Bone Marrow Stimulation and Left Ventricular Function in Acute Myocardial Infarction

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Summary

Background: Experimental studies have demonstrated that bone marrow stem cells can migrate into peripheral blood and regenerate damaged myocardium.

Hypothesis: Bone marrow stimulation might improve myocardial functional recovery after acute myocardial infarction (AMI).

Methods: In all, 104 consecutive patients with anterior wall AMI treated by primary coronary angioplasty and stenting within 12 h after onset, and who underwent left ventriculography on admission and 6 months after discharge, were studied. Among these, 23 patients (Group 1) demonstrated transient appearance of immature blood cells including myelocytes, promyelocytes, and myeloblasts during hospital stay. Thirty-eight matched patients in whom no immature blood cells were detected were studied as a control group (Group 2).

Results: There was no significant difference in baseline characteristics between the two groups. There was no significant difference in left ventricular ejection fraction (EF) on admission between Group 1 (33 ± 12%) and Group 2 (34 ± 8%). In contrast, EF was significantly better in Group 1 (47 ± 12%) than in Group 2 (40 ± 10%, p = 0.016) 6 months after discharge.

Conclusion: The study suggests significantly greater improvement in left ventricular function in patients with AMI with sign of bone marrow stimulation than in matched patients with no sign of bone marrow stimulation.

Key words: myocardial infarction, left ventricular function, bone marrow stem cell