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Urinary kidney injury molecule-1 and the risk of cardiovascular mortality in elderly men

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Abstract

KIM-1 has been suggested as a clinically relevant highly specific biomarker of acute kidney tubular damage. Yet, community-based data on the association between urinary levels of KIM-1 and the risk for cardiovascular mortality is lacking. The aim was to investigate the association between urinary kidney injury molecule (KIM)-1 and cardiovascular mortality.

Prospective study, using the community-based Uppsala Longitudinal Study of Adult Men (ULSAM; n=590; mean age: 77 years; baseline period: 1997-2001; median follow-up: 8.1 years; end of follow-up: 2008)

During follow-up, 89 participants died of cardiovascular causes (incidence rate 2.07 /100 person-years at risk). In models adjusted for cardiovascular risk factors (age, systolic blood pressure, diabetes, smoking, body mass index, total cholesterol, high-density lipoprotein cholesterol, antihypertensive treatment, lipid-lowering treatment, aspirin treatment, and history of cardiovascular disease) and markers of kidney dysfunction and damage (cystatin C-based glomerular filtration rate (GFR) and urinary albumin/creatinine-ratio), higher urinary KIM-1/creatinine was associated with higher risk for cardiovascular mortality (HR per SD-increase, 1.27; 95% CI 1.05 to 1.54; P=0.01). Participants with a combination of high KIM-1/creatinine (upper quintile, >175 ng/mmol), low GFR (<60 ml/min/1.73 m^2) and micro-/macro-albuminuria (albumin/creatinine-ratio>3g/mol) had a more then 8-fold increased risk compared to participants with low KIM-1/creatinine (<175 ng/mmol), normal GFR (>60 ml/min/1.73 m^2), and normoalbuminuria (albumin/creatinine-ratio <3 g/mol), [HR 8.56, 95%CI 4.17-17.56, p<0.001].

Higher urinary KIM-1 is associated with an increased risk of cardiovascular mortality independently of established cardiovascular risk factors, GFR and albuminuria. Additional studies are needed to further assess the utility of measuring KIM-1 in the clinical setting.

Biography

Axel C Carlsson completed his Ph.D. at the age of 36 years from Karolinska Institutet in 2009 and is currently involved in postdoctoral studies at Karolinska Institutet and Uppsala University since then. His area of research involves cardiovascular epidemiology, where cardiometabolic mortality risk and novel biomarkers are his main interests. He has published more than 28 papers in reputed journals and is involved in an update of the current national guidelines for the treatment of type 2 diabetes in Sweden.

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