KSN 2018
Seoul, Korea · May 17 - 20

Abstract Type : Oral
Presentation No. : OR 08 CK-06

Higher muscle to fat ratio is associated with lower CKD development risk in subjects with normal renal function: Community based prospective cohort study

Jong Hyun Jhee, Seung Hyeok Han, Tae-Hyun Yoo, Shin-Wook Kang, Jung Tak Park
Department of Internal Medicine-Nephrology, Inha University School of Medicine, Korea, Republic of

Objectives: Obesity assessed by body mass index (BMI) has been suspected as a risk of chronic kidney disease (CKD). However, BMI correlates highly with both fat and muscle mass. Therefore, previous investigations using BMI may not effectively reflect variations in fat versus muscle mass levels. Therefore in order to elucidate whether the composition of muscle and fat affects renal function, the impact of muscle to fat ratio on CKD development was investigated in subjects with normal renal function.

Methods: Data were retrieved from the Korean Genome and Epidemiology Study, a prospective community-based cohort study. The study subjects were followed-up biennially from 2001 to 2014. Muscle mass and fat mass was measured by multifrequency bioelectrical impedance analysis (MF-BIA; InBody 3.0, Biospace, Seoul, Korea). Subjects were divided into two groups based on sex-specific median of the muscle to fat ratio (MF ratio).

Results: A total of 7682 subjects were evaluated. The mean age was 51.7 and 3686 (48%) participants were male. The mean eGFR was 93.9 ± 14.3 mL/min/1.73 m^2. The average mass of muscle and fat was 43.6 and 17.1 kg, respectively. When the association between MF ratio and CKD development was investigated by multiple Cox analysis, the MF ratio increase was significantly associated with a decrease in CKD development risk (hazard ratio [HR], 0.90; 95% confidence interval [CI], 0.84-0.96). When a subgroup analysis was done among different BMI groups (normal, overweight, obese), the relationship between MF ratio and incident CKD risk was significant only in overweight and obese individuals. In addition, the CKD incidence rate was highest in obese subjects with low MF ratio.

Conclusions: Lower fat mass relative to muscle mass may lower the risk of CKD development in individuals with normal renal function. This relationship seems to be more prominent in overweight and obese subjects than normal weight subjects.