MYOCARDIAL ISCHEMIA AND INFARCTION

TOTAL ISCHEMIC TIME IS AN INDEPENDENT PREDICTOR OF RESPONSE TO STEM CELL THERAPY IN PATIENTS WITH STEMI

ACC Poster Contributions
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Background: Although the clinical outcomes of clinical trials on the intracoronary (IC) bone marrow stem cell (BMSC) transfer in patients with ST-elevation myocardial infarction (STEMI) have been encouraging, the patient selection criteria are not well established.

Hypothesis: This investigation sought to determine if the total ischemic time (TIT), defined by the symptom onset to percutaneous coronary intervention (PCI), predicts the response to BMSC therapy in patients with STEMI.

Methods: A systematic search of medical literature was made to identify the randomized controlled trials with primary end point of left ventricular ejection fraction (LVEF) improvement during follow-up for patients with STEMI undergoing primary PCI and who received IC BMSC. The clinical trials were grouped according to their baseline LVEF (45%) and TIT (< 6 hours or > 6 hours). Short (3-6 months) and long term (up to 12 months) results and LV end systolic volumes (LVESV) were also analyzed by using normal regression model.

Results: Total of 16 articles reporting the results of 11 trials (10 trials, 710 patients for short-term; and 6 trials, 428 patients for long-term) were included in this study. Compared to baseline LVEF, BMSC treatment in patients with longer TIT and lower baseline LVEF level improved LVEF by 6.47%. Whereas the patients with shorter TIT and higher baseline LVEF had no improvement in their LVEF (-1.38%). The effect of TIT was a significant predictor (regression coefficient [rc]: 1.087 with 95% CI [0.300, 1.803]) for the benefit of BMSC treatment in patients with STEMI independent from the baseline LVEF. This difference seemed less significant in long-term results (rc: 0.799 with 95% CI [-0.105, 1.641]). Longer TITs were also associated with increased therapeutic effect of BMSC on LVESV (short term rc: -1.452 with 95% CI [-2.705, -0.074], and long term rc: -2.231 with 95% CI [-3.511, -0.692]).

Conclusion: In the study, total ischemic time appears to be an important “independent” predictor of BMSC therapy response in patients with STEMI and it should be included as one of the selection criteria for future trials.