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Incident Dementia in Kidney Transplantation Recipients: A Nationwide Population-Based Cohort Study in Korea

Seon Ha Baek¹, Sehoon Park², Mi-yeon Yu³, Ji-Eun Kim², Kyungdo Han⁴, Yong Chul Kim², Dong Ki Kim², Kwon Wook Joo², Yon Su Kim², Hajeong Lee²

¹Department of Internal Medicine-Nephrology, Hallym University Dongtan Sacred Heart Hospital, Korea, Republic of

²Department of Internal Medicine-Nephrology, Seoul National University Hospital, Korea, Republic of

³Department of Internal Medicine-Nephrology, Hanyang University Guri Hospital, Korea, Republic of

⁴Department of Medical Statistics, College of Medicine, The Catholic University of Korea, Korea, Republic of

Objectives: Recent studies have shown that patients with end stage renal disease (ESRD) are at elevated risk of dementia. However, whether kidney transplantation lower the risk of dementia development or not remains unclear. In this study, we aimed to estimate the risk of incident dementia in KT recipients compared with ESRD patients and healthy controls (HCs).

Methods: From the Korean National Health Insurance Service database, we identified KT recipients aged ≥ 20 years without any history of dementia between 2007 and 2015. We also established two control cohorts without a history of dementia: 1) incident ESRD cohort, 2) HC cohort of insured subjects without a history of kidney disease with frequency matched for age, sex, and inclusion year. All-cause dementia (F00-F03), Alzheimer' disease (AD, F00), and vascular dementia (VD, F01) were diagnosed on the code of the International Classification of Disease, 10th Revision.

Results: We followed 11,385 KT recipients, ESRD patients, HCs for 54,454, 46,260, and 56,020 patient-years, respectively (mean age: 45.7 years, 6754 male/4631 female). Over observation periods, 44, 231, and 44 dementias occurred in KT recipients, ESRD patients and HCs. AD/VD was found in 21/14 KT recipients, 144/58 ESRD patients, and 26/13 HCs. KT recipients showed lower risk of all types of dementia (hazard ratio [HR] 0.15, $P < 0.001$), AD (HR 0.11, $P < 0.001$), and VD (HR 0.20, $P < 0.001$) compared with ESRD patients even after adjustment. These findings were reproduced even when KT recipients were compared with HCs. The strongest predictors for dementia in KT recipients were older recipient age, diabetes and numbers of Charlson's comorbidity index.

Conclusions: These findings suggest that KT recipients had a lower risk of incident dementia, AD, and VD than those of ESRD patients. Furthermore, their dementia development risk was lower than even HCs in spite of long-standing kidney disease and/or use of neurotoxic immunosuppressants.