Clin. Cardiol. 27, 683–688 (2004)

Markers of Myocardial Reperfusion as Predictors of Left Ventricular Function Recovery in Acute Myocardial Infarction Treated with Primary Angioplasty

FRANCESCO BELLANDI, M.D., MARIO LEONCINI, M.D., MAURO MAIOLI, M.D., ANNA TOSO, M.D., MICHELA GALLOPIN, M.D., ROBERTO PIERO DABIZZI, M.D.

Division of Cardiology, Misericordia e Dolce Hospital, Prato, Italy

Summary

Background: Myocardial blush grade (MBG), corrected TIMI frame count (cTFC), and ST-segment reduction are indices of myocardial reperfusion.

Hypothesis: We evaluated their predictive value for left ventricular (LV) function recovery by gated single-photon emission computed tomography (SPECT) after acute myocardial infarction (AMI) treated with primary percutaneous coronary intervention (PCI).

Methods: In 40 patients with AMI, gated SPECT was performed at admission and repeated 7 and 30 days after PCI. Left ventricular function recovery was defined as an increase ≥ 10 points in SPECT LV ejection fraction from baseline to 1 month. The MBG, cTFC, and ST-segment elevation index 1 h after PCI were determined to evaluate reperfusion.

Results: Twenty-four patients (Group 1) had LV function recovery and 16 (Group 2) did not. A significant correlation was found between LV function recovery and MBG ($r = 0.66$; $p = 0.0001$), and ST-segment elevation index at 1 h ($r = -0.55$; $p = 0.0001$), but not with cTFC. Univariate predictors of LV function recovery were MBG ($p = 0.0003$) and ST-segment elevation index 1 h after intervention ($p = 0.0026$), but not cTFC. In a multivariate analysis, MBG was the only predictor of LV function recovery. Myocardial blush grade ≥ 2 and ST-segment elevation index reduction had the same accuracy (88%) for predicting LV function recovery. Lower accuracy (75%) was shown by fast cTFC (< 23 frames). Myocardial blush grade ≥ 2 showed the better negative likelihood ratio, and ST-segment elevation index reduction had the higher positive likelihood ratio in predicting LV function recovery.

Conclusions: Myocardial blush grade was the best parameter for prediction of LV function recovery: MBG ≥ 2 and ST-segment elevation index reduction showed good accuracy in predicting LV function recovery. The cTFC failed to be a significant predictor.

Key words: acute myocardial infarction, gated tomography, primary coronary angioplasty

Address for reprints:

Francesco Bellandi, M.D.
Via Aurelio Nicolodi 5
59100, Prato, Italy
e-mail: bellandi.mail@libero.it

Received: May 27, 2004
Accepted with revision: September 27, 2004