

Primary percutaneous coronary intervention was more effective than thrombolytic therapy for acute MI

Aversano T, Aversano LT, Passamani E, et al., for the Atlantic Cardiovascular Patient Outcomes Research Team (C-PORT). Thrombolytic therapy vs primary percutaneous coronary intervention for myocardial infarction in patients presenting to hospitals without on-site cardiac surgery. A randomized controlled trial. *JAMA*. 2002 Apr 17;287:1943-51.

QUESTION

In patients who present with acute myocardial infarction (MI) to hospitals without on-site cardiac surgery programs, is primary percutaneous intervention (PCI) more effective than thrombolytic therapy?

DESIGN

Randomized (allocation concealed*), blinded (outcome assessors)*, controlled trial with 6-month follow-up.

SETTING

11 community hospitals in Maryland and Massachusetts, USA.

PATIENTS

451 patients who were ≥ 18 years of age (mean age 64 y, 71% men), had chest discomfort or other symptoms compatible with myocardial ischemia lasting ≥ 30 minutes and < 12 hours, and had either ≥ 1 mm ST-segment elevation in ≥ 2 contiguous electrocardiographic (ECG) leads or ≥ 1 mm ST-segment depression in leads V_1 and V_2 compatible with true posterior wall injury or presumed new left bundle-branch block. Patients were excluded if they used metformin and had a creatinine level > 132.6 $\mu\text{mol/L}$ (men) or > 123.8 $\mu\text{mol/L}$ (women), had true idio-

syncratic reactions to aspirin or radiographic contrast media, or were ineligible for thrombolytic therapy. Follow-up was complete.

INTERVENTION

Patients were allocated to primary PCI ($n = 225$) or thrombolytic therapy ($n = 226$). All patients received immediate aspirin. Thrombolytic therapy consisted of accelerated tissue plasminogen activator (bolus dose of 15 mg and an infusion of 0.75 mg/kg of body weight for 30 min and another infusion of 0.5 mg/kg for 60 min) and postthrombotic heparin for 48 hours.

MAIN OUTCOME MEASURE

A composite end point of death, recurrent MI, and stroke.

MAIN RESULTS

Analysis was by intention to treat. Fewer patients in the primary-PCI group than in the thrombolytic-therapy group had the composite end point at discharge, 6 weeks, or 6 months (Table).

CONCLUSION

In patients who present with acute myocardial infarction (MI) to hospitals that do not have on-site surgery programs, primary percutaneous coronary intervention was better than thrombolytic therapy for reducing the composite end point of death, recurrent MI, and stroke.

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*See Glossary.

Primary percutaneous intervention (PCI) vs thrombolytic therapy (TT) for acute myocardial infarction (MI) in hospitals without on-site cardiac surgery†

Outcomes	PCI	TT	RRR (95% CI)	NNT (CI)
Composite end point at discharge	9.8%	17%	42% (5.6 to 64)	15 (8 to 129)
Composite end point at 6 wk	11%	18%	40% (4.1 to 62)	15 (8 to 168)
Composite end point at 6 mo	12%	20%	38% (4.0 to 59)	14 (7 to 150)

†Composite end point consists of death, recurrent MI, and stroke. Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.

COMMENTARY

The value of fibrinolysis for acute MI has been shown in trials involving hundreds of thousands of patients. However, several modest-sized clinical trials have suggested that primary PCI is superior to fibrinolytic therapy. These data lead to the conclusion that primary PCI is an alternative to fibrinolysis when it can be provided by experienced hospitals or operators in a timely fashion (1).

The recent C-PORT and the Danish Multicenter Randomized Study on Thrombolytic Therapy versus Acute Coronary Angioplasty in Acute Myocardial Infarction (DANAMI-2) (2) trials raise important questions: Should the strategy shift toward primary PCI and away from fibrinolysis? Is this best accomplished by proliferating angioplasty-capable hospitals or by regionalizing MI care?

C-PORT is not sufficient to alter health policy. The trial was small, and because it failed to meet its enrollment goal, the results need to be viewed with caution. However, the notion that health care personnel in smaller hospitals can be trained to provide primary PCI services warrants consideration. DANAMI-2, a modest-sized trial that also stopped before enrollment goals were met, proposes another option: Transfer patients with MI from a community to a PCI hospital.

Shifting patients toward PCI is probably the preferred strategy. Adapting a care strategy analogous to trauma networks could help ensure

that patients with acute MI are rapidly and appropriately triaged to a facility with a range of reperfusion options. Communities should consider whether immediate transfer of patients with MI is feasible, and if so, they should provide training to emergency medical personnel. Hospitals that choose to provide on-site primary PCI must also guarantee well-trained physicians and staff who have enough patients to maintain a high level of expertise. The challenge will be to strike a balance between the resource interests of hospitals and the health interests of their patients.

RCTs in acute MI will soon compare primary PCI with facilitated PCI (i.e., combinations of fibrinolysis, antithrombotic therapies, and immediate PCI) (3). If facilitated PCI proves superior to primary PCI by providing more rapid reperfusion, it may diminish some of the pressures associated with a transfer strategy and allow a smoother transition to a regional system of MI care.

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