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Fibrotic severity of non-alcoholic fatty liver disease is associated with higher risk of incident chronic kidney disease

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Objectives: There are few studies evaluating the longitudinal effect of fibrotic severity on chronic kidney disease (CKD) development in patients with non-alcoholic fatty liver disease (NAFLD). This study investigated the independent association between fibrotic burden of NAFLD and incident CKD using a community-based prospective cohort with 12-year follow-up.

Methods: Among 10,030 participants from the Korean Genome Epidemiology Study, 1,774 NAFLD patients were included. Severity of liver fibrosis was assessed by NAFLD fibrosis score (NFS) and Fibrosis-4 (FIB-4). Study outcome was incident CKD, defined as estimated glomerular filtration rate (eGFR) <60 mL/min/1.73m^2 and/or proteinuria of more than 1+ on dipstick.

Results: During a mean follow-up of 108.7±44.5 months, CKD developed in 510 patients (28.7%). Multivariable Cox analysis indicated that NAFLD patients with advanced degree of liver fibrosis had a greater risk of incident CKD (quartile 4 of NFS, hazard ratio [HR]=1.404, 95% confidence interval [CI]=1.048-1.881; quartile 4 of FIB-4, HR=1.508, 95% CI-1.103-2.062; quartile 1 as reference), independent of metabolic syndrome. Furthermore, eGFR decline during the follow-up period was significantly greater in patients with higher degree of liver fibrosis (quartile 4 of NFS, P=0.04; quartile of FIB-4, P=0.001; quartile 1 to 3 as reference).

Conclusions: Advanced liver fibrosis was independently associated with increased risk of incident CKD, suggesting that assessing fibrotic burden of NAFLD can help to stratify the risk of adverse kidney outcomes in NAFLD populations.