Infusion of drug into the coronary artery may help reduce size of heart damage after heart attack

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Administration of a bolus dose of the anticoagulant drug abciximab into the coronary artery involved in causing a certain type of heart attack among patients who were undergoing a percutaneous coronary intervention and also receiving another anticoagulant resulted in reduction in the size of damage to the heart muscle at 30 days, while a procedure that involved use of a catheter to remove the blood clot blocking that coronary artery did not produce these results, according to a study appearing in *JAMA*. The study is being published early online to coincide with its presentation at the American College of Cardiology's annual scientific sessions.

"Primary percutaneous coronary intervention [PCI; procedures such as balloon angioplasty or stent placement used to open narrowed coronary arteries] is widely accepted as the most effective reperfusion [restoration of blood flow] modality for ST-segment elevation myocardial infarction [STEMI; a certain pattern on an electrocardiogram following a heart attack]. However, myocardial recovery after primary PCI is often suboptimal despite restoration of coronary blood flow, in part due to thrombus embolization [small blood clots blocking the arteries] resulting in impaired microvascular perfusion [blood flow]," according to background information in the article. Two strategies proposed to reduce this complication after PCI include bolus (large dose) infusion of intracoronary abciximab and manual thrombus aspiration (use of a catheter for removal of a clot). "However, conflicting results have been

reported as to whether intracoronary abciximab and manual aspiration thrombectomy reduce infarct [heart muscle damage] size or improve clinical outcomes, in part because of differences in patient selection, devices, and study methodology."

Gregg W. Stone, M.D., of Columbia University Medical Center and New York - Presbyterian Hospital, New York, and colleague investigated whether bolus intracoronary abciximab, manual aspiration thrombectomy, or both would reduce infarct size in high-risk patients with STEMI. The study, conducted between November 2009 and December 2011, included 452 patients presenting at 37 sites in 6 countries within 4 hours of STEMI due to blockage in a certain area of the heart (proximal or mid left anterior descending artery occlusion) undergoing primary PCI with the anticoagulant bivalirudin. The patients were randomized to bolus intracoronary abciximab delivered locally (via a drug delivery catheter) at the infarct lesion site vs. no abciximab and to manual aspiration thrombectomy vs. no thrombectomy. Infarct size was assessed at 30 days by cardiac magnetic resonance imaging (cMRI).

Evaluable cMRI results at 30 days were present in 181 and 172 patients randomized to intracoronary abciximab vs. no abciximab, respectively, and in 174 and 179 patients randomized to manual aspiration vs. no aspiration, respectively. The researchers found that patients randomized to intracoronary abciximab compared with no abciximab had a significant decrease in infarct size measured as a percentage of total myocardial mass (median [midpoint], 15.1 percent vs. 17.9 percent) and absolute infarct mass (median, 18.7 g vs. 24.0 g), but not in abnormal wall motion (the movement of the wall of the heart during contraction) score. Patients randomized to aspiration thrombectomy vs. no aspiration had no significant difference in infarct size (median, 17.0 percent vs. median, 17.3 percent), absolute infarct mass (median, 20.3 g vs. 21.0 g), or abnormal wall motion score.

"The principal findings from this multicenter, prospective, randomized trial in patients presenting early in the course of a large evolving anterior STEMI undergoing primary PCI with bivalirudin anticoagulation are as follows: (1) bolus intracoronary abciximab delivered to the infarct lesion site significantly but modestly reduced the primary end point of infarct size at 30 days; (2) in contrast, manual aspiration thrombectomy did not significantly reduce infarct size; and (3) indices of myocardial reperfusion, ST-segment resolution, and 30-day clinical event rates were not significantly different between the randomized groups," the authors conclude.

More information: *JAMA*. 2012;307(17):doi:10.1001/jama.2012.421