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Decrease in waist-to-hip ratio significantly reduced the risk of incident chronic kidney disease even in non-obese non-alcoholic fatty liver disease

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Objectives: Weight loss is regarded as a pivotal treatment strategy in both obese and non-obese non-alcoholic fatty liver disease (NAFLD). However, there is a lack of data evaluating whether changes in central obesity affects long-term kidney function in this population. Therefore, we investigated the impact of changes in waist-to-hip ratio (WHR) on adverse kidney outcomes in NAFLD patients using a community-based, prospective cohort with a 12-year follow-up.

Methods: Among 10,030 participants from the Korean Genome Epidemiology Study, 1,774 NAFLD patients were included in this study. Patients were categorized into three groups according to time-averaged percent changes of WHR (TA-%WHR change), respectively; ≥-5%, <-5% to <5%, ≥5%. Study outcomes were development of chronic kidney disease (CKD). The independent association of TA-%WHR change with CKD development was evaluated in both non-obese NAFLD (body mass index [BMI] <25 kg/m^2) and obese NAFLD (BMI ≥25 kg/m^2).

Results: During a mean follow-up of 108.7 ± 44.5 months, CKD developed in 510 patients (28.7%). In 1,774 NAFLD patients, compared to patients with minimal changes of WHR (<-5% to <5%), patients with reduced WHR of more than 5% had a significantly decreased risk of CKD development (HR=0.300; 95% CI=0.194-0.464; P<0.001). Furthermore, significant risk reduction from decreased WHR (≥-5%) for developing CKD remained still in non-obese NAFLD patients (HR=0.290; 95% CI=0.114-0.736; P=0.01), as well as obese NAFLD patients (HR=0.289; 95% CI=0.175-0.476; P<0.001).

Conclusions: This study demonstrated that more than an average of 5% decrease in WHR, a useful anthropometric index of central obesity, significantly reduced the risk of CKD development even in NAFLD patients who are non-obese. It suggests that significant and sustained reduction of central obesity may improve long-term kidney outcomes in patients with NAFLD.