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Thrombolytic Therapy I

IMPORTANCE OF THE 90 MINUTE ANGIOGRAPHIC FLOW GRADE IN PREDICTING SUBSEQUENT INFARCT ARTERY PATENCY FOLLOWING THROMBOLYTIC THERAPY

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Infarct related artery (IRA) blood flow grade (FG) following thrombolytic therapy has been used as a measure of lytic efficacy. Little is known, however, about the value of IRA FG in predicting subsequent coronary patency. Accordingly we reviewed the results of 60 patients (PTS) with acute myocardial infarction (AMI) who underwent serial coronary angiography (ANG) at 60, 90, and 120 minutes (MIN) after receiving a front loaded regimen of intravenous t-PA consisting of a 20mg bolus and a delayed infusion of 80mg over 2 hrs. Fifty-three PTS had ANG at 60 MIN, 60 PTS had 90 MIN ANG, and 53 PTS had ANG at 120 MIN. At 90 MIN, 5 PTS (8.3%) had TIMI 0 or 1 FG, 22 PTS (36.6%) had TIMI 2 FG, and 33 PTS (55.0%), had TIMI 3 FG. In each PT 90 MIN FG was evaluated to determine its relationship to subsequent patency. The change in FG from 90 to 120 MIN is shown below.

90' FG	n	FLOW GRADE AT 120 MIN No Change	Improved	Worse	No 120'ANG
0, 1	5	4 (80.0%)	0	--	1 (20.0%)
2	22	8 (36.4%)	8 (36.4%)	3 (13.6%)	3 (13.6%)
3	33	29 (87.9%)	--	1 (3.0%)	3 (9.0%)

The positive predictive accuracy (PPA) of TIMI 0, 1 FG at 90 MIN for continued TIMI 0, 1 FG at 120 MIN was 100%. The PPA of 90 MIN TIMI 3 FG for continued TIMI 3 FG at 120 MIN was 96.7%. FG at 60 MIN was not as powerful as 90 MIN FG in predicting 120 MIN FG. We conclude that continued patency or occlusion can be predicted accurately on the basis of 90 MIN FG when this t-PA regimen is utilized.

PRE-TREATMENT WITH HEPARIN PRIOR TO THROMBOLYTIC THERAPY WITH STREPTOKINASE AND rt-PA IN EVOLVING ACUTE MYOCARDIAL INFARCTION - EARLY AND LONGTERM RESULTS.

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The results of thrombolytic therapy with streptokinase (SK) 750,000 iu over 30 minutes, and rt-PA 120 mg over 6 hours was compared in 2 matched groups (Gr) of patients (pts) with an acute myocardial infarction (MI). 76 pts (Gr I) received SK preceded by a bolus of 5000 iu of heparin (H) and by a continuous infusion 12 hours later until angiography on the third day. 96 pts (Gr II) received rt-PA 120 mg by infusion over 6 hours preceded by 5000 iu H bolus and 1000 iu H hourly until angiography at 3 days.

In hospital results: There was no significant difference between Gr I and Gr II as regarding infarct artery patency (83% and 82% respectively), length of hospitalisation, incidence of non-Q wave MI and heart failure, bleeding, reinfarction and mortality. 72% of Gr I pts and 54% of Gr II underwent angioplasty of the infarct artery ($p<0.01$). Global LV ejection fraction (LVEF) was 47±15% and 52±12% respectively.

Long-term results (12 months): In Gr I and Gr II there was no difference in the incidence of late deaths (3.9% vs. 4.4%), angina (13% vs. 16.3%), recurrent MI (2.9% vs. 5.8%) and surgical cross-over (17.4% vs. 5.8%).

LVEF	Inf.MI:24 hrs	12 mths	Ant MI:24 hrs	12 mths
Gr I	47±9%	46±10%	38±10%	48±12%
Gr II	53±16%	56±11%	39±15%	48±14%

Conclusions: Both pt groups, receiving heparin pre-treatment prior to thrombolytic therapy with SK and rt-PA showed no significant differences in the infarct artery patency at 3 days and long-term clinical outcome.

EFFECT OF CIGARETTE SMOKING ON OUTCOME AFTER THROMBOLYTIC THERAPY FOR MYOCARDIAL INFARCTION

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Paradoxically, the TIMI investigators reported that pts who smoke have a favorable prognosis after thrombolysis compared with nonsmokers. To examine this issue, we reviewed 1389 pts treated with tPA, urokinase, or both, in 5 consecutive MI trials, of whom 744 (54%) were currently smoking. As expected, baseline fibrinogen (320 vs 300mg/dl, p<.005) and hematocrit (44.1% vs 42.6%, p<.0001) levels were greater in smokers. However, there were no differences between smokers and nonsmokers with regard to 90 min patency, residual stenosis, or reocclusion. Although smokers tended to have improved in-hospital mortality compared with nonsmokers in univariate analysis (4% vs 9%, p<.0001), after adjusting for baseline differences in age (54 vs 60 yrs, p<.0001), infarct location (62 vs 51% inferior, p<.0001), 3-vessel disease (16 vs 22%, p<.005), and ejection fraction (52 vs 50%, p<.005), smoking history was of no prognostic significance. Therefore, although smokers have a relative hypercoagulable state documented by increased fibrinogen, their response to thrombolytic therapy is similar to nonsmokers. The apparently benign prognosis in smokers appears to be due to favorable baseline characteristics and younger age at which infarction occurs in this population.

BENEFICIAL EFFECT OF STREPTOKINASE IN THE FIRST 4 DAYS AFTER ACUTE MYOCARDIAL INFARCTION

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The effect of intravenous streptokinase (SK) therapy on the time course of functional recovery was investigated in a controlled study of 64 patients (pts) randomized within 3 hrs after onset of acute myocardial infarction (AMI) at the Hôpital Cardiologique, Lille, France. Contrast ventriculography was performed 1-4 d after AMI and 5 wks later. Wall motion was analyzed by the centerline method in the central infarct region (CIR), peripheral infarct region (PIR) and noninfarct region (NIR).

Among pts with analyzable ventriculograms at the first study, SK treated pts had less severe hypokinesis in the CIR than control pts (-2.9 ± 0.9, N=29, vs -3.4 ± 0.7 SD, N=21, $p<0.05$). The benefit of SK was more marked in the PIR (-1.5 ± 0.7 vs -2.1 ± 0.6 SD, $p<0.001$). As a result, the ejection fraction was slightly higher in SK pts (46 ± 10 vs 43 ± 7%, respectively, p=NS). At 5 wks, function in the SK and control pts diverged further due to continued improvement in SK-treated pts.

This study shows that SK benefits LV function earlier after AMI than previously reported. The benefit was not limited to the PIR, where ischemia might have been less severe, but was also seen in the CIR. The inference is that SK can improve LV function during the period of myocardial stunning, while myocardial function is still recovering.