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## **Incident Parkinson Disease in Kidney Transplantation Recipients: A Nationwide Population-Based Cohort Study in Korea**

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**Objectives:** Patients with end stage renal disease (ESRD) have a substantially increased Parkinson disease (PD) risk, but few studies have examined the risk of PD in kidney transplant (KT) recipients. In this study, we aimed to estimate the risk of incident PD in KT recipients compared with general population (GP) or ESRD patients.

**Methods:** From the Korean National Health Insurance Service database, we identified incident KT recipients aged  $\geq 40$  years without any history of PD between 2007 and 2015. We also established two control cohorts without a history of PD: 1) GP cohort of insured subjects without a history of kidney disease, 2) ESRD cohort of incident ESRD subjects, with frequency matched for age, sex, and inclusion year. PD was diagnosed on the code of the International Classification of Disease, 10<sup>th</sup> Revision (G20-22).

**Results:** We followed 8,198 KT recipients, ESRD patients, and GP for 44,808, 36,559, and 46,578 patient-years, respectively. Their mean age was 51.2 years and 59.7% were men. Over observation periods, 18, 43, and 13 incident PD occurred in KT, ESRD and GP group, respectively. KT recipients showed a significantly lower risk of incident PD compared to ESRD patients (adjusted hazard ratio [HR] 0.32, 95% confidence interval [CI], 0.18 to 0.56,  $P < 0.001$ ) and a similar risk of incident PD compared to GP group (adjusted HR 0.98, 95% CI 0.37 to 2.58,  $P < 0.001$ ) even after adjustment including age, sex, diabetes mellitus, hypertension, dyslipidemia, and Charlson's comorbidity index. The strongest predictor for incident PD was older recipient age in KT recipients.

**Conclusions:** We found that risk of incident PD after KT was significantly lower than ESRD patients and similar to GP. Older age at the time of KT was an independent risk factor for PD occurrence in KT recipients.