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Impact of dietary selenium on all-cause mortality according to the baseline kidney function

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Objectives : The antioxidant properties of selenium have diverse positive effects on human health, especially the thyroid and metabolic systems. The bioavailability of selenium from meals may be affected by kidney function due to the metabolic pathways involved. The purpose of this research was to examine the association between dietary selenium and several risk factors for death based on kidney function.
Methods : We used data from the US National Health and Nutrition Examination Survey 1999-2016. Based on a 1-day 24-hr dietary recall, the intake of selenium was divided by quintile; the third quintile was regarded as a reference. The subjects were divided into two groups based on the baseline estimated glomerular filtration rates ≥60 and <60 mL/min/1.73 m2. We used a multivariate Cox proportional hazard model to identify the impact of selenium on all-cause mortality.
Results : A total of 41,423 subjects were included in the study. There were 4,014 (9.7%) subjects with eGFR <60 mL/min/1.73 m2. The risk for all-cause mortality was significantly increased in subjects included in the 1st quintile (adjusted hazard ratio [aHR] 1.12, 95% confidence interval [CI] 1.03-1.21) after adjustment with age, gender, ethnicity, education, income, comorbidities (hypertension, diabetes), BMI, total calorie intake, laboratory results (hemoglobin, serum albumin, total cholesterol, serum glucose, and estimated glomerular filtration rate). Lower intake of selenium increased mortality in subjects with eGFR ≥60 mL/min/1.73 m^2 (aHR 1.14, 95% CI 1.03-1.27 in 1st quintile), but there was no association between selenium intake and all-cause mortality in subjects with eGFR <60 mL/min/1.73 m^2. However, lowest group for blood level of selenium showed increased risk of all-cause mortality irrespective of baseline kidney function.
Conclusions : Lower level of blood selenium significantly increased risk of all-cause mortality regardless of baseline kidney function. Deficiency in selenium intake significantly increased all-cause mortality, especially in subjects with preserved kidney function.