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Predictors of renal outcome after heart transplantation – a nationwide retrospective study

Junseok Jeon¹, Hyo Jin Boo¹, Hyejeong Park², Danbee Kang², Juhee Cho², Jung Eun Lee¹,
Wooseong Huh¹, Yoon-Goo Kim¹, Dae Joong Kim¹, Hye Ryoung Jang¹

¹Department of Internal Medicine-Nephrology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea, Republic of

²Department of Center for Clinical Epidemiology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea, Republic of

Objectives: Renal dysfunction after heart transplantation (HT) is associated with poor outcome. Although simultaneous heart and kidney transplantation (HKT) has been recommended in patients with irreversible severe renal dysfunction, consensus regarding the indication for simultaneous HKT is lacking. Predicting renal outcome after HT is a substantial but difficult issue considering organ shortage. We investigated the predictive factors of renal outcome after HT using a nationwide cohort data.

Methods: We conducted a retrospective cohort study using the Korean ICU National Data (KIND) registry of Health Insurance Review and Assessment database. A total of 654 patients who received HT between January 2007 and September 2016 and survived to hospital discharge were included in the final analyses.

Results: The median (interquartile range) age was 52 (40-60) years and 68.1% were male. Perioperative renal replacement therapy (RRT) was performed in 27.8% of the patients. During a median of 2.8 years of follow-up, end-stage kidney disease (ESKD) developed in 12 of 654 patients (1.8%). In a fully-adjusted model, preexisting renal disease (HR 3.85; 95% CI, 1.24-11.98), RRT > 21 days (HR 8.74; 95% CI, 3.49-21.94), and inotropics/vasopressors (HR 7.85; 95% CI, 2.81-21.89) were associated with ESKD. Among 561 patients without chronic kidney disease (CKD), CKD developed in 104 patients (20.0%). Age (HR 1.03; 95% CI, 1.01-1.05), extracorporeal membrane oxygenation (ECMO) (HR 1.54; 95% CI, 1.14-2.07), and RRT (HR, 3.71; 95% CI, 1.50-9.15) were associated with the development of CKD.

Conclusions: Our nationwide cohort study demonstrated that preexisting renal disease and perioperative RRT were predictors of poor renal outcome after HT. These results suggest that HT should be performed before irreversible renal damage occurs and that active renoprotective strategy may be required during the perioperative period.