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Post-heart transplant outcomes according to age and ECMO support: Implications for New Heart Allocation System in Korea

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Introduction: Although recipient age and extracorporeal membrane oxygenation (ECMO) support are known to affect clinical outcomes after heart transplantation (HTx), data are limited for recent Korean recipients. We sought to evaluate the impact of recipient age and ECMO support on the post-HTx outcomes using nationwide prospective cohort.

Methods: From the Korean Organ Transplant Registry (KOTRY), we analyzed clinical characteristics of 628 patients who received HTx from January 2015 to December 2020. Enrolled recipients are divided into three groups according age: below 50 years (group 1), between 50 and 64 years (group 2) and over 65 years (group 3). Post-HTx survival and rates of infection, moderate-to-severe rejection and cardiac allograft vasculopathy (CAV) were analyzed.

Results: Recipients with old age tended to have more comorbidities, heart failure of ischemic etiology, more ventricular assist device for bridge to transplantation and older age of donor. Post-HTx survival was significantly different among 3 groups for 5 years (p=0.025). Recipient age over 65 years is an independent predictor for increased mortality (Group 1 vs. 3; hazard ratio, 2.14; 95% CI, 1.144.01; p=0.018), after adjusting clinical variables. Post-HTx survival rate showed significant difference according to pre-HTx ECMO support in group 2 (p<0.001) and group 3 (p<0.001) but not in group 1 (p=0.054). Incidence of moderate-to-severe rejection, CAV was similar between three groups, but infection was more prevalent in group 3 (p<0.001). Furthermore, pre-HTx ECMO support was associated with significant higher rates of post-HTx mortality (p<0.001), infection (p<0.001), but no significant differences in rates of moderate-to-severe rejection (p=0.555) and CAV (p=0.244).

Conclusion: Recipient age over 65 years is significantly associated with increased mortality and higher infection after HTx, especially with ECMO support. These data might have clinical implications for new heart allocation system in Korea.