Low dietary fat consumption is associated with increased CKD development risk in subjects with normal renal function: Community based prospective cohort study

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Objectives: Dietary fat intake has been found to be closely related with cardiovascular disease, metabolic disease, and mortality. However, the association between fat consumption and renal function remains unclear. Therefore, the effect of dietary fat intake on the development of chronic kidney disease (CKD) was evaluated in a prospective cohort of subjects with normal renal function.

Methods: Data were retrieved from the Korean Genome and Epidemiology Study, a prospective community-based cohort study. Dietary fat intake was estimated by a 24-h dietary recall Food Frequency Questionnaire. The primary endpoint was incident CKD, defined as a composite of estimated glomerular filtration rate <60 mL×min⁻¹×1.73 m⁻² and/or the development of proteinuria.

Results: A total of 6418 subjects were evaluated. The mean age was 51.7 ± 8.6 and 3104 (48.4%) participants were male. The mean estimated glomerular filtration rate was 94.2 ± 14.2 mL×min⁻¹×1.73 m⁻². The average daily dietary fat intake amount was 30.2 ± 15.5 g. During a mean follow-up duration of 141.0 (96.4 – 143.1) months, CKD newly developed in 1223 (19.1%) subjects. When the subjects were divided into quartiles according to energy-adjusted fat intake, the incidence rate of CKD development was significantly higher in the lowest quartile compared to the highest quartile. Multiple Cox proportional hazard analysis revealed that the risk of CKD development in the lowest quartile was significantly higher than that of the highest quartile. This association was significant even after adjustments were made for confounding factors (HR, 1.214, P = 0.03). When the CKD incidence free curves were calculated by the Kaplan-Meier method and compared by the log rank test similar results were found between the lowest and highest quartile (P = 0.01).

Conclusions: Excessively low dietary fat intake may increase the risk of CKD development in subjects with normal renal function.