

^aDepartment of Cardiology, University Hospital., Rennes, France^bDepartment of Emergency, Care Unit, Rennes, France^cClinique St Laurent, Rennes, France^dDepartment of Cardiology, University Hospital., Brest, France^eDepartment of Cardiology, Lorient, France^fDepartment of Cardiology, St Brieuc, France^gDepartment of Cardiology, St Malo, France^hDepartment of Cardiology Quimper, France

Purpose: Recent improvement in management of ST-elevation myocardial infarction (STEMI), and notably reduction of delays to coronary reperfusion, allowed a decrease of the incidence of complications. This study aims at determining the actual epidemiology and intrahospital prognosis of complicated cardiogenic shock (CS) requiring circulatory assist device (CAD).

Methods: We analyzed data collected in the “Observatoire Régional Breton sur l’Infarctus (ORBI),” a registry of all patients admitted to an interventional cardiology center in Brittany in the acute phase of a STEMI, within 24 h of symptoms onset. Main clinical data and intrahospital outcome were compared between ORBI patients requiring CAD for CS (group 1) and those who did not require CAD (group 2: 2599 pts).

Results: Among 2700 patients included in the ORBI registry, 101 patients (3.7%) required CAD: intraaortic balloon pump (IABP), 93 patients (3.4%); extracorporeal life support (ECLS), 2 patients (0.07%); IABP and ECLS, 6 patients (0.2%). Main clinical data regarding age, sex and risk factors are nonsignificant. Group 1 mortality was high (38%) compared to the low mortality in group 2 (4%, $P<0.001$). Factors associated with requiring CAD were age, anterior area STEMI, coronary angioplasty, three-vessel or left main coronary artery disease and hemodynamic parameters [heart rate, blood pressure, grade 3 or 4 Killip, left ventricular ejection fraction (LVEF)]. In group 1, predictive factors of mortality were age, three-vessel or left main coronary artery disease, blood pressure, grade 3 or 4 Killip and LVEF.

Conclusion: Despite recent improvement in the management of STEMI, incidence of patients requiring CAD for CS is still high and mortality is elevated

	Gp 1 n=101	Gp 2 n=2599	P	Gp 1 deceased pts n=38	Gp 1 alive pts n=63	P
Ant STEMI	71	1104	<.0001	24 (63%)	147 (75%)	.3
Mean delay (min)	241.9±221	261.9±243	.51	243±22	241±228	.7
Thrombolysis	12 (12%)	485 (19%)	.09	4 (10%)	8 (13%)	1.0
PCI	96 (95%)	2244 (86%)	.01	36 (95%)	60 (95%)	1.0
3-vessel or LM disease	37 (37%)	418 (17%)	<.0001	22 (58%)	15 (24%)	<.001
HR at admission (min)	81.9±25	76.1±18	.02	85.9±31	79.5±22	.3
BP at admission (mmHg)	108.0±32	132.3±26	<.0001	95.2±30	115.7±32	.02
Killip 3/4	41 (43%)	108 (4%)	<.0001	24 (71%)	17 (28%)	<.0001
LVEF	37.3±12	50.9±10	<.0001	31.7±12	40.6±9	<.0001

· “Mean delay” is mean delay between onset of symptoms and admission in the interventional cardiology center. Group 1: requiring circulatory assist device. Group 2: not requiring circulatory assist device.

doi:10.1016/j.carrev.2011.04.287

Does the smoker’s paradox still exist in the clopidogrel and DES era?

Kohei Wakabayashi, Rafael Romaguera, Ana Laynez, Gabriel Maluenda, Itsik Ben-Dor, Gabriel Sardi, Michael A. Gaglia, Michael Mahmoudi,

Manuel A. Gonzalez, Cedric Delhaye, Rebecca Torguson, Zhenyi Xue, William O. Suddath, Lowell F. Satler, Kenneth M. Kent, Augusto D. Pichard, Joseph Lindsay, Ron Waksman
Washington Hospital Center, Washington, DC, USA

Background: Prior studies have found an apparent paradox: the acute phase outcomes in smokers after acute myocardial infarction (MI) are superior to those of nonsmokers. Further, smoking is reported to have impact on the metabolism of clopidogrel. This study aimed to examine whether this paradoxical finding exists in patients who underwent drug-eluting stent (DES) and were treated with clopidogrel.

Methods: From April 2003 to June 2010, 1424 consecutive patients with acute MI who underwent primary or rescue percutaneous coronary intervention (PCI) with DES and clopidogrel were enrolled. They were divided into three groups: current smokers ($n=486$), previous smokers ($n=349$) and nonsmokers ($n=589$). The primary endpoint was a composite of 30-day, all-cause death, nonfatal MI or definite stent thrombosis.

Results: As compared to nonsmokers, current smokers were younger ($P<0.001$) and more often male ($P<0.001$). They had larger MI than nonsmokers [maximum troponin I, 8.9 (2.4, 38.4) vs. 6.8 (1.4, 30.1) ng/ml, $P=.01$]. Current smokers less frequently met the primary endpoint than nonsmokers (2.9% vs. 6.1%, $P=.01$). However, after adjustment for baseline and angiographic characteristics, the beneficial effect of smoking was no longer seen (odds ratio 1.35, CI 0.53–3.44, $P=.5$) (Fig. 1).

Conclusion: A beneficial effect of smoking (“smoker’s paradox”) in the unadjusted primary endpoint continues to be present, but after adjustment for differences in baseline characteristics, no difference was detectable. There is no benefit from smoking in patients treated with DES and clopidogrel.

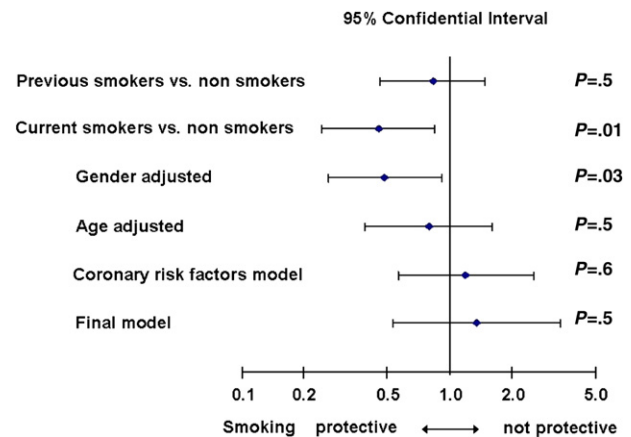


Fig. 1.

doi:10.1016/j.carrev.2011.04.288

Combined intracoronary tirofiban and manual thrombectomy during primary percutaneous coronary intervention in patients with ST-segment elevation myocardial infarction

Deepak Natarajan, Nirmalya Mukherjee
Moolchand MedCity, New Delhi, India

Background: This study assessed the probable synergistic effect of combination of intracoronary (IC) tirofiban and manual thrombectomy (MT) during primary percutaneous coronary intervention (pPCI) in patients with acute ST-elevation myocardial infarction (STEMI).

Methods: Forty patients with STEMI were divided into two groups (A and B): Group A (20 patients) received IC bolus of tirofiban (25 µg/kg) plus MT, while group B patients underwent pPCI with an intravenous (IV) bolus of tirofiban (25 µg/kg) and no MT. Subsequently, both groups received IV tirofiban infusion for the next 16 h (0.15 µg/kg/min). Both groups had similar baseline clinical characteristics and door to balloon time.

Results: Group A had both superior ST-segment resolution at 60 min (86% vs. 63%; $P<.05$) and myocardial blush (88% vs. 61%; $P=.06$). The incidence of in-hospital combined MACE and major bleeds was comparable in both groups. At 30 days, there was no difference in mortality, but combined MACE was significantly less in group A (6.1% vs. 22%; $P<.05$).

Conclusion: Intracoronary tirofiban combined with manual thrombectomy during pPCI in STEMI is not only feasible but also produces better clinical outcomes than IV tirofiban alone. Prospective adequately powered randomized studies are needed to confirm the above.

doi:10.1016/j.carrev.2011.04.289

Laser and localized IIb/IIIa inhibitor via the ClearWay infusion catheter in AMI

Antonis Pratsos

Bryn Mawr Hospital, Wynnewood, PA, USA

The treatment of STEMI using balloon angioplasty and stent is problematic because of potential distal embolization, microvascular plugging, decreased myocardial perfusion and higher mortality. Excimer laser coronary atherectomy (ELCA) can facilitate direct stenting in AMI by ablating plaque and dissolving thrombus, potentially minimizing embolization. Also, the use of intracoronary abciximab in AMI can reduce distal embolization, improve TIMI flow and TMPG and reduce infarct size. The ClearWay catheter infuses and contains 2b3a inhibitors such as abciximab within thrombotic occlusions, potentiating the local drug effect 1000-fold. This aids in thrombus dissolution, potentially improving clinical outcomes.

We retrospectively analyzed the strategy of ELCA and/or aspiration thrombectomy combined with intralesional infusion of 2b3a inhibitors using the ClearWay infusion catheter in 42 patients with AMI presenting at Bryn Mawr Hospital between 2008 and 2010. The patients had a mean age of 59 years, 80% were male, 40% had HTN and 35% were smokers. All lesions were 100% occluded with definitive thrombus. Forty-six percent of patients had an anterior MI related to LAD occlusion. Abciximab was used 83% of the time; and eptifibatide, 17%. Laser was used in 81% of the patients. The angiographic characteristics and results in the cath lab following laser/aspiration and ClearWay (L/A/C) are shown in the table below. In this high-risk patient population, TIMI 3 flow was achieved in all the cases; and a final TMPG of 3, in 81% of cases. Our study demonstrates that in patients presenting with AMI, the use of ELCA and intralesional 2b3a inhibition with the ClearWay infusion catheter is safe and effective in restoration of myocardial perfusion. This could potentially translate into better clinical outcomes in the long term and deserves further study in a larger randomized control study.

TIMI pre	TIMI post L/A/C	TIMI final	TMPG final	
0	36 (85%)	0	0	0
1	4 (10%)	1 (3%)	0	0
2	2 (5%)	5 (12%)	0	8 (19%)
3	0	36 (85%)	42 (100%)	34 (81%)

doi:10.1016/j.carrev.2011.04.290

Impact of culprit vessel location in acute myocardial infarction on clinical outcome

Kohei Wakabayashi, Itsik Ben-Dor, Gabriel Maluenda, Michael Mahmoudi, Gabriel Sardi, Rafael Romaguera, Ana Laynez, Michael A. Gaglia Jr, Manuel A. Gonzalez, Cedric Delhayre, Rebecca Torguson, Zhenyi Xue, William O. Suddath, Lowell F. Satler, Kenneth M. Kent, Augusto D. Pichard, Joseph Lindsay, Ron Waksman Washington Hospital Center, Washington, DC, USA

Background: Patients presenting with ST-elevation myocardial infarction (STEMI) have different clinical outcomes based on their clinical baseline characteristics and presentation. This study was aimed to determine the importance of lesion location of the culprit vessel on mortality and the 1-year cardiovascular events.

Methods: The study comprised 700 consecutive patients with STEMI who underwent primary percutaneous coronary intervention (PCI) for the culprit lesion. Patients were divided into two groups regarding the vessel location of the culprit lesion: left anterior descending artery (LAD) group ($n=321$) vs. non-LAD group ($n=379$). The patients who underwent multilesion PCI or multivessel PCI and those with left main coronary artery disease were excluded. The clinical outcome in hospital and at 1 year was recorded.

Results: The baseline characteristics were similar between the two groups. In-hospital mortality was significantly higher in the LAD group than the non-LAD group (8.7% vs. 4.7%, $P=.03$), as was total 1-year mortality ([15.0% vs. 10.3%, $P=.06$). After adjustment for baseline, angiographic or procedural characteristics, culprit lesion located in LAD remained an independent predictor for 1-year MACE (Table 1).

Conclusion: In patients presenting with STEMI for primary PCI, culprit lesion located in the LAD remained an independent predictor for 1-year death and MI. These patients should be stratified for more aggressive management and when enrolled into clinical trials.

Table 1
Multivariate predictors of 1-year death or myocardial infarction

Variable	Hazard ratio	Hazard ratio lower upper	P value
Culprit lesion located in LAD	1.7	1.0–2.7	.03
Age	1.0	1.0–1.1	.001
Male	0.6	0.4–0.9	.02
Chronic renal insufficiency	2.8	1.7–4.8	.001
Cardiogenic shock	3.1	1.9–5.0	<.001
Troponin I maximum	1.0	1.0–1.0	.02
Drug-eluting stent use	0.6	0.3–0.9	.03

LAD, left anterior descending artery.

doi:10.1016/j.carrev.2011.04.291

Statin improves outcome of patients presenting with first acute myocardial infarction

Manuel A. Gonzalez, Michael Mahmoudi, Gabriel Sardi, Itsik Ben-Dor, Gabriel Maluenda, Michael A. Gaglia Jr, Kohei Wakabayashi, Rafael Romaguera, Ana Laynez, Rebecca Torguson, William O. Suddath, Augusto D. Pichard, Lowell F. Satler, Ron Waksman Washington Hospital Center, Washington, DC, USA

Background: Use of statin after an acute myocardial infarction (AMI) improves outcomes. However, it is debated whether receiving statin for primary prevention improves in-hospital outcomes when presenting with the first AMI.

Methods: This registry study includes 681 consecutive patients with AMI as the first manifestation of coronary artery disease (CAD) who received PCI and were discharged on statin. The study outcomes were the rates of in-hospital death, recurrent AMI, length of stay, ejection fraction (EF) and peak troponin levels.

Results: The study groups included patients pretreated with statin ($n=214$, 31.4%) and not receiving statin ($n=467$, 68.6%). There were no differences in the baseline and clinical characteristics between the groups. However, patients receiving statin were older and had more hypertension, diabetes, hypercholesterolemia and renal failure and lower LDL cholesterol and hsCRP compared to the no-statin group (all $P<.05$). The mean EF (0.46 vs. 0.44), peak troponin (42.6 ± 8 vs. 41.5 ± 7), length of stay (3.9 vs. 4.2 days) and rate of in-hospital death, recurrent AMI, cardiogenic shock, and stroke were not different (all $P>.05$) (Fig. 1).