Abstract: 2229
Apoptotic and non-apoptotic circulating microparticles in patients with acute coronary syndromes

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Background: Circulating microparticles (MP) are surrogate biomarkers of atherosclerosis but their role in patients with acute coronary syndromes (ACS) remain unknown.

Purpose: To explore the levels of apoptotic and non-apoptotic MP in patients with ACS.

Methods: We enrolled a total of 153 patients as follows: 49 patients with STEMI, 35 NSTEMI, 38 with unstable angina (UA), 15 with stable CAD (SCAD) and 16 non-CAD (controls). Flow cytometry analysis was used to quantify circulating apoptotic (annexin+) and non-apoptotic endothelial cell (EMP), red blood cell (RMP) and platelet (PMP) derived microparticles. Circulating C-reactive protein (hsCRP) levels and cardiac troponin I (cTnI) were also assessed. Brachial FMD was also determined as a marker of endothelial function.

Results: There was a stepwise increase in the total number of EMP, RMP and PMP in patients with ACS (STEMI/NSTEMI) compared to UA, SCAD and non-CAD patients. This was mainly explained by the increase in the number of apoptotic EMP, RMP and PMP (a-c), while there were no significant differences in the level of apoptotic EMP, RMP or PMP between patient subgroups (not shown). There was no association between circulating levels of apoptotic or non-apoptotic EMP, RBP or PMP with hsCRP (p=NS for all). Apoptotic EMP only were negatively associated with brachial FMD (rho=−0.185, p=0.04) and positively with cTnI levels (rho=0.307, p<0.0001).

Conclusions: Circulating apoptotic (but not non-apoptotic) MP are increased in patients with ACS. A negative association is observed between the numbers of circulating apoptotic EMP only and systemic endothelial function. The biological role of circulating apoptotic microparticles in the pathogenesis of ACS merits further investigation.