

## MYOCARDIAL ISCHEMIA AND INFARCTION

### EXTRACORPOREAL CRP-APHERESIS AFTER MYOCARDIAL INFARCTION DECREASES INFARCTION SIZE AND PRESERVES LEFT VENTRICULAR EJECTION FRACTION IN PIGS

ACC Poster Contributions

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**Background:** C-reactive protein (CRP) is an important risk factor for coronary artery disease and is elevated in the acute coronary syndrome. There is increasing evidence that CRP might play a pivotal role in reperfusion damage after myocardial infarction and may increase the myocardial infarction size.

**Methods:** We tested the effects of extracorporeal CRP-plasma apheresis on myocardial infarction size in 10 pigs compared to sham apheresis in the control group. Acute myocardial infarction was induced by percutaneous transluminal coronary angioplasty. An angioplasty balloon was inflated for 60 minutes in the second diagonal branch of the left anterior descending coronary artery (LAD). Subsequent CRP-plasma apheresis was performed on day 1 and day 2. Blood samples were taken daily. Myocardial infarction size was evaluated by cardiac-magnetic resonance imaging (cardiac-MRI) on day 0 and 14 and by staining with Evans-blue and TTC after animals were sacrificed.

**Results:** Occlusion of the second diagonal branch of the LAD for 60 minutes caused a reproducible infarction size ( $10.02 \pm 2.11\%$  of the left ventricle). After myocardial infarction an increase of CRP-plasma levels was evident in all animals. CRP-plasma apheresis led to a sustained decrease in CRP-plasma levels and resulted in a reduction of the infarcted surface area in the left ventricle (%LV) in cardiac-MRI after 14 days ( $-3.62 \pm 1.49\%$ LV,  $p=0.006$ ) whereas no significant reduction was seen in the control group ( $-0.65 \pm 5.34\%$ LV,  $p=0.464$ ). Furthermore animals undergoing verum apheresis showed a higher left ventricular ejection fraction (LVEF) compared to the control group 14 days after infarction (LVEF  $56 \pm 5.32\%$  vs  $46 \pm 6.07\%$ ,  $p=0.016$ ). There was a close correlation between infarction size measurement in cardiac-MRT and morphological analysis after staining.

**Conclusions:** Myocardial infarction leads to elevated CRP plasma levels. Extracorporeal CRP apheresis is a new and efficient way to lower elevated CRP levels and to reduce myocardial infarction size and to preserve LVEF. These findings support the hypothesis that CRP plays a crucial role in myocardial reperfusion damage.