TCT-467
Clinical Outcomes after Anterior ST-Elevation Myocardial Infarction According to LAD Lesion Location: The INFUSE-AMI Trial
Sorin Brener1, Bernhard Witzenbichler2, Akiko Maehara3, Joe Dizon4, Martin Fahy1, Magdi El-Omar5, Jan-Henk Dambrik6, Roxana Mehran7, Keith Oldroyd6, Helen Parise6, C. Michael Gibson2, Gregg Stone2
1New York Methodist Hospital, Brooklyn, NY, 2Charité Campus Benjamin Franklin, Berlin, Germany, 3Catheterization Research Foundation, New York, NY, 4Columbia University, New York, NY, 5Manchester Heart Centre, Manchester, United Kingdom, 6Isala klinieken, Zwolle, Netherlands, 7Mount Sinai Hospital, New York, NY

Background: Prognosis of ST-elevation myocardial infarction (STEMI) is determined predominantly by the extent of myocardial damage and hemodynamic status. Thus, in previous studies patients with proximal LAD occlusion have had worse outcome than those with more distal LAD lesions. It is not known whether modern reperfusion therapy has altered this relationship.

Methods: The INFUSE-AMI trial randomized patients with anterior STEMI due to proximal or mid LAD occlusion to intracoronary bolus abciximab delivered locally via the ClearWay RX catheter vs. no abciximab, and to manual thrombus aspiration with the Export catheter vs. no aspiration. The primary endpoint was core laboratory assessed MlR infarct size (IS, % LV mass) at 30 days. Lesion location was assessed at a core laboratory blinded to randomization and outcomes and was deﬁned as proximal (pLAD) if present before or at first signiﬁcant septal perforator branch, or mid (mLAD) if beyond it.

Results: The study enrolled 452 patients. The median age was 61y, 74% were men and 11% had diabetes. Intracoronary abciximab reduced IS (% LV mass): 15.1[6.8-22.7] vs. 20.8[16, 26] in proximal patients and 14.3[6.2, 18.9] vs 20[16,26] in mid LAD patients with p<0.01. IS was an independent predictor of 3-year cardiac death (HR[95%CI] 1.75, 95%CI 1.28-0.71) and IS at 5 days was performed at 5 days and 6-months to evaluate MVO and IS.

Results: 88 patients were enrolled, mean age 55 ± 10 years: 43.1% in the positive TA group.

Conclusions: Positive thrombus retrieval during primary PCI with manual TA in STEMI reduces MVO and in the acute phase and at 6 months and represents a powerful predictor of final infarct size.

TCT-469
Frequency, Timing and Implications of Reinfarction after Primary Stenting in ST-Segment Elevation Myocardial Infarction: The HORIZONS-AMI trial
Samantha Stone1, Roxana Mehran2, Bernhard Witzenbichler3, Giulio Guagliumi4, Jan Perugia5, Bruce Brodie6, Dariusz Dudek7, Martin Mockel8, Gregg Stone2
1Catheterization Research Foundation, New York, NY, 2Mount Sinai Hospital, New York, NY, 3Charité Campus Benjamin Franklin, Berlin, Germany, 4Ospedali Riuniti di Bergamo, Bergamo, Italy, 5Medic al University of Lodz, Lodz, LODZ, 6LeBauer CV Research Foundation, Greensboro, NC, 7University Hospital, Krakow, Poland, 8Charité Campus Virchow-Klinikum, Berlin, Germany, 9Columbia University Medical Center and the Catheterization Research Foundation, New York, NY

Background: In early studies, reinfarction after primary angioplasty occurred relatively frequently and was an important cause of mortality in STEMI. The frequency, timing and implications of reinfarction in the contemporary primary PCI era have not been described.

Methods: In HORIZONS-AMI, 3,602 pts with STEMI at 123 sites were randomized to heparin + glycoprotein IIb/IIIa inhibitor (GPI) vs. bivalirudin, and to paclitaxel-eluting stents vs. bare metal stents (BMS). Clinical FU was conducted for 3 years.

Results: Stents were implanted in 3,202 pts, comprising the current study cohort. Reinfarction within 3 years occurred in 221 pts (6.9%) at median (IQR) 244 [22, 573] days. Reinfarction developed within 30 days in 59 pts (20.8%). The unadjusted 3-year reinfarction rate was lower in pts assigned to bivalirudin vs. heparin + GPI (6.7% vs. 8.3%, p=0.04), but was not different with DES vs. BMS (7.0% vs. 8.1%, p=0.31). By multivariable analysis, independent predictors of reinfarction were current smoking (P=0.009), Killip class ≥1 (P=0.013), stent length (P=0.006), plated count (P=0.0003), symptom to balloon time (P=0.02), multivessel disease (P=0.0004) and prior MI (P=0.0001). At 3 years, pts with vs without reinfarction had higher unadjusted rates of cardiac death (9.8% vs. 3.2%, P=0.0001) and all-cause mortality (15.3% vs. 5.8%, P=0.0001). In a time and covariate adjusted Cox multivariable model, reinfarction was an independent predictor of 3-year cardiac death (HR[95%CI] = 8.39 [4.77, 14.77], P<0.0001) and all-cause mortality (HR[95%CI] = 3.25 [1.98, 5.35], P<0.0001).

Conclusions: Despite improvements in drugs and devices, reinfarction after primary PCI still occurs relatively frequently with both BMS and DES; is often due to stent thrombosis; and is strongly associated with subsequent cardiac death and all-cause mortality. Safer stents and more effective antithrombotic agents are required to prevent reinfarction and further improve outcomes in STEMI.

TCT-468
Impact of Successful Thrombus Retrieval During Primary Percutaneous Coronary Intervention With Thrombus Aspiration on Infarct Size and Microvascular Obstruction: Insight From Contrast-Enhanced Magnetic Resonance Imaging
Romain Chopard1, Phillkstomn Plastra1, Jerome Jehl1, Vincent Descotes-Genon1, Marie-France Seronde1, Sebastien Janin1, Bruno Kastler1, Francois Schiele1, Nicolas Meneveau1
1University HospitalBesançon, France, Besançon, France

Background: Thromboaspiration (TA) during primary percutaneous intervention (PCI) is effective in opening the infarct-related artery in patients with ST-segment elevation myocardial infarction (STEMI), leading to better reperfusion and improved outcome. However, the effect of positive macroscopic efficiency of TA remains unknown. We aimed to evaluate the impact of positive thrombus retrieval during PCI with manual TA on infarct size (IS) and microvascular obstruction (MVO) as assessed by contrast-enhanced magnetic resonance imaging (CE-MRI) in a subset of patients with STEMI.

Methods: Inclusion criteria were patients aged <75 years, with first STEMI referred for PCI within 12 hours of onset of symptoms, infarct-related artery ≥2.5 mm in diameter, thrombus score ≥3 and no prior history of coronary disease. All patients underwent TA before stenting and were categorized according to positive or negative TA. Clinical and procedural characteristics of study population were recorded and CE-MRI was performed at 5 days and 6-months to evaluate MVO and IS.

Results: 88 patients were enrolled, mean age 55 ± 10 years: 43.1% in the positive TA group. Main results are presented in the table. Clinical and procedural characteristics (90-min total ischemia time, ST-segment resolution, post-procedural TIMI flow grade and post-stenting microvascular blush grade, and peak troponin) did not differ significantly between groups. Independent predictors of final IS were: positive TA (OR 0.34, 95%CI 0.03-0.71), MVO (OR 1.75, 95%CI 1.28-0.71) and IS at 5 days (OR 2.06, 95%CI 1.87-3.32).

Conclusions: Positive thrombus retrieval during primary PCI with manual TA in STEMI reduces MVO and in the acute phase and at 6 months and represents a powerful predictor of final infarct size.

TCT-470
Manual Thrombectomy during Primary Percutaneous Coronary Intervention Can Preserve the Index of Microcirculatory Resistance in Patients with Anterior ST-Segment Elevation Myocardial Infarction
Seong Ri Woo1, Ji Hoon Jang1, Soo Han Kim1, Dae-Hyeok Kim1, Keun-Soo Park1, Sang-Don Park1, Sang-Hee Shin1, Dong-Hyeok Jang1
1Inha University Hospital, Incheon, Korea, Republic of, 2Seoul National University Bundang Hospital, Sungnam, Korea, Republic of

Background: Despite recovered normal epicardial coronary flow after primary percutaneous coronary intervention (PCI) for ST-segment elevation myocardial infarction (STEMI), microvascular damage and dysfunction limit the effect of primary PCI. The purpose of this study was to evaluate whether manual thrombectomy can preserve the index of microcirculatory resistance (IMR) after primary PCI in patients with anterior STEMI.
Methods: 414 consecutive patients (38 men and 3 women; age 52 ± 9 years) with anterior STEMI were enrolled. All patients were randomized into two groups and underwent primary PCI for anterior STEMI stenting after manual thrombectomy (aspiration group, n = 22) and stenting without manual thrombectomy (conventional group, n = 19). The thrombolysis-derived coronary flow reserve (CFR) and index of microcirculatory resistance (IMR) were measured by using the pressure-temperature sensor-tipped coronary wire at the left anterior descending artery (LAD) after primary PCI. Baseline echocardiography was performed before discharge and follow-up echocardiography was performed 6 months later.

Results: There was no significant difference in reperfusion time (onset to balloon time) and CFR (2.01 ± 1.1 vs. 2.05 ± 1.1, p = 0.833), baseline ejection fraction (EF, 44.5 ± 7.5% vs. 48.0 ± 8.0%, p = 0.151), baseline wall motion score index (WMSI, 1.52 ± 0.32 vs. 1.46 ± 0.31, p = 0.59) between two groups. But, there was significant difference in IMR (22.3 ± 8.7 vs. 29.5 ± 11.9, p = 0.037). ΔEF (follow up EF – baseline EF, 5.86 ± 7.2 vs. 1.29 ± 2.5, p = 0.011), ΔWMSI (baseline WMSI – follow up WMSI, −0.19 ± 0.24 vs. 0.003 ± 0.075, p = 0.001) between two groups.

Conclusions: Compared with conventional PCI, manual thrombectomy before stenting for patients with anterior STEMI seems to preserve microvascular integrity. Manual thrombectomy as an adjunctive method of primary PCI for acute anterior STEMI might have beneficial efficacy on myocardial microcirculation.

TCT-471
Joshua Kohl1, Hironori Kitabata2, Israel Barbash3, Danny Dvir4, Salem Badri5, Rebecca Torguson6, Kenneth Kent7, Lowell Satler8, William Suddath9, Augusto Pichard10, Ron Walman11
1Medstar Washington Hospital Center, Washington, DC, 2Washington Hospital Center, Washington, DC, 3Washington Hospital Center, Washington, DC, 4Washington Hospital Center, Washington, DC, 5Washington hospital center, Washington, DC, 6washsington hospital center, Washington, USA, 7Georgetown University, Washington, DC

Background: Drug-eluting stents (DES) are used in ST segment elevation myocardial infarction (STEMI) patients with good safety and efficacy, even in complex patient subsets. This study aimed to compare the in-hospital and 1-year outcomes of STEMI patients with complex clinical and angiographic characteristics treated with 1st- versus 2nd-generation DES.

Methods: The study included 524 consecutive STEMI patients with ≥1 of the following characteristics: Ejection fraction (EF) <30%, chronic renal insufficiency (CRI), cardiogenic shock, bifurcation, unprotected left main, totally occluded, ACC/AHA Type C, bypass graft, in-stent restenosis, presence of thrombus, ventricular fibrillation, cardiogenic shock, bifurcation, unprotected left main, totally occluded, ACC/AHA Type C.

Results: Baseline demographics were similar in patients treated with 1st- vs. 2nd-generation DES. Mean age was 62.2 ± 12.5 years; 65% males; mean EF was 42 ± 13%; and 13.1% had CRI. LAD was used 42.4% of the time, procedure time (50 ± 51 min overall), lesion locations, graft and in-stent restenosis lesions were also similar. 2nd-generation DES were used more frequently in Type C lesions (56.8% vs. 27.4%, p < 0.001) and distal lesions (25.2 vs. 13.8%, p < 0.001). The implantation of 1st generation DES was 1.5 ± 0.8 overall. Angiographic success was similar at 99.4% overall. There was no difference in major in-hospital complications. 1-year mortality, revascularization, and major adverse cardiac event rates were similar in both groups (Table).

Conclusions: Despite the presence of higher lesion complexity, the use of 2nd-generation DES in a STEMI population with complex clinical and angiographic characteristics results in similarly low rates of in-hospital and 1-year outcomes when compared to 1st-generation DES.

TCT-472
Prognosis of Patients Presenting With Non-ST-segment Elevation Myocardial Infarction and Non-obstructive Coronary Artery Disease: Propensity Score Matched Cohort from the ACUITY Trial
David Planer1, E. Magnus Ohman2, Harvey White3, Jeffrey Moses4, Martin Fahy5, Roxana Mehran6, Gregg Stone7
1Hadassah - Hebrew University Medical Center, Jerusalem, Israel, 2Duke University Medical Center, Durham, North Carolina, 3Auckland City Hospital, Auckland, New Zealand, 4Columbia University Medical Center and the Cardiovascular Research Foundation, New York, NY, 5Cardiovascular Research Foundation, New York, NY, 6Mount Sinai Hospital, New York, USA

Background: Troponin elevation is a risk factor for mortality in pts with non-ST-segment elevation acute coronary syndromes (NSTEACS). However, prognostic impact of non-obstructive coronary artery disease (CAD) in NSTEACS pts with troponin elevation is unknown.

Methods: In the ACUITY trial, 3-vessel quantitative coronary angiography was performed in a formal substudy of 6,921 pts with moderate and high-risk NSTEACS. Patients with elevated admission troponin levels (> local upper limit of normal) were stratified by the presence or absence of obstructive CAD (any lesion with diameter stenosis (DS) ≥50%). Propensity-score matching was performed to adjust for baseline characteristics.

Results: Of 2,442 patients with elevated troponins, 197 (8.8%) had non-obstructive CAD. Maximum DS was 83.5% ± 17.5 vs. 24.1% ± 12.2 (p < 0.0001) in pts with vs. without obstructive CAD. Propensity score matching yielded 117 patients with non-obstructive CAD and 351 patients with obstructive CAD with no significant baseline differences including renal function and diabetes.

1-year mortality was significantly higher in pts with non-obstructive CAD (5.2% vs 1.2%; HR [95%CI] = 4.57 [1.29,16.21], p = 0.01), driven mainly by higher non-cardiac mortality (Table). Conversely, recurrent MI and unplanned revascularization rates were higher in patients with obstructive CAD.

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**TCT Abstracts/POSTER/STEMI/NSTEMI**