Long-term prognostic value of soluble urokinase plasminogen activator receptor in acute coronary syndromes

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Topic(s):
Acute Coronary Syndromes – Epidemiology, Prognosis, Outcome

Citation:
Introduction: Soluble urokinase plasminogen activator receptor (suPAR) is a low-grade inflammatory biomarker. In patients affected by an acute illness, chronic kidney disease and cardiovascular disease, elevated concentrations of suPAR have been related to adverse outcomes. However, there are limited data about the prognostic value of suPAR in the setting of an acute coronary syndrome (ACS).

Purpose: To study the long-term prognostic value of suPAR in ACS.

Methods: We included patients with an ACS who underwent coronary angiography and plasma suPAR concentration was measured. Patients were classified into two groups: low suPAR concentrations (<2.6ng/mL) and high suPAR concentrations (=2.6ng/mL) and long-term events were evaluated. suPAR prognostic value was assessed beyond a clinical model that included age, GRACE score, estimated glomerular filtration rate, cardiac troponin I peak and left ventricular ejection fraction.<40%.

Results: A total of 340 patients were included; 194 (<2.6ng/mL) and 146 (=2.6ng/mL). The median (IQR) age was 65 (56–74) years and 28.2% were female. Of all patients, 62.35% were admitted with non-ST-elevation myocardial infarction, 22.65% with ST-elevation myocardial infarction and 15.00% with unstable angina. Higher values of suPAR were consistently associated with an increased prevalence of cardiovascular risk factors. During a maximum follow-up of 5 years (median 4.9 [IQR 4.1-5.0]) 53 patients died. Of those patients, 13 (6.7%) had values of suPAR <2.6ng/mL and 40 (27.4%) =2.6ng/mL. After adjustment for potential confounders, suPAR =2.6ng/mL was independently associated with all-cause death (HR 2.5; 95% CI 1.2–5.2; p=0.011) and major adverse cardiovascular events (MACE) which were identified as all-cause death, non-fatal myocardial infarction and heart failure (HR 1.8; 95% CI 1.1–2.8; p=0.013). For long-term all-cause death a significant improvement of the net reclassification improvement (0.656; 95% CI 0.358–0.954; p<0.001) and integrated discrimination improvement (0.029; 95% CI 0.009–0.049; p=0.004) was seen after addition of suPAR to the clinical model. Of 16 events of heart failure, 13 occurred in patients with suPAR =2.6ng/mL. A multivariate competing risk model showed a significant association between suPAR =2.6ng/mL and incidence of heart failure (SHR 4.9; 95% CI 1.4–17.6; p=0.014) but non-significant association were found for myocardial infarction.

Conclusions: In the setting of an ACS suPAR is associated with long-term all-cause death, MACE and heart failure and provides incremental prognostic value beyond traditional risks factors in the long-term all-cause death.

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