TCT-252

Prognostic value of ACEF (age, creatinine, ejection fraction) score of one year mortality in 30-day survivors undergoing percutaneous coronary intervention after acute myocardial infarction

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Background: Predictors of one year mortality in 30-day survivors after acute myocardial infarction (AMI) has not been elucidated yet. Recently, several studies reported that ACEF (age, creatinine, ejection fraction) score could provide a prognostic information in patients undergoing percutaneous coronary intervention (PCI) after AMI. Accordingly, the aim of this study is to assess whether ACEF score could predict one year mortality in 30-day post-MI survivors.
Methods: Between November 2005 and August 2011, 12,000 30-day post-MI survivors (8760 men; mean age = 62.2 ± 12.4 year-old) underwent PCI were analyzed in this study from Korea AMI registry. ACEF score was calculated on the basis of the modified formula; [age/left ventricular ejection fraction] + 1 if serum creatinine >2mg/dL. Patients were categorized into 3 groups according to tertiles of ACEF score; ACEF_low (<1.0, n=3,755), ACEF_mid (1.0-1.39, n=4,470), and ACEF_high ($\geq$1.4, n=3,775).
Results: During the follow-up, ACEF score was significantly higher in 30-day post-MI survivors with 12-month mortality (1.28 ± 5.04 versus 1.95 ± 0.82, p <0.001). In Cox proportional hazards model, ACEF score (hazards ratio [HR] 2.26, 95% confidence interval [CI] 2.03 – 2.51; p <0.001) was an independent predictor of 12-month mortality after adjusting for conventional clinical risk factors. In receiver operating characteristics curves, area under the curve (AUC) of ACEF score for predicting 12-month mortality was 0.788 (sensitivity 71.2% and specificity 74.4%), and optimum cut-off value was 1.47. Kaplan-Meier survival curve showed the patients with ACEF score of 1.47 or more (6.9% versus 1.0%; log-rank p <0.001) had significantly higher 12-month mortality compared with patients with ACEF score <1.47. The 12-month mortality was 0.4% in ACEF_low, 1.4% in ACEF_mid, and 6.1% in ACEF_high, respectively (p<0.001). Adjusted HRs for 12-month mortality were 1 (reference), 3.11 (95%CI 1.70 - 5.70; p<0.001), and 10.38 (95%CI 5.83 – 18.47; p<0.001), respectively.
Conclusions: The ACEF score provides useful prognostic information for clinicians to advise patients who have survived the acute phase of AMI. More intensive management is required in post-MI survivors with high ACEF score.
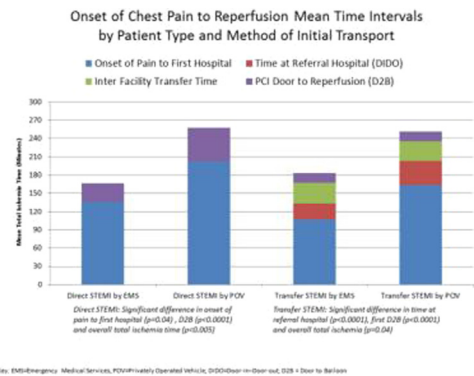
TCT-253

Calling 911 Anywhere Best Determines Reduction in Total Ischemia Time in ST-Elevation Myocardial Infarction (STEMI)

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Background: Since consistent rapid door-to-balloon (D2B) times have largely been solved in most PCI hospitals, reduction in total ischemia time (RITIT) from symptom onset to less than 120-180 minutes to reperfusion has been proposed as a better goal (rather than first medical contact) to reduce mortality in regional systems of STEMI care. Therefore we sought key drivers of RITIT in our combined metro and regional STEMI system.
Methods: Treatment times from January 2011-March 2013 representing direct (non-transfer) and transfer patients for PCI reperfusion for STEMI from a 9 hospital metro and regional system serving over 2 million were collected and a multivariable analysis of gender, age, race, off hours onset of pain, and method of initial transport was performed.
Results: A total of 197 patients were direct STEMI patients with 168 arriving by emergency medical services (EMS) and 75% having onset of pain to reperfusion in <= 180 minutes, while 29 came by privately operated vehicle (POV) with 52% within 180 minutes (p=0.01). A total of 195 patients were transfer STEMI with 56 arriving at the referral hospital by EMS and 139 arriving by POV with 75% EMS having total ischemia time <= 180 minutes versus 57% POV (p=0.02). Details of mean time interval differences for both groups are shown in the graph below:

Onset of Chest Pain to Reperfusion Mean Time Intervals by Patient Type and Method of Initial Transport

Conclusions: Only the method of arrival to the initial hospital was significant in multivariable models of total ischemia time. In both metro and regional settings, calling 911 for EMS is the key determinant for subsequent RITIT in STEMI and leads to time reduction in every step to reperfusion.

TCT-254

Everolimus Eluting Bioresorbable Vascular Scaffolds In Patients With ST-Segment Myocardial Infarction. Safety Feasibility and Acute Performance

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Background: No data are currently available on the use of everolimus eluting bioresorbable vascular scaffolds (BVS) in patients presenting with ST-segment elevation myocardial infarction (STEMI).
Methods: The present report is a prospective, single arm, single centre study evaluating the safety, feasibility and performance of BVS for treatment of consecutive patients presenting with STEMI. Baseline quantitative coronary angiography and post-implantation optical coherence tomography (OCT) data were evaluated. Clinical outcomes are reported at 30-day follow-up.
Results: The intent-to-treat population comprises a total of 40 patients. The procedural success was 97.5% (39/40 patients). Mean door-to-needle time was 30.33 ± 18.51 min. Male gender was present in 31 patients (77.5%). Mean age was 57.9 ± 9.8 years. Pre-procedure TIMI flow was 0 in 52.6% of the patients; Thrombectomy was performed in 31 patients (79.5%), and additional balloon pre-dilatation in 22 subjects (56.5%). After BVS implantation a TIMI flow III was achieved in 35 patients (89.7%), no reflow was observed in 1 case (2.6%), and distal embolization in 7 cases (17.9%). The post-procedure %diameter stenosis was $15.3 \pm 8.2\%$. MI SYNTAX score I and II were respectively 10.5 (7.5-15.0) and 8.0 (5.0-13.0). OCT analysis was performed in a total of 25 patients. The mean lumen area was 7.76 ± 1.88 mm2, minimum lumen area 5.61 ± 1.48 mm2, minimum flow area 5.29 ± 1.54 mm2, mean incomplete stent apposition area 0.131 ± 0.179 mm2, mean prolapse area 0.58 ± 0.28 mm2, mean intraluminal material area 0.013 ± 0.017 mm2; mean %malapposed struts $2.80 \pm 4.11\%$, scaffolds with >5% malapposed struts were 5. At 30-days follow-up the MACE rate was 2.6%, this was due to a non-target vessel Non Q-Wave myocardial infarction (MI), Target vessel failure rate was 0%. No target vessel revascularisation, and target vessel MI were reported. No cases of cardiac death or scaffold thrombosis were observed.
Conclusions: The use of BVS in patients presenting with acute myocardial infarction was observed to be safe and feasible. Angiographic and OCT data showed optimal acute results with high rate of TIMI III flow, low residual stenosis and good apposition of the scaffold.

TCT-255

Favourable Long-term Survival Of Out-of-hospital Cardiac Arrest Patients Managed With Systematic Coronary Angiogram On Admission

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Background: Coronary angiogram (CA) with percutaneous coronary intervention (PCI) on admission may improve survival to hospital discharge in out-of-hospital

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cardiac arrest (OHCA) patients, but data on the long-term survival are scarce. We performed a study to assess long-term survival in OHCA patients managed with CA on admission and PCI if indicated and to compare survival between patients with and without acute myocardial infarction (AMI).

Methods: Retrospective single-centre study including patients ≥18 y.o. resuscitated from an OHCA without an obvious non-cardiac cause. AMI was diagnosed angiographically as lesions suggestive of ruptured plaques with fresh thrombus and critical stenosis easily crossed by an angioplasty wire. Survival was recorded at discharge and 5-years survival probability was estimated by Kaplan-Meier survival curves. Data are expressed as numbers (percentages) and median (interquartile range-IQR).

Results: 300 comatose patients aged 56 (48-67) were included from 2002 to 2011. 130 patients (43%) had ventricular fibrillation, 116 (39%) asystole, 54 (18%) had other/unknown initial rhythm. All patients had CA on admission and 93 (31%) had an AMI. PCI was attempted in 85 (91%) of AMI patients, successful in 79. Therapeutic hypothermia was performed in 256 (84%) patients. Survival at discharge was 32.3% (97/300). After discharge, 5-year probability of survival was 81.7±5.4%. Probability of survival from admission to 5 years was 26.2%±2.8%. AMI patients had better survival at discharge, 40.8% (38/93) versus 28.5% (59/207) in non-AMI, p=0.047. Probability of survival from discharge to 5 years in AMI patients was 92.2%±5.4% versus 73.4±8.6% in non-AMI, hazard ratio (HR)=2.7, confidence interval (CI)=(0.8-8.9), p=0.1. Survival probability from admission to 5 years was better for AMI patients, 37.4%±5.2% versus, 20.7%±3.0% in non-AMI, HR=1.5, CI=(1.12-2.0), p=0.0067.

Conclusions: We observed a very favourable post-discharge prognosis in OHCA patients undergoing on-admission CA with PCI if indicated. Patients suffering OHCA due to AMI had better survival to discharge and at 5 years follow-up than patients suffering OHCA due to other causes.

TCT-256

Distal Embolization and Myocardial Damage during Primary-Percutaneous Coronary Intervention: The Relevance of Thrombus Burden

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Background: It has been advocated that LTBL treatment in the context of p-PCI may lead to unsuccessful angiographic reperfusion and unfavorable clinical outcome, suggesting that thrombus aspiration should be considered in this subset. However, the hazard of LTBL treatment on myocardial reperfusion and damage has not been evaluated. This study aims to investigate the impact of large thrombus burden lesion (LTBL) on myocardial damage, using CE-CMR in the setting of primary-PCI (p-PCI).

Methods: In 327 patients, who underwent p-PCI without mechanical device use, within 12-hours from symptom onset, we prospectively assessed the impact of LTBL on infarct size and microvascular damage, using CE-CMR. LTBL was defined by the presence of TIMI-thrombus score ≥ 3 in patent IRAs; or by "cut off" occlusion pattern and/or large reference vessel diameter (≥ 3.5 mm) in occluded IRAs

Results: 197 (60.2%) patients showed LTBL, and 130 (39.8%) did not. Distal embolization (DE) occurred in 18.8% LTBL vs 6.9% no-LTBL patients (p=0.003). At CE-MR, patients with LTBL had larger infarct size index (27.5+11.1 vs 22.1+17.5, p=0.009), and more often transmural necrosis (70.5% vs55.4%, p=0.008) compared to patients without LTBL. After excluding patients with DE, LTBL patients still had larger necrosis. At multivariate analysis, occluded (IRA) at baseline, anterior infarction, and occurrence of distal embolization predicted transmural necrosis.

Conclusions: Treatment LTBL in the setting of P-PCI is related to larger myocardial damage as detected by CE-CMR, regardless of angiographic detectable embolization. These findings suggest that in patients with LTBL thrombus aspiration before stenting should be considered.

TCT-257

In-appropriate Activation Of The Cardiac Catheterization Laboratory For Code STEMI: Electrocardiographic Findings And Clinical Outcome

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Background: Inappropriate activation (IA) of the cardiac catheterization laboratory for code STEMI is associated with significant time and health care costs. The clinical outcome of patients with IA has not been characterized. The objective of this study was to determine the reasons for IA and to evaluate the short-term outcome of these patients.

Methods: From January, 2009 through September, 2011, 396 patients initially activated for code STEMI were evaluated. Patients that underwent emergent coronary angiography with or without PCI were considered as appropriate activation (AA Group, n =228); patients that were subsequently cancelled and did not undergo emergent coronary angiography were considered as inappropriate activation (IA

Group, n=168). Baseline demographics, findings of initial ECG, reasons for cancellation and in-hospital outcome were collected.

Results: Mean age was 57±8 years and 73% were male. The most common initial ECG findings for the IA group were ST segment elevation <1 mm (55%), arrhythmias (23%), bundle branch block (22%) and left ventricular hypertrophy (18%). The most common reasons for code STEMI cancellation were absence of ST segment elevation >1 mm (83%), coexisting severe medical condition (10%) and a normal bedside echocardiogram in the setting of an equivocal ECG (15%). In-hospital mortality was significantly worse for the IA Group compared to the AA Group, 17.3% vs 7%, p=0.002, respectively.

Conclusions: Abnormalities of rhythm and conduction and left ventricular hypertrophy account for the majority of ECG findings for IA. The lack of ST segment elevation >1 mm was the most common reason for code STEMI cancellation. Short-term mortality for patients with IA is significantly higher than in patients with STEMI. These findings suggest that additional treatment strategies for code STEMI cancellation should be explored.

TCT-258

Elaboration of a New Risk Score for Predicting Distal Embolization during Primary Angioplasty in ST-Elevation Myocardial Infarction

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Background: Distal embolization (DE) is a serious complication of primary-PCI for ST-elevation myocardial infarction, affecting mortality and morbidity rate. This study aims to develop and validate a new angiographic risk score to predict the risk of DE in patients undergoing p-PCI.

Methods: Study sample included data from 1200 pts undergoing p-PCI. Logistic regression was used to examine the relationship between risk factors and occurrence of DE. The cohort was randomly divided into a risk score development cohort (n=814), and a validation cohort (n =386). Each covariate in the model was assigned an integer score based on the regression coefficients.

Results: The rate of DE was 14.4%, with in-hospital mortality of 9.8%. At multivariate analysis, four variables resulted independent predictors of DE: the "cut-off " occlusion pattern of infarct-related artery, TIMI thrombus score 2-4, RVD ≥ 3.5 mm, lesion length > 20 mm. Each variable was assigned a 0 to +2 points according to the strength of the statistical association. Risk scores 0 to 1 were considered low risk, 2 to 4 intermediate risk, and 5 to 7 high risks for DE. DE was different among risk score groups in both derivation cohort (p for trend < 0.0001; C-statistic 0.68) and in validation cohort (p for trend <0.0001; C-statistic 0.64).
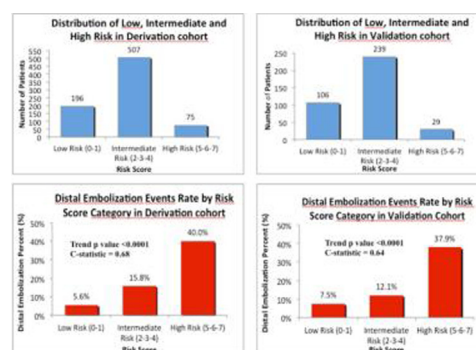
Conclusions: The individual risk of distal embolization can be predicted using simple 4-variable model. The application of this new risk score can be useful in strategies making during p-PCI in STEMI, particularly in selecting patients who may benefit from pharmacological and adjunctive mechanical thrombus removal.

TCT-259

The Impact of Non-Chest Pain Complaint as a Presenting Symptom on the Door-to-Balloon Time and Clinical Outcomes in Patients with ST-Segment Elevation Myocardial Infarction

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Background: Time to reperfusion treatment is known to be an essential predictor of morbidity and mortality outcomes in patients with ST-elevation myocardial infarction (STEMI). Specifically, increased door-to-balloon (DTB) time is associated with