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Acute Coronary Syndromes

MACROPHAGES IN CORONARY ARTERIES AND SERUM INFLAMMATORY MARKERS ARE RELATED DURING ACUTE MYOCARDIAL INFARCTION

ACC Moderated Poster Contributions
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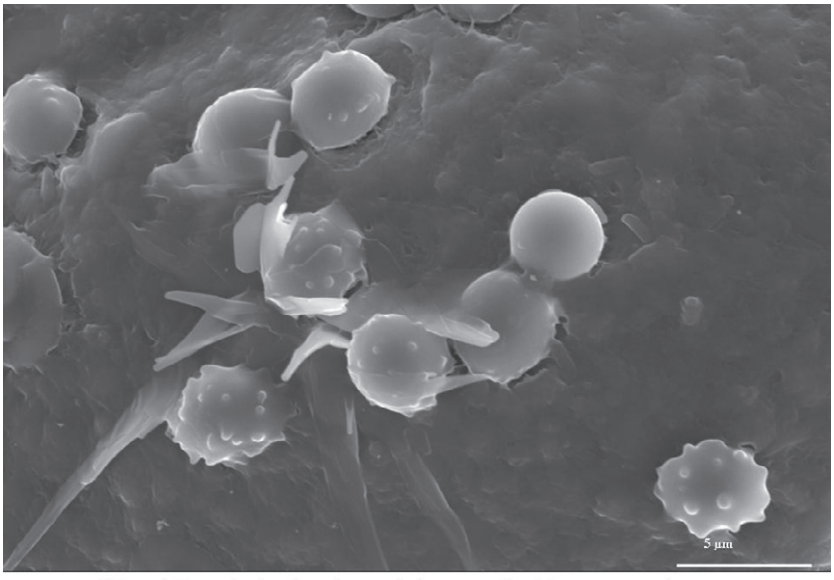
Background: High-sensitivity C-reactive protein (CRP), matrix metalloproteinase-9 (MMP-9), and plasminogen activator inhibitor-1 (PAI-1) are known biomarkers that are elevated in acute myocardial infarction (AMI). Also, cholesterol crystals (CC) have been demonstrated to trigger inflammation. We evaluated the presence of macrophages and CC in coronary arteries and their relationship to biomarkers during AMI.

Methods: Patients were selected upon operator's discretion for athero-aspiration when presenting with AMI requiring urgent intervention. Aspirates were placed on nylon mesh for scanning electron microscopy. Presence of macrophages, CC size and density were evaluated. Blood samples (10 ml) collected simultaneously were analyzed for CRP, MMP-9 and PAI-1 levels.

Results: Macrophages were detected in 52/96 (54%) of aspirated samples from AMI patients. Hs-CRP was significantly higher in patients with macrophages vs. patients with no macrophages (8.50±12.8 vs. 4.0±4.0 µg/ml; $p<0.02$) but MMP-9 and PAI-1 were not significantly different. CC were noted to be dissolving in some patients and MMP-9 was significantly lower in these patients than in those with intact crystals (0.65±0.37 vs. 0.97±0.78 µg/ml; $p<0.01$) (Figure).

Conclusions: CRP data suggest a correlation between presence of macrophages in aspirates and systemic inflammation. CC dissolution was associated with a decrease in MMP-9. These data support the hypothesis that both local and systemic inflammation increase during AMI.



Dissolving cholesterol crystals engulfed by macrophages