KSN 2021
FULLY VIRTUAL MEETING
September 02 (Thu) - 05 (Sun)

Abstract Submission No. : 2114

Relationship between cholesterol intake and development of chronic kidney disease: a community-based prospective cohort study

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Objectives:

It is well known that dyslipidemia is associated with development and progression of chronic kidney disease (CKD). However, it is still unclear whether dietary cholesterol should be restricted to prevent development of CKD. Recent studies have showed inconsistent relationships between cholesterol intake and risk of cardiovascular disease. Therefore, we aimed to evaluate relationship between cholesterol intake and incident CKD in Korean general population.

Methods:

We included 9226 subjects without CKD from the Korean Genome and Epidemiology Study. The amount of daily cholesterol intake was assessed by food frequency questionnaire. The primary outcome was the development of CKD, which was defined as an estimated glomerular filtration rate (eGFR) of <60 mL/min/1.73 m^2 and/or proteinuria (≥1+).

Results: The mean age was 55.7±8.8 years and 39.6% of subjects were men. The cholesterol intake was only significantly correlated with serum high-density lipoprotein (HDL) cholesterol, but not with total and non-HDL cholesterol. Moreover, this significant relationship was disappeared after adjusting for daily fat intake. During median follow-up duration of 11.4 years. 778 (8.5%) CKD events occurred. In multivariable Cox analysis, serum total cholesterol was significantly associated with incident CKD (hazard ratio [HR] 1.005, 95% confidence interval [CI] 1.003-1.007; P <0.001). However, cholesterol intake was not associated with incident CKD both in subjects with dyslipidemia (HR, 1.001; 95% CI, 1.000-1.002; P=0.205) and without dyslipidemia (HR, 0.999; 95% CI, 0.997-1.000; P = 0.134). In addition, egg consumption also had no significant relationship with incident CKD (HR, 0.999; 95% CI; 0.991-1.007; P=0.736).

Conclusions:

Cholesterol intake was not correlated with serum cholesterol levels with considering fat intake. In addition, cholesterol intake was not associated with increased risk of CKD in the general population. Therefore, it may not be necessary to limit cholesterol intake to prevent CKD in this population.