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Predictive factors for renal outcome in heart transplantation

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Objectives: Patients with end-stage heart failure waiting for heart transplantation (HT) often show renal dysfunction due to preexisting chronic kidney disease (CKD) or cardiorenal syndrome. However, the predictive factors for renal outcome after HT are yet to be determined. We investigated the factors predicting renal outcome after HT.

Methods: This single-center retrospective cohort study analyzed 180 patients who underwent HT from 1996 to 2015 and followed up for ≥ 3 years. Final analyses included patients who survived for more than 1 year after HT (n = 150). CKD and perioperative renal replacement therapy (RRT) were defined as estimated glomerular filtration rate (eGFR) < 60 ml/min/1.73m^2 and receiving RRT within 1 month before and after HT, respectively. Primary outcomes were the prevalence of CKD at 1-year after HT and change in renal function.

Results: Baseline eGFR < 30 ml/min/1.73m^2 (n = 13) was associated with lower eGFR and higher proportion of CKD at post-HT 1-year. The perioperative RRT (n = 45) groups showed a higher mortality compared to the non-RRT group ($p < 0.001$), but there was no significant difference in renal dysfunction between groups among 1-year survivors ($p = 0.172$). Old age ($p < 0.001$), preexisting CKD ($p = 0.002$), and preoperative organ supports ($p = 0.002$) were independent predictors of CKD. High %ΔeGFR at post-HT 1-week ($p = 0.023$) and 1-month ($p = 0.020$), and smaller difference between preoperative 24-hour creatinine clearance and MDRD eGFR ($p = 0.020$) were associated with significant improvements in renal function at post-HT 1-year.

Conclusions: Preexisting CKD was associated with renal outcome after HT, and preoperative renal dysfunction requiring RRT may not be a contraindication for HT without kidney transplantation. Our data suggest that proactive diagnosis of preexisting CKD and adequate perioperative renoprotective management are crucial for improving renal outcome following HT.