Nardilysin is a promising biomarker for the early diagnosis of acute coronary syndrome

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Biomarkers for detection of transient myocardial ischemia in patients with unstable angina (UA) or for very early diagnosis of acute myocardial infarction (AMI) are not currently available. We performed two sequential screenings of autoantibodies elevated shortly after the onset of acute coronary syndrome (ACS), and focused on metalloendopeptidase nardilysin (NRDC) among 19 identified candidate antigens. In a retrospective analysis among 93 ACS and 117 non-ACS patients, the serum level of NRDC was significantly increased in patients with ACS compared with that in patients with non-ACS (2073.5 ± 189.8 pg/ml versus 775.7 ± 63.4 pg/ml, $P < 0.0001$). The area under the curve of NRDC for the diagnosis of ACS was 0.822 by the receiver operating characteristic curves analysis. In the time course analysis in 43 consecutive ACS patients (AMI: N=35 and UA: N=8), serum concentration of NRDC was significantly increased even in UA patients with a peak serum NRDC levels reached at admission both in AMI and UA patients. In a mouse model of AMI, we found an acute increase in serum NRDC and reduced NRDC expression in ischemic regions shortly after coronary artery ligation. NRDC expression was also reduced in infarcted regions in human autopsy samples from AMI patients. Moreover, the short treatment of primary culture of rat cardiomyocytes with H_2O_2 or A23187 induced NRDC secretion without cell toxicity. In conclusion, NRDC is a promising biomarker for the early detection of ACS, even in UA patients without elevation of necrosis markers.