

TCT-291

Correlation Between Reduced Infarct-Related Artery Patency on Initial Angiography and Post-PCI Reperfusion TIMI Flow in STEMI Patients—A COMPARE CRUSH Subanalysis



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BACKGROUND The negative impact of reduced TIMI (Thrombolysis In Myocardial Infarction) flow in the infarct-related artery (IRA) before primary percutaneous coronary intervention (PCI) on survival is well described in patients with ST-segment elevation myocardial infarction (STEMI). However, the impact of reduced IRA patency pre-PCI on post-PCI TIMI flow in a contemporary setting in pretreated patients with STEMI undergoing primary PCI is unknown.

METHODS We evaluated 633 patients with STEMI who were enrolled in the COMPARE CRUSH trial between 2017 and 2021 and received crushed or integral prasugrel loading-dose tablets plus aspirin and heparin pretreatment in the ambulance. We stratified patients in groups according to pre-PCI TIMI flow grade (0 or 1, 2, or 3) and assessed post-PCI TIMI flow and blush grade, corrected TIMI frame count (cTFC), ≥70% ST-segment resolution (STR) after 1 hour, and clinical outcomes at 1 year.

RESULTS Among 633 patients with STEMI, 611 underwent primary PCI. IRA TIMI flow grades 0 or 1, 2, and 3 pre-PCI were observed in 55%, 14%, and 30%, respectively. Post-PCI TIMI flow grade 3 was most common in patients with TIMI flow grade 3 pre-PCI (84%, 78%, and 98%; *P* < 0.01). In line, TIMI blush grade 3 post-PCI was most common in the TIMI flow grade 3 pre-PCI group (71%) compared with TIMI flow grade 0 or 1 (48%) and 2 (43%) (*P* < 0.01). Post-PCI cTFC was lowest in the pre-PCI TIMI flow grade 3 group (20 [IQR: 14-30], 24 [IQR: 17-32], and 16 [IQR: 12-27]; *P* < 0.01). However, ≥70% STR 1 hour post-PCI rates were comparable between groups (58%, 55%, and 63%; *P* = 0.24). Moreover, mortality rates and reinfarction rates were similar between groups (mortality 2% vs 2% vs 3% [*P* = 0.95]; reinfarction 4% vs 0% vs 5% [*P* = 0.13]).

	TIMI Flow Grade 0 or 1 Pre-PCI	TIMI Flow Grade 2 Pre-PCI	TIMI Flow Grade 3 Pre-PCI	P-Value
Angiographic post-PCI				
TIMI flow grade 3	261 (84.1%)	62 (77.5%)	166 (98.2%)	<0.01
TIMI blush grade	92 (47.7%)	19 (43.2%)	75 (70.8%)	<0.01
cTFC, frames/s	20 (14-30)	24 (17-32)	16 (12-27)	<0.01
ECG 1 h post-PCI				
≥70% STR	136 (57.7%)	36 (54.5%)	96 (62.7%)	0.45
Clinical outcomes (1 y)				
Mortality	7 (2.2%)	2 (2.3%)	5 (2.6%)	0.95
Reinfarction	14 (4.4%)	0 (0.0%)	9 (4.7%)	0.13

CONCLUSIONS In a contemporary primary PCI setting of pretreated patients with STEMI, poor IRA patency pre-PCI remains correlated with reduced angiographic early reperfusion markers post-PCI. Interestingly, IRA TIMI flow grade 2 pre-PCI was associated with the lowest angiographic reperfusion parameters.

CATEGORIES CORONARY: Acute Myocardial Infarction

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Differences in Clinical and Angiographic Parameters Following Intracoronary Ergonovine and Acetylcholine Provocation Test in Young Patients



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BACKGROUND Ergonovine (Erg) and acetylcholine (Ach) are useful agents for assessing significant coronary artery spasm (CAS). However, there are few data concerning the coronary response between Erg and Ach. The aim of this study was to compare simultaneous Erg and Ach provocation testing in young patients (≤65 years of age).

METHODS A total 5,896 young patients who underwent Erg or Ach provocation testing between November 2004 and June 2021 were enrolled. Significant CAS was defined as focal or diffuse severe transient luminal narrowing (>70%) with or without chest pain or ST-T-segment change on electrocardiography. We divided into 2 groups according to provocation agents: the Erg group (n = 429) and the Ach group (n = 5,467). We investigated whether there are differences in clinical and angiographic characteristics according to provocation agents.

RESULTS Baseline clinical characteristics were similar between the 2 groups except that that Erg group had more elderly patients (52.28 ± 10.37 vs 51.19 ± 9.66; *P* = 0.036) but had a lower prevalence of hypertension (35.4% vs 41.2%; *P* = 0.019) and fewer smokers (19.6% vs 24.8%; *P* = 0.016). The Ach group had a higher rate of myocardial bridge, electrocardiographic changes, chest pain, atrioventricular node block, and positive CAS results. However, lower rates of baseline spastic change were shown in the Ach group. The Erg group received a higher rate of a high concentration dose compared with the Ach provocation test (**Table**).

Table. Angiographic and Procedural Parameters during Ergonovine versus Acetylcholine Provocation Test

Variables (%)	Ergonovine (n=429)	Acetylcholine (n=5,467)	P value
Myocardial Bridge	19 (4.4)	961 (17.6)	<0.001
Baseline spasm	115 (26.8)	1052 (19.2)	<0.001
ECG Change	11 (2.6)	252 (4.6)	0.048
Chest pain	125 (29.1)	2496 (45.7)	<0.001
Spasm positive	159 (37.1)	3152 (57.7)	<0.001
Diffuse spasm (> 30mm)	142 (89.3)	2722 (86.4)	0.288
Provocation dose			
E1 or A1 (Erg 20 ug, Ach 20 ug)	7 (1.6)	201 (3.7)	0.027
E2 or A2 (Erg 40 ug, Ach 50 ug)	32 (7.5)	1262 (23.1)	<0.001
E3 or A3 (Erg 80 ug, Ach 100 ug)	390 (90.9)	4004 (73.2)	<0.001
Multi-vessel spasm	55 (37.2)	1140 (36.2)	0.806
Spasm site			
Left anterior descending	149 (93.7)	2957 (93.8)	0.958
Left circumflex	69 (43.4)	1296 (41.1)	0.569
Spasm location			
Proximal	96 (60.4)	1718 (54.5)	0.147
Mid	138 (86.8)	2856 (90.6)	0.111
Distal	127 (79.9)	2591 (82.2)	0.455
Moderate fixed lesion (≥ 50%)	39 (9.1)	442 (8.1)	0.464
Severe fixed lesion (≥ 70%)	11 (2.6)	157 (2.9)	0.712
AV Block	9 (2.1)	1348 (24.7)	<0.001

CONCLUSIONS Ach was more sensitive even to lower Ach dose compared with Erg in young patients. Further study would be of major importance to validate the different parameters and different positive rates between the 2 agents.

CATEGORIES IMAGING AND PHYSIOLOGY: Angiography and QCA

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Invasive Assessment of Coronary Microvascular Dysfunction in Patients With Arrhythmia-Induced Cardiomyopathy



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