

Abstract Type : Oral

Abstract Submission No. : 1134

The Association Between Potassium Intake and Risk of Chronic Kidney Diseases

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Objectives: High potassium intake is closely related to lower risk of cardiovascular disease. However, the association between potassium intake and chronic kidney disease (CKD) development in the general population is uncertain.

Methods: From UK biobank cohort, we included 317,162 participants without CKD between 2006 and 2010. The main predictor was spot urine potassium-to-creatinine ratio (KCR) as a surrogate of potassium intake. The primary outcome was incident CKD, defined based on ICD-10 and OPCS-4 codes. For secondary analysis, we included 141,180 participants who completed 24-h dietary recall questionnaire and dietary potassium intake-to-weight was an additional predictor.

Results: At baseline, individuals with higher KCR had lower levels of blood pressure, body mass index, and inflammation, and were less likely to have diabetes and hypertension than those with lower KCR. During a median follow-up of 11.9 years, the primary outcome events occurred in 15,255 (4.8%) participants. In Cox proportional hazard model, adjusted hazard ratio (aHR) per 1-standard deviation increase in KCR for incident CKD was 0.90 (95% confidence interval [CI], 0.89-0.92). In addition, compared with quartile 1 of KCR, the aHRs (95% CIs) for second, third, and fourth quartile were 0.98 (0.94–1.02), 0.90 (0.86–0.94), and 0.80 (0.76–0.84), respectively. In secondary analysis, higher potassium consumption was also inversely associated with risk of CKD. Compared with quartile 1 of dietary potassium intake, the corresponding aHRs (95% CIs) for each quartile were 0.85 (0.78–0.92), 0.73 (0.67–0.81), and 0.67 (0.60–0.75), respectively.

Conclusions: Higher urinary potassium excretion and potassium intake were associated with lower risk of incident CKD.

Table 1. Incidence of primary outcome according to quartiles of spot urinary KCR