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Intra-aortic balloon counterpulsation and infarct size in patients with acute anterior myocardial infarction without shock: the CRISP AMI randomized trial.

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SOURCE:

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Abstract

CONTEXT:

Intra-aortic balloon counterpulsation (IABC) is an adjunct to revascularization in patients with cardiogenic shock and reduces infarct size when placed prior to reperfusion in animal models.

OBJECTIVE:

To determine if routine IABC placement prior to reperfusion in patients with anterior ST-segment elevation myocardial infarction (STEMI) without shock reduces myocardial infarct size.

DESIGN, SETTING, AND PATIENTS:

An open, multicenter, randomized controlled trial, the Counterpulsation to Reduce Infarct Size Pre-PCI Acute Myocardial Infarction (CRISP AMI) included 337 patients with acute anterior STEMI but without cardiogenic shock at 30 sites in 9 countries from June 2009 through February 2011.

INTERVENTION:

Initiation of IABC before primary percutaneous coronary intervention (PCI) and continuation for at least 12 hours (IABC plus PCI) vs primary PCI alone.

MAIN OUTCOME MEASURES:

Infarct size expressed as a percentage of left ventricular (LV) mass and measured by cardiac magnetic resonance imaging performed 3 to 5 days after PCI. Secondary end points included all-cause death at 6 months and vascular complications and major bleeding at 30 days. Multiple imputations were performed for missing infarct size data.

RESULTS:

The median time from first contact to first coronary device was 77 minutes (interquartile range, 53 to 114 minutes) for the IABC plus PCI group vs 68 minutes (interquartile range, 40 to 100 minutes) for the PCI alone group (P = .04). The mean infarct size was not significantly different between the patients in the IABC plus PCI group and in the PCI alone group (42.1% [95% CI, 38.7% to 45.6%] vs 37.5% [95% CI, 34.3% to 40.8%], respectively; difference of 4.6% [95% CI, -0.2% to 9.4%], P = .06; imputed difference of 4.5% [95% CI, -0.3% to 9.3%], P = .07) and in patients with proximal left anterior descending Thrombolysis in Myocardial Infarction flow scores of 0 or 1 (46.7% [95% CI, 42.8% to 50.6%] vs 42.3% [95% CI, 38.6% to 45.9%], respectively; difference of 4.4% [95% CI, -1.0% to 9.7%], P = .11; imputed difference of 4.8% [95% CI, -0.6% to 10.1%], P = .08). At 30 days, there were no significant differences between the IABC plus PCI group and the PCI alone group for major vascular complications (n = 7 [4.3%; 95% CI, 1.8% to 8.8%] vs n = 2 [1.1%; 95% CI, 0.1% to 4.0%], respectively; P = .09) and major bleeding or transfusions (n = 5 [3.1%; 95% CI, 1.0% to 7.1%] vs n = 3

[1.7%; 95% CI, 0.4% to 4.9%]; P = .49). By 6 months, 3 patients (1.9%; 95% CI, 0.6% to 5.7%) in the IABC plus PCI group and 9 patients (5.2%; 95% CI, 2.7% to 9.7%) in the PCI alone group had died (P = .12).

CONCLUSION:

Among patients with acute anterior STEMI without shock, IABC plus primary PCI compared with PCI alone did not result in reduced infarct size.