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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<sup>2</sup> per year. There were 133 participants with rapid mGFR decline, defined as an annual mGFR loss  $>3.0$  ml/min per  $1.73$  m<sup>2</sup>, and 26 participants with incident CKD, defined as mGFR  $<60$  ml/min per  $1.73$  m<sup>2</sup> 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<sup>2</sup> 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<sup>2</sup> 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  
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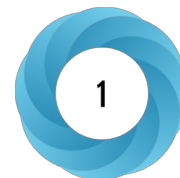
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