P1275 | BEDSIDE
Detection of tissue factor antigen and coagulation activity in coronary artery thrombi isolated from patients with ST-segment elevation acute myocardial infarction
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Purpose: We sought to investigate whether coagulant active Tissue Factor (TF) can be retrieved in thrombi of patients with ST-Segment Elevation acute Myocardial Infarction (STEMI). Meth: Nineteen patients with STEMI referred for primary PCI were enrolled in this study. Coronary thrombi aspirated from coronary arteries using manual thrombectomy devices were routinely processed for paraffin embedding and histological evaluation (4 patients) or immediately snap frozen for evaluation of TF activity using a modified aPTT test (15 patients). Immunoprecipitation followed by immunoblotting was also performed in 12 patients.

Results: Thrombi aspirated from coronary arteries showed large and irregular areas of TF staining within platelet aggregates, and in close contact with inflammatory cells. Some platelet aggregates stained positive for TF whereas others did not. Monocytes consistently stained strongly for TF, neutrophils had weak and irregular TF staining, and red blood cells did not demonstrate staining for TF. Median clotting time of plasma samples containing homogenized thrombi incubated with a monoclonal antibody that specifically inhibits TF-mediated coagulation activity (mAb 5G9) were significantly longer than their respective controls (88.9 seconds versus 76.5 seconds, respectively; p<0.001). TF was also identified by immunoprecipitation in 10 patients, with significant variability among band intensities.

Conclusions: Active TF is present in coronary artery thrombi of patients with STEMI, suggesting that TF may contribute to thrombus growth and propagation during the acute phase of STEMI.

P1276 | BEDSIDE
Long-term outcomes of unprotected left main stem PCI in STEMI
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Purpose: ST-elevation myocardial infarction due to the left main coronary artery disease is one of the most life-threatening conditions in daily clinical practice.

Methods: Of the 1127 PCIs performed in STEMI patients at our hospital from January 1, 2009 to December 31, 2011, the left main stem was the culprit lesion in 43.8% cases. A retrospective analysis of treatment of 43 patients (mean age was 64.7±6.5 years, 74.4% were males) presenting with STEMI due to the left main disease that underwent PCI at a single high-volume center was performed. The study end points included in-hospital mortality and the rate of major adverse cardiac and cerebrovascular events (MACCE), defined as composite of death, myocardial infarction, stroke, and repeat revascularization at a mean 26.7±9.2 (range 13-43) months of follow-up.

Results: The median time from symptoms onset to balloon was 75 minutes with an interquartile range of 55 to 115 minutes. Sixteen (37.2%) patients presented with cardiogenic shock at admission, 21 (48.8%) patients had an acute pulmonary edema. Angiographically, 7 (16.3%) patients had an acute occlusion of left main stem, 28 (65.1%) – distal left main disease, 6 (14.0%) – isolated left main disease, 8 (18.6%) – chronic total occlusion of the right coronary artery. Intra-aortic balloon pump was used in all cases. Drug-eluting stents were implanted in 39 (90.7%) patients. Multi- vessel PCI in acute phase was performed in 14 (32.6%) patients. TIMI III flow was achieved in 97.7% cases. The in-hospital mortality rate was 11.6%. At 26.7±9.2 months of follow up there were 3/38 (7.9%) deaths, 4/38 (10.5%) new myoccardial infarctions, 12/38 (31.6%) patients were performed CABG, 7/38 (18.4%) patients had staged PCI of non-culprit lesions. One (2.6%) patient had a minor stroke after CABG. At 26.7±9.2 months of follow up the overall rate of MACCE was 62.8%.

Conclusions: Unprotected left main coronary artery PCI in STEMI is technically feasible in most patients and provides rapid reperfusion to critically ill patients with acceptable short-term and long-term outcomes. PCI of the noninfarct-related arteries in acute setting in patients with multi-vessel coronary disease should be considered in patients that remain hemodynamically unstable after left main stenting. The high rate of MACCE at 26.7±9.2 months of follow up is largely driven by the high incidence of repeat revascularization and can be explained by the intention to provide complete revascularization after stabilization of left main STEMI patients with concomitant multi-vessel coronary disease.