

 MYOCARDIAL ISCHEMIA AND INFARCTION

ENDOTHELIAL COLONY-FORMING CELLS ARE ASSOCIATED WITH INFARCT SIZE REDUCTION THROUGH REDUCTION OF MICROVASCULAR OBSTRUCTION

ACC Poster Contributions

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Background: Endothelial colony-forming cells (ECFCs) have proliferative and vasculogenic capacities and can be detected in patients with myocardial infarction (MI). Although high levels of ECFCs have been reported to lead to positive left ventricular (LV) remodelling after acute MI, the potential mechanism by which these cells improve LV function has never been assessed. The aim of this study was to evaluate the relationship between ECFC levels and microvascular obstruction (MVO), and the impact of this relation on infarct size at 6 months as assessed by magnetic resonance imaging (MRI).

Methods: One hundred and nine patients <75 years old, admitted with a first MI within 12 hours of onset of symptoms were enrolled. Peripheral blood samples were drawn to assess number of ECFC colonies (culture cells). Measurements of infarct size by MRI were performed at day 5 and at 6 months follow-up. MVO was defined as subendocardial areas of hypoenhanced signal surrounded by hyperenhanced myocardial tissue and expressed as percentage of total myocardium.

Results: ECFC colonies were detected in 51/109 patients (47.2% of pts) at admission (ECFCpos patients). Number of ECFC colonies was significantly correlated with the relative change in infarct size at 6 months MRI ($r^2=0.33$, $p<0.0001$). Among ECFCpos patients, MVO was $3\pm 6\%$ vs $7\pm 6\%$ in ECFC-negative patients, $p=0.0007$. Moreover, a significant positive correlation was observed among ECFCpos patients between MVO at day 5 and infarct size at 6 months follow-up ($r^2=0.58$, $p<0.0001$).

Conclusion: The presence of ECFC colonies is associated with a reduced degree of microvascular obstruction early after myocardial infarction, leading to reduced infarct size at 6 months as assessed by MRI