STEMI randomly assigned to thrombus aspiration or conventional primary PCI group by randomization. The primary endpoint was defined as a composite of IMR in thrombus aspiration compared to conventional PCI group. Myocardial perfusion grade and resolution of ST-segment elevation were also assessed. Infarct size and left ventricle remodeling were assessed by echocardiographic indices and SPECT.

Results: Manual thrombus aspiration, as compared with conventional PCI, resulted in significant improvement of lower IMR (25% vs. 39%, P < 0.0082), treatment with thrombus aspiration, as compared with conventional PCI, resulted in similar rates of myocardial perfusion grade 0 or 1 (20.8% vs. 29.4%; relative risk, 0.71; 95% CI, 0.38 to 1.30; P = 0.26) and complete resolution of ST-segment elevation (59.7% vs. 47.1%; relative risk, 1.27; 95% CI, 0.96 to 1.70, P = 0.17). In a multiple regression model with the log-transformed IMR as dependent variable, after adjusting for clinical, angiographic and procedural variables, thrombus aspiration remained a strong independent predictor of lower IMR (27.14 U; 95% CI, 23.79 to 30.93 U, vs. 36.11 U; 95% CI, 30.74 to 42.41 U, P < 0.0076). Histopathological examination confirmed successful thrombus aspiration in 89.6% of patients.

Conclusions: Manual thrombus aspiration reduces microcirculatory resistance indicating better myocardial perfusion compared to conventional PCI in patients with STEMI. Manual thrombus aspiration tended towards improved clinical outcome.

TCT-142

Thrombus aspiration is similarly effective in STEMI patients with ischemia lasting less than 6 hours compared to those with longer ischemia: subanalysis of the PATA STEMI trial

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Background: It has been reported that thrombus aspiration is effective in STEMI patients with total ischemic time duration of less than 3 hours and less effective in longer ischemia. Some studies tested thrombus aspiration efficacy only within 6 hours from chest pain onset. However, little is known about invasive assessment of thrombus aspiration efficacy in STEMI patients beyond 6 hours of ischemia.

Methods: Patients who underwent thrombus aspiration were divided into two groups according to total ischemic time duration: < 6 hours and >6 hours. These patients were taken from the PATA STEMI trial for the analysis. Primary endpoint was value of mean index of microcirculatory resistance (IMR). Secondary endpoints were myocardial blush grade (MBG), resolution of ST segment elevation, AUC CK, wall motion score index (WMSI), left ventricular ejection fraction and MACE rate at one year follow-up.

Results: In the PATA STEMI trial 75 patients underwent manual thrombus aspiration with the Eliminate3 catheter (Terumo Europe, Leiden, Belgium). In baseline characteristics, patients delay (74.5 vs 377.9, P = 0.06), LVEF 53.9% vs. 59.3%, P = 0.026, were more frequent in patients with total ischemic time >6 hours (N = 42), patients with totals ischemic time < 6 hours (N = 63) compared to those with ≥6 hours, mean IMR was 30.4 vs. 17.8 vs. 36.4 vs. 19.8 U, P = 0.34 (mean corrected IMR 26.5 vs. 15.8 vs. 34.3 vs. 19.9 U, P = 0.22), mean IMR in non-infarct related artery territory 18.6 ± 1.8 vs 2.4 ± 2.0 U, P = 0.01, complete resolution of ST-segment elevation 63.5% vs. 50.0%, P = 0.53, myocardial blush grade 2 in 80.9% vs. 66.7%, P = 0.44, AUC CK: 40303 ± 25380 vs. 44331 ± 30316 U/L, P = 0.69, WMSI 1.32 ± 0.03 vs. 1.18 ± 0.09, P = 0.06, LVEF 59.9% vs. 59.3%, P = 0.11 and MACE rate 11% vs. 0%, P = 0.59.

Conclusions: Manual thrombus aspiration in STEMI patients with ischemia lasting less than 6 hours is similarly effective as in those with longer ischemia.

Cath Lab of the Future

Washington Convention Center, Lower Level, Hall A
Saturday, September 13, 2014, 5:00 PM–7:00 PM

Abstract nos: 145-148

TCT-143

Impact of manual thrombus aspiration on left ventricular remodeling: the echocardiographic substudy of the randomized Physiologic Assessment of Thrombus Aspiration in patients with ST-segment Elevation Myocardial Infarction (PATA STEMI) trial

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Background: It has been reported that index of microcirculatory resistance (IMR) is lower in STEMI patients who underwent thrombus aspiration before stent implantation compared to those treated with conventional primary PCI. The aim of this study was to evaluate impact of improved myocardial perfusion by manual thrombus aspiration assessed by IMR in STEMI patients at mid-term follow-up.

Methods: The total of 115 patients entered the echocardiography substudy of the PATA STEMI trial (randomized Physiologic Assessment of Thrombus Aspiration in patients with ST-segment Elevation Myocardial Infarction) trial which evaluated efficacy of manual thrombus aspiration using Eliminate3 catheter (Terumo Europe, Leiden, Belgium).

Results: Thrombus aspiration was done within the first 24 hours after the index procedure and after 4 months. End-diastolic and end-systolic LV volumes per body surface area, EF, CSI volume and WMSI were similar between the thrombus aspiration and no aspiration group at baseline and at follow-up. At follow-up, percent change in WMSI tended to be greater in thrombus aspiration group (increase in WMSI 8.2% vs. increase in WMSI 0.8%, P = 0.094).

Conclusions: Improved myocardial perfusion assessed by IMR has no impact on left ventricular remodeling in STEMI patients at mid-term follow-up.

TCT-144

The clinical efficacy of thrombus aspiration on five-year clinical outcomes in patients with ST-segment elevation acute myocardial infarction undergoing percutaneous coronary intervention

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Background: The use of adjunctive thrombus aspiration (TA) promotes better coronary reperfusion and improves myocardial perfusion in STEMI but the long-term mortality benefit still remains controversial.

Methods: The CREDY-Kyoto AMI registry is a large-scale cohort study of acute myocardial infarction (AMI) patients undergoing coronary revascularization in 2005-2007 at 26 hospitals in Japan. Among 3,242 patients enrolled in the registry, the current study population consisted of 3325 patients who arrived at the hospital within 12 hours after the symptom onset and underwent primary PCI. During primary PCI, 2120 out of 3325 (63.8%) patients received thrombus aspiration (the TA group). Clinical outcomes were compared between the TA group and the non-TA group. Results: The cumulative five-year incidence of all-cause death was significantly lower in the TA group than in the non-TA group (18.6% versus 22.6%, P < 0.001). Similarly, the cumulative incidences of cardiac death, non-cardiac death, and target-lesion revascularization (TLR) were significantly lower in the TA group. After adjusting for confounders, however, the use of adjunctive TA was not associated with lower risk for all-cause death (hazard ratio [HR]:0.91, 95% confidence interval [CI]:0.77-1.09, P=0.30). In contrast, the subgroup analysis indicated TA was associated with a lower all-cause mortality only in patients with initial TIMI grade 1-3 (HR:0.70, 95% CI:0.52-0.94, P=0.02). Adjunctive thrombus aspiration had a neutral effect in the rest of the subgroups.

Table. Clinical outcomes at 5-Year

<table>
<thead>
<tr>
<th></th>
<th>TA group (n=2120)</th>
<th>non-TA group (n=1205)</th>
<th>Grade</th>
<th>Adjusted HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N of events</td>
<td>(Cumulative incidence)</td>
<td>(Cumulative incidence)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MI</td>
<td>201 (9.9%)</td>
<td>220 (18.2%)</td>
<td>0.760</td>
<td>0.570-1.000</td>
</tr>
<tr>
<td>Death</td>
<td>110 (5.2%)</td>
<td>120 (10.0%)</td>
<td>0.901</td>
<td>0.775-1.054</td>
</tr>
<tr>
<td>MI + Death</td>
<td>311 (14.7%)</td>
<td>340 (28.2%)</td>
<td>0.690</td>
<td>0.563-0.844</td>
</tr>
<tr>
<td>MI + Non-Cardiac Death</td>
<td>110 (5.2%)</td>
<td>120 (10.0%)</td>
<td>0.901</td>
<td>0.775-1.054</td>
</tr>
<tr>
<td>Non-Cardiac Death</td>
<td>100 (4.8%)</td>
<td>115 (9.6%)</td>
<td>0.720</td>
<td>0.594-0.869</td>
</tr>
<tr>
<td>TLR</td>
<td>157 (7.4%)</td>
<td>157 (13.0%)</td>
<td>0.958</td>
<td>0.859-1.084</td>
</tr>
</tbody>
</table>

Conclusions: Adjunctive thrombus aspiration was not associated with better five-year mortality benefit in STEMI patients who underwent primary PCI.