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Even a trace of urine dipstick albumin predicts all-cause mortality in Korean adults

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Background: Previous studies have shown that the level of albuminuria predicts cardiovascular and all-cause mortality. Traditionally, albuminuria was measured semi-quantitatively by urine dipstick test. Although clinical significance of mild increase in albuminuria also known as microalbuminuria is well-known, the importance of trace in dipstick albuminuria is not known well and neglected frequently in the clinical practice. The aim of this study is to investigate role of trace of albuminuria in predicting all-cause mortality in Korean adults.

Methods: We analyzed participants who underwent urine dipstick test in 2002-2012 as a part of a health examination program at a tertiary hospital in Korea. After exclusion of malignancy history and deaths within a year from screening, we analyzed 347,938 Korean adults. Participants were divided into three groups as negative, trace (±) and overt (≥1+) according to their dipstick results in urine albumin. Then, trace group was stratified by urine specific gravity (SG): high(≥1.020) and low (≤1.015). Data on vital status and causes of death were obtained from STATICS KOREA, a Korean governmental organization for statistics. Cox proportional hazards models was used to calculated hazard ratios (HRs) and 95% CIs for all-cause mortality at follow-up.

Results: During median follow-up of 5.9 years, there were 1,855 deaths. Mortality was compared to negative group, and adjusted for age, sex, body mass index, hypertension, diabetes, dyslipidemia, cardiovascular disease, eGFR, smoking, alcohol intake and exercise. Mortality was not increased in trace (HR, 1.19; 95% CI, 0.97-1.47; P=0.097) group, but increased in overt (HR, 1.69; 95% CI, 1.38-2.07; P<0.001) albuminuria group. When trace group was divided according to SG, mortality was not increased in trace/high SG (HR, 1.09; 95% CI, 0.86-1.37; P=0.488) group, but increased in trace/low SG (HR, 1.84; 95% CI, 1.19-2.83; P=0.006) and overt (HR, 1.70; 95% CI, 1.39-2.08; P<0.001) group.

Conclusion: Trace of dipstick albuminuria combined with low SG was associated with higher all-cause mortality in Korean adults. We cannot neglect the trace of albuminuria when interpreting urine dipstick results, and should pay attention to the urine SG.

Keywords: Mortality, Specific gravity, Trace of albuminuria, Urine dipstick test