in KT from marginal donors.

Keywords : Kidney transplantation, Acute kidney injury, Graft survival, Chronic disease