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Association between Family History of CKD and Incidence and Progression of CKD: A Nationwide Family Cohort Study in South Korea

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Objectives: It is suggested that family clustering plays a crucial role in the development of kidney diseases with the effect of both genetic factor and shared environment. However, it is not well documented that if chronic kidney disease (CKD) aggregates in Asian families.

Methods: We aimed to estimate the familial aggregation of kidney diseases using a national database of Korean population with detailed longitudinal data. A total of 881,453 patients with incident CKD diagnosed between 2004-2017 were matched to control by age and sex on a 1:1 basis. Primary outcome of interest was the risk for incident CKD in the general population and the disease progression to kidney failure among CKD patients having first-degree relatives affected with end stage renal disease (ESRD).

Results: Multivariable logistic regression analysis showed that individuals with an affected first-degree relative with CKD were found to have 46% higher risks for incident CKD than that in the general population, which was independent of age, sex, residential area, income levels, and comorbid conditions including hypertension and diabetes (adjusted OR 1.46; 95% CI, 1.43-1.49). Furthermore, during 3,207,497 person-years of follow-up (mean 3.9 years), multivariable-adjusted Cox proportional hazards models revealed that having an affected first-degree relative with ESRD was associated with an increased risk for the development of ESRD (adjusted HR 1.22; 95% CI, 1.17-1.26). Not only in related kinship, higher risks were observed in those with an unrelated affected spouse.

Conclusions: In this large national study of Korean population, individuals having first-degree relatives affected with kidney diseases had higher risks for incident CKD and the disease progression to kidney failure.