CONCLUSIONS Remnant CV risk is still high beyond the first year even in the stable post-MI 1-year survivors who received current state-of-art therapeutics. Further larger studies are needed to define the high-risk group in Korean stable post-MI survivors.

CATEGORIES CORONARY: Acute Myocardial Infarction

KEYWORDS Acute myocardial infarction, Cardiovascular disease, Percutaneous coronary intervention

TCT-243 Long-term residual risk according to optimal medical treatment in acute myocardial infarction treated with percutaneous coronary

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BACKGROUND Current guidelines recommend appropriate revascularization and optimal medical treatment (OMT) including antiplatelet therapy, statin, beta-blocker, or renin-angiotensin system (RAS) blocker in the treatment of acute myocardial infarction (AMI). The purpose of this study is to describe the prescription status for OMT and long-term clinical outcome according to the status for OMT at discharge and at 1-year.

METHODS We consecutively enrolled AMI patients who underwent percutaneous coronary intervention (PCI) in the COREA-AMI (Cardiovascular Risk and idEntification of potential high-risk population in AMI) registry including nine major university hospitals throughout South Korea from January 2004 to December 2009. OMT was defined as taking all three medications including statin, beta-blocker, and RAS blocker (angiotensin converting enzyme inhibitor or angiotensin receptor blocker) with dual antiplatelet agent (DAPT) at discharge or with one or more antiplatelet agent at 1 year. The primary endpoint was all-cause death and landmark analysis for 1-year post-MI survivors were performed.

RESULTS Of 4,748 AMI patients, 2,517 were taking OMT with DAPT and 1,878 were not taking OMT at discharge. At 1 year, 1,719 were prescribed OMT with one or more antiplatelet 1,845 were not prescribed OMT among 4,200 who were alive at 1 year stably without non-fatal MI or stroke. Median follow-up duration was 43.8 months (interquartile range 29.8 to 60.5 months). Within the first year, the incidence rates of primary endpoint were 2.3% in OMT group and 5.4% in non-OMT group [Unadjusted HR (95%CI) 2.32 (1.69-3.19), p<0.001]. After 1 year from index PCI, all-cause death were 4.2% in OMT group and 9.8% in non-OMT group [Adjusted HR (1.14-2.59), p<0.005].

CONCLUSIONS About 40% of post MI survivors were not prescribed full OMT at the time of discharge or at 1 year. Long-term clinical outcome was significantly superior in the OMT group as compared with non-OMT group not only within the first year but also from 1 year to study completion among stable post-MI 1 year survivors.

CATEGORIES CORONARY: Acute Myocardial Infarction

KEYWORDS Acute myocardial infarction, Optimal medical therapy, Percutaneous coronary intervention

TCT-244 The Impella to Balloon (ITB) Strategy Limits Infarct Size and Improves Survival in Acute Myocardial Infarction Complicated by Cardiogenic Shock: A Bench to Bedside Study

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BACKGROUND Clinical trials have failed to show a clear benefit of mechanical unloading of the left ventricle (LV) to limit ischemia-reperfusion injury (IRI) in acute myocardial infarction (AMI), which may reflect a poor understanding of whether to unload the LV before or after reperfusion. We explored the kinetics of LV unloading with an axial flow catheter (Impella) in relation to balloon reperfusion as a strategy to reduce infarct size and improve survival in AMI.

METHODS We first employed a swine model of AMI. After 90 minutes of LAD occlusion, adult, male swine (n=4/group) were randomized to either: 1) 120 minutes of reperfusion alone (IRI), 2) 15, 30, or 60 minutes of LV unloading before 120 minutes of coronary reperfusion (Impella to Balloon Group; ITB-15; ITB-30; ITB-60) or 3) 30 minutes of coronary reperfusion followed by LV unloading and an additional 120 minutes of reperfusion (Balloon to Impella Group; BTI-30). Infarct size, myocardial kinase activity, and mitochondrial integrity were quantified. To begin exploring the clinical utility of LV unloading before reperfusion we retrospectively studied all patients in the USPella registry presenting with acute ST-segment elevation myocardial infarction and cardiogenic shock who received an Impella within 120 minutes before (n=41; STEMI-ITB) or within 120 minutes after (n=76; STEMI-BTI) percutaneous coronary reperfusion between 2009 and 2014.

RESULTS Compared to IRI alone, infarct size was reduced in the ITB-30 and ITB-60 groups, but not in the ITB-15 or BTI groups (Figure). Levels of phosphorylated Akt, Erk-1/2, GSK3β and mitochondria per cardiomyocyte were increased within the infarct zone in the ITB-30 and ITB-60 groups, not the BTI group. In the registry analysis, in-hospital (51% vs 28%, p<0.02) and 30-day survival (42% vs 25%, p<0.03) were higher in the STEMI-ITB than the STEMI-BTI group. A STEMI-ITB time of less than 60 minutes (n=38) was associated with higher in-hospital survival than a STEMI-BTI time of less than 60 minutes (n=40) (50% vs 25%, p<0.02).

Coronary: Acute Myocardial Infarction

% Area at Risk

Reperfusion

IRI Alone

IRI+ITB 15min

IRI+ITB 30min

IRI+ITB 60min

Balloon to Impella Group

Impella to Balloon Group

Impact of Mechanical Unloading on Infarct Size in Acute Myocardial Infarction Complicated by Cardiogenic Shock

TCT-244

The Impella to Balloon (ITB) Strategy Limits Infarct Size and Improves Survival in Acute Myocardial Infarction Complicated by Cardiogenic Shock: A Bench to Bedside Study

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RESULTS Compared to IRI alone, infarct size was reduced in the ITB-30 and ITB-60 groups, but not in the ITB-15 or BTI groups (Figure). Levels of phosphorylated Akt, Erk-1/2, GSK3β and mitochondria per cardiomyocyte were increased within the infarct zone in the ITB-30 and ITB-60 groups, not the BTI group. In the registry analysis, in-hospital (51% vs 28%, p<0.02) and 30-day survival (42% vs 25%, p<0.03) were higher in the STEMI-ITB than the STEMI-BTI group. A STEMI-ITB time of less than 60 minutes (n=38) was associated with higher in-hospital survival than a STEMI-BTI time of less than 60 minutes (n=40) (50% vs 25%, p<0.02).
CONCLUSIONS Primary LV unloading with an axial flow catheter for 30 or 60 minutes before, not after, coronary reperfusion is associated with reduced infarct size, increased cardioprotective signaling, and improved mitochondrial integrity. These preclinical findings are supported by improved survival among patients treated with an axial flow catheter before, not after reperfusion.

CATEGORIES CORONARY: Acute Myocardial Infarction

KEYWORDS Cardioprotection, Mechanical circulatory support, Myocardial infarction, acute

Thrombectomy

KEYWORDS Acute myocardial infarction, Coronary microcirculation, Protection mid-term follow up.

allow echocardiographic or clinical improvement in STEMI patients at microcirculatory resistance. Reduction in microcirculatory resistance after primary PCI in 128 patients with the first STEMI randomly assigned to thrombus aspiration or conventional primary PCI group before coronary angiography. The primary endpoint was defined as a mean value of IMRcorr in thrombus aspiration compared to conventional PCI group. Myocardial perfusion grade, resolution of ST-segment elevation, enzymatic infarct size, left ventricle remodeling and rate of adverse cardiac events were secondary endpoints.

RESULTS Manual thrombus aspiration, as compared with conventional PCI, resulted in significantly lower IMRcorr (27.5 ± 16.8 U vs 39.9 ± 32.7 U, P = 0.039). Treatment with thrombus aspiration, as compared with conventional PCI, resulted in similar rates of myocardial perfusion grade 0 or 1 (21.5% vs. 28.6%; RR 0.75; 95% CI, 0.41 to 1.38; P = 0.36), complete resolution of ST-segment elevation (61.5% vs. 49.2%; RR 1.25; 95% CI, 0.91 to 1.71; P = 0.16), similar infarct size (median AUC CK-MB: 4362 U/L (IQR 696 to 15636 U/L) versus 4401 U/L (IQR 275-222.5), min P = 0.17, total ischemic time 166 (IQR 131.25-302.5) vs. 202,5 (IQR140.0-333.75); P = 0.21, antecedent angina 56.0 vs. 50.0%, P = 0.88, the rate of anterior STEMI 40.0 vs. 29.2%, P = 0.63 and total ST-segment deviation 16.2 ± 8.94 vs. 16.7 ± 9.91, P = 0.85, respectively. There were no inter-group differences in angiographic and procedural characteristics: multi vessel disease (48.0 vs. 50.0%, P = 0.69), TIMI 0 or 1 at baseline (84 vs. 87.5%, P = 0.72), TIMI 3 after completion of pPCI (96.0 vs 91.7%, P = 0.52), thrombus length (12.3 ± 8.86 vs. 12.4 ± 8.12, P = 1) and final MBG 0 or 1 (20.0% vs. 33.3%, P = 0.29). Resolution of ST-segment elevation (80.0 vs. 50.0%, P = 0.027) and IMRcorr (22.9 ± 13.35 vs. 37.2 ± 27.32, P = 0.032) were lower in the group with fresh thrombi compared to old thrombi. There was a trend towards lower rate of distal embolizations in the group with fresh thrombi (8.0 vs. 22.9%, P = 0.074). However, there were no differences in infarct size (AUC CK 41542.7 ± 31052.9 vs. 44712.1 ± 26186.1, P = 0.71), LVEF (55.2 ± 11.67 vs. 54.0 ± 10.63, P = 0.72,) WMSI (1.37 ± 0.37 vs. 1.29 ± 0.20) or remodeling rate (08.5 vs. 25.0%, P = 1) between the groups with fresh and old thrombi.

CONCLUSIONS The manual aspiration of fresh thrombi leads to improved myocardial perfusion in STEMI patients as compared with old thrombi. However, we were unable to identify clinical or angiographic characteristics to be associated with fresh thrombi. In addition, improved myocardial perfusion was not associated with improved clinical outcome in patients with fresh compared to old thrombi.

CATEGORIES CORONARY: Thrombus / Thrombectomy and Embolic Protection

KEYWORDS Acute myocardial infarction, Coronary microcirculation, Thrombectomy

Thrombectomy

Impact of thrombus age on efficacy of manual thrombus aspiration: subanalysis form the PATA STEMI trial

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BACKGROUND The composition of thrombus in infarct-related artery is related to the age of thrombus. It has not been analyzed the impact of thrombus age on the efficacy of manual thrombus aspiration in STEMI patients assessed by invasive and quantitative method of measuring microcirculatory resistance.

METHODS Out of 128 patients randomly allocated to either routine manual thrombus aspiration or standard pPCI, 75 patients underwent thrombus aspiration of which 10 patients had crossover. The efficacy of thrombus aspiration was assessed by determining the index of microcirculatory circulation. The age of thrombus was assessed after hematoxylin eosin staining. Fresh thrombi were rich in erythrocytes with no signs of lysis of nuclei. Lytic thrombi had signs of lysis and cell necrosis, while organized thrombi had thick collagen bands.

RESULTS In 49 patients thrombus size allowed histologic examination with hematoxylin eosin staining. Fresh thrombus was found in 25 patients and lytic or organized thrombus was found in 24 patients. There were no differences in baseline clinical characteristics between the group with fresh and old thrombi: 59.7 ± 10.55 vs. 75.9 ± 13.07, P = 0.074, 56.0 vs. 75.8% male patients, risk factors > 2, 44.0 ± 16.7%, P = 0.06, patient delay median 45 (IQR 15-125,7) vs. 60 (IQR 28.75- 222.5) min, P = 0.17, total ischemic time 166 (IQR 131.25-302.5) vs. 202.5 (IQR140.0-333.75); P = 0.21, antecedent angina 56.0 vs. 50.0%, P = 0.88, the rate of anterior STEMI 40.0 vs. 29.2%, P = 0.63 and total ST-segment deviation 16.2 ± 8.94 vs. 16.7 ± 9.91, P = 0.85, respectively. There were no inter-group differences in angiographic and procedural characteristics: multi vessel disease (48.0 vs. 50.0%, P = 0.69), TIMI 0 or 1 at baseline (84 vs. 87.5%, P = 0.72), TIMI 3 after completion of pPCI (96.0 vs 91.7%, P = 0.52), thrombus length (12.3 ± 8.86 vs. 12.4 ± 8.12, P = 1) and final MBG 0 or 1 (20.0% vs. 33.3%, P = 0.29). Resolution of ST-segment elevation (80.0 vs. 50.0%, P = 0.027) and IMRcorr (22.9 ± 13.35 vs. 37.2 ± 27.32, P = 0.032) were lower in the group with fresh thrombi compared to old thrombi. There was a trend towards lower rate of distal embolizations in the group with fresh thrombi (8.0 vs. 22.9%, P = 0.074). However, there were no differences in infarct size (AUC CK 41542.7 ± 31052.9 vs. 44712.1 ± 26186.1, P = 0.71), LVEF (55.2 ± 11.67 vs. 54.0 ± 10.63, P = 0.72,) WMSI (1.37 ± 0.37 vs. 1.29 ± 0.20) or remodeling rate (08.5 vs. 25.0%, P = 1) between the groups with fresh and old thrombi.

CONCLUSIONS The manual aspiration of fresh thrombi leads to improved myocardial perfusion in STEMI patients as compared with old thrombi. However, we were unable to identify clinical or angiographic characteristics to be associated with fresh thrombi. In addition, improved myocardial perfusion was not associated with improved clinical outcome in patients with fresh compared to old thrombi.

CATEGORIES CORONARY: Thrombus / Thrombectomy and Embolic Protection

KEYWORDS Acute myocardial infarction, Coronary microcirculation, Thrombectomy

Thrombectomy

Hypothyroidism is a Prognostic Marker in ST-elevation Myocardial Infarction Patients Undergoing Primary PCI

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BACKGROUND Previous studies have suggested that thyroid dysfunction is associated with the mortality in patients with acute myocardial infarction, but whether the thyroid function status is associated with the prognosis of primary PCI has not been evaluated sufficiently.

METHODS Consecutive 1079 patients with ST-elevation myocardial infarction (STEMI), who were hospitalized in Fuwai hospital from January 2010 to December 2012, were enrolled into this study. Patients underwent primary PCI treatment and thyroid function profile evaluation within the first 12 hours after admission. The duration...