KSN 2017 Abstract

KSN-17-O048

Association between Time-updated Body Mass Index and the Development of Chronic Kidney Disease: A Nationwide Cohort Study

Tae ik CHANG[1], Ea wha KANG[1], Jung tak PARK[2], Tae-hyun YOO[2], Shin-wook KANG[2], *Seung hyeok HAN[2]

[1]Department of Internal Medicine, NHIS Medical Center, Ilsan Hospital, Korea,South, [2]Department of Internal Medicine, Yonsei University College of Medicine, Korea,South

Objectives : A number of epidemiologic studies indicated linear associations between body mass index (BMI) and poor cardiovascular outcomes including mortality. However, the role of BMI in the development of incident chronic kidney disease (CKD) has not been fully studied. Moreover, most studies are limited by a single baseline measurement of BMI and other important factors that can affect kidney function such as blood pressure, thus cannot reflect the effects of time-dependent changes of these parameters on outcomes.

Methods : We studied the association of BMI over time and risk of incident CKD in a nationwide representative sample of 181,966 adults from the National Health Insurance Service National Health Checkup Cohort between 2009 and 2013. All individuals had an estimated glomerular filtration rate (eGFR) of ≥60 mL/min per 1.73m2 and assessed BMI at cohort entry, and underwent at least ≥ 3 measurements of eGFR during follow-up period. Association of BMI over time with risk of developing CKD was assessed using time-varying cox proportional hazard regression models. CKD was defined as de novo development in eGFR of <60 mL/min per 1.73m2 for at least two consecutive measurements or a ≥30 % decline in eGFR from the baseline.

Results : During a median (inter-quartile range) follow-up of 3.9 (3.3 to 4.1) years, 4,786 (2.6%) individuals developed CKD with a crude rate of 7.2 (95% confidence intervals, 7.0 to 7.4) incident CKD events per 1,000 patient-years. In time-varying models adjusted for age, gender, comorbidities, baseline eGFR, systolic blood pressure, and laboratory parameters (total cholesterol, hemoglobin, and proteinuria) over time, there was a graded linear association between BMI and risk of CKD development. Compared to a referent of 23 to <24.5 kg/m2, hazard ratios (95% confidence intervals) among a priori selected categories of <20, 20 to <21.5, 21.5 to <23, 24.5 to <26, 26 to <27.5, and ≥27.5 kg/m2 were 0.78 (0.68-0.90), 0.85 (0.76-0.95), 1.04 (0.95-1.14), 1.22 (1.12-1.33), 1.25 (1.13-1.38), and 1.22 (1.10-1.35), respectively. Additional analyses using baseline values yielded similar findings.

KSN 2017 Abstract

Conclusions : In this large-scale nationwide cohort study, we found a significant linear association between time-varying BMI and incident CKD and BMI of ≥24.5 kg/m2 was associated with an increased risk of developing CKD.

Keywords : Body mass index, chronic kidney disease