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Cardiovascular disease after kidney transplantation: A Nationwide population-based cohort study

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Objectives: Cardiovascular disease (CVD) is the most common cause of death in end-stage renal disease (ESRD). Kidney transplantation (KT) is an effective treatment for ESRD, and is known as lowering risk for CVD compared to the ESRD patients on the transplantation waiting list. However, there is a lack of large-population studies especially for Asians.

Methods: We analyzed the nationwide health insurance database of South Korea and identified patients who received kidney transplantation from the year of 2007 to 2015. As controls, ESRD and GP groups were extracted after same exclusion and matching with KT recipients by age, sex, and inclusion year. CVD was defined as major cardiovascular events (MACEs) consisted of myocardial infarction, ischemic stroke, and all-cause mortality.

Results: During the study period, a total of 13,179 patients received KT. After exclusion, 4,156 KT recipients were selected. The same number of ESRD and GP control were extracted after matching. Mean age was 41.3 ± 10.2 years and 55.2% were men in all 3 groups. The total number of MACEs was 76 (3.7 per 1000 person-year) in KT recipients, 377 (21.7 per 1000 person-year) in ESRD, 51 (2.5 per 1000 person-year) in GP, respectively. KT recipients showed a significantly lower MACE risk (adjusted HR 0.16, 95% CI 0.12-0.20, p <0.001) than ESRD controls. Comparing with matched GP, MACE risk was elevated in KT recipients (unadjusted HR 1.52, 95% CI 1.07-2.17, p <0.001), but it was reversed after adjustment with co-morbidities (adjusted HR 0.44; 95% CI 0.28-0.69; p<0.001).

Conclusions: In this study, we found that KT recipients developed lower new-onset MACE after transplantation compared with patients maintaining dialysis in Korea. Our preliminary data suggested new onset CVD risk of KT recipients was lower than GP, but further subgroup analysis is warranted.