

Is transfer for primary angioplasty better than on-site fibrinolytic therapy for acute myocardial infarction?

Andersen HR, Nielsen TT, Rasmussen K, Thuesen L, Kelbaek H, Thyssen P, et al, for the DANAMI-2 Investigators. A comparison of coronary angioplasty with fibrinolytic therapy in acute myocardial infarction. *N Engl J Med* 2003;349:733-42.

Background: There is evidence that percutaneous transluminal coronary angioplasty (PTCA) is superior to fibrinolysis for the treatment of acute ST-segment elevation myocardial infarction (STEMI). However, the majority of community hospitals do not have PTCA facilities.

Question: When patients with acute STEMI present to a community hospital, is transfer to a centre with available PTCA better than on-site fibrinolysis?

Design: In this randomized controlled trial, patients presenting to a community hospital with acute STEMI were randomly assigned to receive either fibrinolysis on site or PTCA following transfer. Patients presenting to an angioplasty centre were similarly assigned to receive either treatment. The primary end point was a composite of death from any cause, clinical reinfarction or disabling stroke at 30 days' follow-up.

Results: Of the 1572 patients assigned to receive either PTCA or fibrinolysis, 1129

were enrolled at community hospitals. The patients transferred to another centre for PTCA had a significantly reduced rate of the composite end point at 30 days compared with patients who underwent fibrinolysis on site (Table 1). The benefit was derived almost exclusively from the reduction in reinfarction rates.

Commentary: A recent quantitative review showed that PTCA was better than fibrinolysis in reducing the combined rate of death, nonfatal reinfarction and stroke (8% [$n = 253$] v. 14% [$n = 442$]; $p < 0.0001$) for the treatment of acute STEMI.¹ This translates to a number needed to treat of 17 for event-free survival. With the benefits apparent, do patients who present to a community hospital without PTCA facilities receive inferior care? The DANAMI-2 study firmly shows that, despite the need for transportation, these patients do benefit from PTCA. A study posing the same question found no difference between fibrinolysis and PTCA when patients presented within 3 hours to hospital.² However, when patients presented after 3 hours (mean 5 hours and 6 minutes), those transported for PTCA had a significantly lower mortality than those who received fibrinolysis on site (6.0% v. 15.3%, $p < 0.02$).

Practice implications: Before making immediate practice changes based on

these findings, one must decide whether the conditions of the trial are similar to those of real life. In the study, patients presenting to a community hospital had a median time from symptom onset to fibrinolysis of 2.8 hours and to PTCA (including transfer) of 3.7 hours. These short times, particularly the latter, reflect numerous factors, including successful public education about the symptoms of acute myocardial infarction, the ability to obtain rapid interhospital transport and the round-the-clock availability of PTCA. Some of these factors may be related to the study environment and therefore may not be immediately applicable to all communities. Nonetheless, the conditions of the trial serve as a model for community hospitals and PTCA centres to develop a cooperative strategy that lessens the effect of geography on patient care.

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References

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2. Widimsky P, Budesinsky T, Vorac D, Groch L, Zelizko M, Aschermann M, et al; 'PRAGUE' Study Group Investigators. Long distance transport for primary angioplasty vs immediate thrombolysis in acute myocardial infarction. Final results of the randomized national multicentre trial — PRAGUE-2. *Eur Heart J* 2003;24(1):94-104.

Table 1: Time from onset of symptoms to start of therapy and clinical outcome at 30 days (data from Andersen and others)

| Variable | Community hospitals | | | Angioplasty centres | | | All hospitals | | |
|---|---------------------------|-----------------------------------|-----------|---------------------------|-------------------|-----------|---------------------------|-------------------|-----------|
| | Fibrinolysis $n = 562$ | PTCA after transport $n = 567$ | p value | Fibrinolysis $n = 220$ | PTCA $n = 223$ | p value | Fibrinolysis $n = 782$ | PTCA $n = 790$ | p value |
| Time from symptom onset to treatment, median (range), min | 169 (110-270) | 224 (171-317) | | 160 (110-255) | 188 (145-273) | | — | — | |
| Outcome at 30 days, no. (%) of patients | | | | | | | | | |
| Death | 48 (8.5) | 37 (6.5) | 0.20 | 13 (5.9) | 15 (6.7) | 0.72 | 61 (7.8) | 52 (6.6) | 0.35 |
| Reinfarction | 35 (6.2) | 11 (1.9) | < 0.001 | 14 (6.4) | 2 (0.9) | 0.002 | 49 (6.3) | 13 (1.6) | < 0.001 |
| Disabling stroke | 11 (2.0) | 9 (1.6) | 0.64 | 5 (2.3) | 0 | 0.02 | 16 (2.0) | 9 (1.1) | 0.15 |
| Composite end point | 80 (14.2) | 48 (8.5) | 0.002 | 27 (12.3) | 15 (6.7) | 0.05 | 107 (13.7) | 63 (8.0) | < 0.001 |