Abstract: **P516**

**Systemic clusterin but not neprilysin levels are associated with acute myocardial infarction**

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**Topic(s):**
Basic Science - Cardiac Diseases: Biomarkers

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**Background**

Systemic neprilysin (NEP), clusterin (CLU), N-terminal B-type natriuretic peptide (NT-proBNP), neutrophil gelatinase-associated lipocalin (NGAL), endothelin-1 (ET-1) and osteopontin are currently thoroughly investigated as cardiac biomarkers characterizing acute myocardial infarction (MI).

**Purpose**

We aimed to assess suitability of the above mentioned biomarkers in a porcine model of acute MI.

**Methods**

A total of 24 pigs underwent MI induced by 90 min percutaneous balloon occlusion of the mid left anterior descending coronary artery (LAD). Cardiac magnetic resonance imaging (cMRI) was performed at day 3 and after 6 weeks of MI to determine infarction size and left ventricular (LV) parameters. NEP and CLU concentrations alongside other cardiac biomarkers such as NT-proBNP, NGAL, ET-1 and osteopontin were measured by ELISA and miRNA21 and miRNA29 through rtPCR during the acute and subacute phase of MI. The course of biomarkers and correlations with cMRI parameters were investigated.

**Results**

cMRI showed an area at risk of 16.4% LV at day 3 after acute MI accompanied by a depressed LV function (LVEF=36.1%). LVEF remained depressed (39.5%) with signs of adverse remodeling reflected by increased LV end-systolic (93.9ml) and -diastolic (153.5ml) volumes during the 6-week follow-up. Further NT-proBNP levels were significantly increased after 3 weeks (pre vs. 3 weeks: 112.25 vs. 189.87 pg/ml, p=0.024). Plasma levels of NGAL (pre vs. 3 weeks: 122.91 vs. 248.38 pg/ml, p=0.005), miRNA21 (pre vs. 3 weeks: 1.09 vs. 7.55 fold increase, p<0.001) and miRNA29 (pre vs. 3 weeks: 0.7 vs. 12.56 fold increase, p<0.001) were significantly increased after 3 weeks and CLU levels were significantly decreased (post vs. 3 weeks: 8275.59 vs. 5196.81 pg/ml, p<0.001). For ET-1 a trend towards increasing levels at 3 weeks was observed (pre vs. 3 weeks: 1.89 vs. 4.09 pg/ml, p=0.057) Changes in plasma NEP concentrations could not be observed (p=0.593) and no correlations were found with infarction size or LVEF (r=-0.10, p=0.664 and r=-0.14, p=0.502).

**Conclusions**

In contrast to recent data on NEP in chronic heart failure, plasma NEP levels were not associated with acute ischemic injury in a porcine model of reperfused myocardial infarction. However, CLU, NGAL, miR21 and miR29 were significantly associated with acute myocardial injury.
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