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Association of TNF Receptor 2 and CRP with GFR Decline in the General Nondiabetic Population

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Abstract

Background and objectives Higher levels of inflammatory markers have been associated with renal outcomes in diabetic populations. We investigated whether soluble TNF receptor 2 (TNFR2) and high-sensitivity C-reactive protein (hsCRP) were associated with the age-related GFR decline in a nondiabetic population using measured GFR (mGFR).

Design, setting, participants, & measurements A representative sample of 1590 middle-aged people from the general population without prevalent kidney disease, diabetes, or cardiovascular disease were enrolled in the Renal Iohexol-Clearance Survey in Tromsø 6 (RENIS-T6) between 2007 and 2009. After a median of 5.6 years, 1296 persons were included in the Renal Iohexol-Clearance Survey Follow-Up Study. GFR was measured using iohexol clearance at baseline and follow-up.

Results The mean decline of mGFR during the period was −0.84 ml/min per 1.73 m^2 per year. There were 133 participants with rapid mGFR decline, defined as an annual mGFR loss >3.0 ml/min per 1.73 m^2, and 26 participants with incident CKD, defined as mGFR<60 ml/min per 1.73 m^2 at follow-up. In multivariable adjusted mixed models, 1 mg/L higher levels of hsCRP were associated with an accelerated decline in mGFR of −0.03 ml/min per 1.73 m^2 per year (95% confidence interval [95% CI], −0.05 to −0.01), and 1 SD higher TNFR2 was associated with a slower decline in mGFR (0.09 ml/min per 1.73 m^2 per year; 95% CI, 0.01 to 0.18). In logistic regression models adjusted for sex, age, weight, and height, 1 mg/L higher levels of hsCRP were associated with higher risk of rapid mGFR decline (odds ratio, 1.03; 95% CI, 1.01 to 1.06) and incident CKD (odds ratio, 1.04; 95% CI, 1.00 to 1.08).

Conclusions Higher baseline levels of hsCRP but not TNFR2 were associated with accelerated age-related mGFR decline and incident CKD in a general nondiabetic population.

GFR decline | chronic kidney disease | soluble TNF receptors | Inflammation | Measured GFR | cytokines | aging | C-Reactive Protein | Cardiovascular Diseases | diabetes mellitus | Follow-Up Studies | glomerular filtration rate | TNFRSF1B protein, human | Humans | Iohexol, kidney | Kidney Function Tests | Logistic Models | Middle Aged | Odds Ratio | Receptors, Tumor Necrosis Factor, Type II | Renal Insufficiency, Chronic | Surveys and Questionnaires

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« Previous | Next Article »
Table of Contents

This Article
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