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


**Question**
In patients who present with acute myocardial infarction (MI) to hospitals without on-site cardiac surgery, 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 ± 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 V1 and V2 compatible with true posterior wall injury or presumed left bundle-branch block. Patients were excluded if they used metformin and had a creatinine level > 132.6 µmol/L (men) or > 123.8 µmol/L (women), had true idiosyncratic 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.

**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 challenge will be to strike a balance between the resource interests of hospitals and the health interests of their patients. 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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**References**