

TOPIC 01 – Coronary heart disease

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001

Thromboaspiration before primary PCI in STEMI patients reduces infarct size, but not microvascular obstruction : a magnetic resonance imaging study

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Background: Thromboaspiration (TA) during primary percutaneous intervention (PCI) is effective in opening infarct related artery (IRA) in patients(pts) with ST elevation acute myocardial infarction (STEMI), leading to better reperfusion and outcome. Microvascular obstruction (MVO) after successful IRA revascularization is associated with greater myocardial damage, left ventricular (LV) impairment and higher mortality. We evaluated relationships between (i) TA and MVO 5 days after STEMI; (ii) TA and infarct size at 5 days and 6 months; (iii) TA and LV remodelling at 6 months.

Methods: 51 pts aged <75, with first STEMI and totally occluded IRA, referred for primary PCI within 12 hours of onset of symptoms were enrolled. All pts underwent TA before stenting. Pts were categorized according to positive or negative TA. MVO, infarct size and remodelling were assessed by contrast-enhanced cardiac magnetic resonance imaging (MRI) at 3T performed 5 days and 6 months after STEMI. Infarct size was measured by assessing global myocardial extent of hyperenhancement on delayed contrast-enhanced MRI. MVO was defined as subendocardial areas of hypoenhanced signal surrounded by hyperenhanced myocardial tissue and expressed as % of total myocardium.

Results: See table.

Conclusion: Positive TA during primary PCI was associated with infarct size reduction at 5 days and 6 months follow-up in STEMI pts with TIMI 0 flow IRA. Although this phenomenon led to positive LV remodelling, it was not associated with a reduction in MVO.

	Negative TA (N=34)	Positive TA (N=17)	p
TIMI III flow post PCI (%)	91 % (31/34)	94% (16/17)	0.86
MVO at 5 days (%)	7.1 ± 5.7	6.8 ± 4.9	0.85
Infarct size at 5 days (%)	20.6 ± 8.1	9.9 ± 7.2	<10-5
Infarct size at 6 months (%)	16.4 ± 9.9	7.2 ± 8.1	.0007
LVSVI at 6 months (ml/m ²)	27.5 ± 9.3	36.4 ± 12.2	0.01

LVSVI = left ventricular stroke volume index

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Rapid improvement in reperfusion strategy in europe: temporal trends in performance measures for reperfusion therapy in ST elevation myocardial infarction

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Background: Rate and type of reperfusion, and delay to reperfusion are related to mortality and used as performance measures (PM) in ST elevation myocardial infarction (STEMI). Improvements in PM contribute to reduced

mortality. Little information exists about the improvement of PM in clinical practice in Europe.

Methods: Euro Heart Survey ACS-III dataset. We selected patients(pts) with STEMI eligible for reperfusion. Pts were divided into 4 periods of 6 months, by date of admission. Rate and type of reperfusion, plus door-to-needle and -artery times were compared between periods. Timely reperfusion was defined as a door-to needle time<30 minutes (min) or a door to artery time <90 min. Independent predictors of timely reperfusion were determined by logistic regression.

Results: 7655 had STEMI and were eligible for reperfusion. Overall reperfusion rate increased from 79.2 to 82.3% from period 1 to 4, with primary percutaneous coronary intervention (P-PCI) in 69.9% and thrombolytic therapy (TT) in 20.8%. There was a significant decrease in use of TT (25.4 to 17.3%) & an increase in P-PCI (70.4 to 79.3%) (p<0.001 for trend). Door-to-needle and -artery times decreased significantly, from 20 to 11 min (p=0.01) and from 60 to 45 min (p<0.0001) respectively. The number of pts reperfused in a timely manner increased from 66.7 to 77.6% (p<0.0001). Independent predictors of timely reperfusion were: Killip class >2, increased systolic blood pressure on admission, female sex, admission to high volume center and admission period. In-hospital mortality decreased from 8.1% to 6.6%, p=0.047.

Conclusions: In Europe, from 2006 to 2008, PM for reperfusion in STEMI improved significantly, particularly reperfusion rate, with more use of PCI. The rate of patients reperfused in a timely manner also increased, through a significant reduction in door to needle and door to artery times. Associated with these improvements, we observed a significant decrease of hospital mortality from 8.1% to 6.6%.

003

Radial approach and bleeding risk in acute coronary syndromes without ST elevation-comparison study between fondaparinux vs. enoxaparin

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Background: Fondaparinux compared to enoxaparin has been showed to reduce the bleeding risk in acute coronary syndromes (ACS). However the bleeding risk has never been compared when radial approach is used for percutaneous coronary interventional (PCI).

Method: We investigated 371 consecutive patients (67±13 years, 74% male) admitted for ACS without ST elevation. All patients received a loading dose of clopidogrel (600mg) and aspirin (250mg to 500mg). PCI was performed through radial artery approach with IV heparin (3000UI) delivered directly in radial artery. The choice between low molecular heparin (fondaparinux or enoxaparin) was left free to physician appreciation. Bleeding complication was defined by the need of red cell transfusion of 2 units and in hospital major cardiac events (MACE) by death, stroke and recurrent myocardial infarction.

Results: On the whole, 120 (32%) patients were treated by enoxaparin and 251 (68%) by fondaparinux. Patients treated by enoxaparin were older (71±13 years vs. 66±13 years, p=0.02) and at higher risk of bleeding complications with greater plasmatic creatinin (114±77 vs. 94±57, p=0.005) and haemoglobin level (12±2g/dL vs. 13±2g/dL, p<0.0001). However, bleeding complications occurring in only 6 (1.7%) patients did not differ between patients treated by enoxaparin vs. fondaparinux (1.6% vs. 1.6%, p=0.9). Similarly, in hospital MACE (3%, n=11) was similar in the two groups (3.3% vs. 2.8%, p=0.8).

Conclusion: Radial approach in ACS is associated with a low rate of bleeding risk and is not affected by the choice of low molecular heparin. These results demonstrate that both enoxaparin and fondaparinux may be used safely when radial approach is performed in ACS.