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Acute Coronary Syndromes

SYSTEMIC ADMINISTRATION OF MESENCHYMAL STEM CELLS PRETREATED WITH ATORVASTATIN IMPROVES CARDIAC PERFORMANCE AFTER ACUTE MYOCARDIAL INFARCTION

Poster Contributions
Hall C
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Background: The interaction between stromal cell-derived factor 1 and its receptor CXC chemokine receptor 4 (CXCR4) plays an important role in mesenchymal stem cells (MSCs) migration and engraftment. Statins can increase the survival of MSCs. However, whether statins could enhance MSCs migration and engraftment is still unknown. Therefore, we designed the study to investigate whether atorvastatin (ATV) could enhance CXCR4 expression of MSCs and promote them homing toward the injured myocardium.

Methods: Expression of CXCR4 was evaluated using flow cytometry and real time PCR. A transwell system was used to assess MSCs migration. Recruitment of systematically delivered MSCs to the infarcted heart was evaluated in rats after permanent occlusion of the left anterior descending coronary artery.

Results: ATV pretreatment enhanced the expression of CXCR4 and stimulated MSCs migration in vitro. However, the effect was largely abolished by CXCR4 neutralizing antibody, indicating that the benefit was mediated by CXCR4 expression. In AMI models of Sprague-Dawley rats, we found that much more ATV-pretreated MSCs homing toward the infarcted myocardium than non-treated cells and this was accompanied by improved cardiac performance.

Conclusion: ATV increases the migration ability of MSCs and improves cardiac performance due to up-regulated expression of CXCR4. These results suggest that ATV pretreatment of donor MSCs is an effective way to promote cell therapeutic potential for AMI.