Demographic features and clinical outcomes in Non transfer STEMI Vs Transfer STEMI groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Non Transfer STEMI (n=501)</th>
<th>Transfer STEMI (n=507)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>62 +/- 13</td>
<td>60 +/- 13</td>
<td>0.07</td>
</tr>
<tr>
<td>Males</td>
<td>75%</td>
<td>71%</td>
<td>0.17</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>21%</td>
<td>21%</td>
<td>0.8</td>
</tr>
<tr>
<td>Mean Ejection fraction</td>
<td>47 +/- 11</td>
<td>47 +/- 10</td>
<td>0.9</td>
</tr>
<tr>
<td>Cardiogenic shock and/or cardiac arrest before PCI</td>
<td>12.8%</td>
<td>14.4%</td>
<td>0.45</td>
</tr>
<tr>
<td>Cardiogenic shock after PCI</td>
<td>2.8%</td>
<td>4.2%</td>
<td>0.24</td>
</tr>
<tr>
<td>CHF after PCI</td>
<td>2.2%</td>
<td>2.4%</td>
<td>0.85</td>
</tr>
<tr>
<td>IABP use</td>
<td>7.6%</td>
<td>7.3%</td>
<td>0.8</td>
</tr>
<tr>
<td>Stroke after PCI</td>
<td>1.2%</td>
<td>0.6%</td>
<td>0.3</td>
</tr>
<tr>
<td>Goal DTB time achieved</td>
<td>85% (-30 min)</td>
<td>33% (+120 min)</td>
<td>0.001</td>
</tr>
<tr>
<td>In hospital mortality</td>
<td>5.2%</td>
<td>5.3%</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Conclusions: Current systems of rapid transfer and PCI in acute STEMI patients transferred for primary PCI from non PCI facility enable these patients to have similar short term clinical outcomes as patients presenting directly to PCI facility.

TCT-45
Impact of Ischemic Post-Conditioning on Infarct Size and Clinical Outcomes in Primary Percutaneous Coronary Intervention: A Meta-analysis of 26 Randomized Controlled Trials

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Background: Ischemic post-conditioning (IPoC) is believed to improve the outcome in ST elevation myocardial infarction (STEMI) undergoing primary percutaneous intervention (PPCI) by minimizing the reperfusion injury though several trials have shown variable results. We sought to perform a meta-analysis of randomized controlled trials (RCTs) comparing IPoC versus standard therapy during PCI.

Methods: PubMed, Cochrane and Web of Science databases were searched through April 30th 2014 for RCTs comparing IPoC versus standard therapy during PPCI. Outcomes analyzed were infarct size by MRI (% of LV mass), peak cardiac biomarkers (troponins), left ventricle ejection fraction (LVEF) by MRI & transthoracic echo (TTE), ST segment resolution of > 70% (ST70), death, myocardial infarction (MI) and subsequent revascularization. Study quality, publication bias, heterogeneity and sensitivity were assessed. Random effect model used for data analysis.

Results: 26 RCTs with 2330 patients (IPoC:1169, Control:1161) were included for the analysis. Infarct size assessed by MRI (SMD: -0.06 [0.84] at 1 wk, -0.03 [0.88] at 1-6 mo), peak troponin (SMD: 0.04 [0.91], ST70 (RR 1.04 [0.78] and LVEF both by MRI (SMD 0.14 [0.12]) at 1wk, 0.04 [0.07] at 1-6 mo) & TTE (SMD 0.28 [0.1) at 1wk, 0.11 [-0.05] at 1-6 mo, 1.16 [0.06] at 1-3 yr) were similar in both groups (IPoC versus control). Similarly there was no difference in clinical endpoints like death (RR 1.44 [0.28]), MI (RR 1.83 [0.37) and subsequent revascularization (RR 1.2 [0.75).

Conclusions: IPoC compared to standard therapy is neither associated with any significant benefit in terms of clinical outcomes nor improvement in degree of myocardial necrosis in STEMI patients undergoing PPCI.

TCT-46
Management of very elderly patients with ST elevation myocardial infarction
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Background: There is very little clinical data or specific management guidelines for very elderly patients with ST Elevation MI (STEMI). We evaluated our practice in the management of STEMI in patients over age 85.

Methods: A retrospective study of STEMI patients aged >85 in a PPCI (Primary percutaneous coronary intervention) centre in the UK between April 2012-November 2013. Data was collected from Intelllect, MINAP databases and discharge documents.

Results: Of the 993 patients with STEMI, 66 (6.6%) were > 85 years of age. There were 38 males and 28 females (average age 88 (85-96) years, 3563%) had PPCI and 31 (27%) treated medically. Inferior MI (50%) was more common than Anterior (36%). Patients had multiple co-morbidities: Hypertension (32), smoking history (30), Ischemic Heart Disease (11), Hyperlipidaemia (8), Diabetes Mellitus (7) and Stroke (6). 77% (51) were discharged alive and 23% (11) died in hospital and a further 16% (11) died 1 year post-discharge. In –hospital complication rate was 13% (8). Of 31 managed conservatively, 21 (67%) were females. Average age 89 years with multiple co-morbidities. Presentation included dizziness, abdominal pain, feeling unwell, vomiting and collapse. PPCI was not offered due to late presentation (>12 hours after symptom onset) (32%), poor prognosis, cardiogenic shock, high risk of bleeding, resolution of symptoms and ECG and frailty. 20 (64%) were discharged alive, 72% died in the hospital and 4 transferred to a different hospital. Additional 8 (25%) died 1 year post-discharge. Complication rate was 12%. In the PPCI group (35), 24 (68%) male patients, average age 87 years presented with typical symptoms and multiple co-morbidities. 30(85%) of patients were discharged alive and a further (3)8.5% died within 1 year post-discharge. Complication rate was 14%.

Conclusions: Elderly patients undergoing PPCI had better outcomes. Both groups had multiple co-morbidities. Overall complication rate was 13%; although PPCI group had a higher complication rate but a lower mortality 1 year post-discharge. Therefore, PPCI has a role in treating the very elderly with STEMI, this analysis emphasises the need for clinical trials targeted at this population.

TCT-47
Impact of Pre-procedural Cardiopulmonary Instability Underlying Primary PCI: Insights from the HORIZONS-AMI trial
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Background: Rapid reperfusion with primary percutaneous coronary intervention (PCI) improves survival in patients with ST-segment elevation myocardial infarction (STEMI). Pre-procedural cardiopulmonary instability and adverse events (IAE) may delay reperfusion time and worsen prognosis. We set out to evaluate the relationship between pre-procedural cardiopulmonary instability and adverse events (IAE), door-to-balloon time (DBT), and outcomes in the HORIZONS-AMI trial.

Methods: Pre-procedural cardiopulmonary IAE included sustained ventricular or supraventricular tachycardia or fibrillation requiring cardioversion or defibrillation, heart block or bradycardia requiring pacemaker implantation, severe hypotension requiring vasopressors or intraaortic balloon counterpulsation, respiratory failure requiring mechanical ventilation, and cardiopulmonary resuscitation. We compared 3-year outcomes of patients with and without IAE according to DBT.

Results: Among 3,602 patients, 159 (4.4%) had at least one IAE. DBT did not differ significantly in patients with and without IAE; however, patients with IAE were less likely to have TIMI 3 flow after PCI. Mortality at 3 years was significantly higher in patients with vs. without IAE (17.0% vs. 6.3%, P< 0.0001), and IAE was an independent predictor of mortality (see Table), whereas DBT was not. However, a significant interaction was present such that 3-year mortality was reduced in patients with DBT < 99 minutes (the median) vs. >99 minutes to a greater extent in patients with IAE (9.9% vs. 20.7%, HR[95%CI] = 0.43 [0.16,1.6]) compared to those without IAE (5.0% vs. 7.2%, HR = 0.69 [0.50,0.95], Pinterception=0.004). Conclusions: IAE prior to PCI is an independent predictor of death and identifies a high-risk group in whom faster reperfusion may be particularly important to improve survival.

TCT-48
Does reducing ischemia times justify to catheterize firstly the culprit artery in every primary percutaneous coronary intervention?
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Background: No consensus exists about which coronary artery should be first catheterized in primary PCIs. Initial catheterization of the “culprit artery” (supposed by ECG) could reduce reperfusion time. However, knowledge of multivessel disease
or left main (LM) disease could modify revascularization strategy. Aim: to analyze this issue in patients with STEMI undergoing primary PCI.

Methods: PCI were performed in 408 consecutive patients (63.1±13.6 years; 73.4% males) by 6 different cardiologists. Choice of isoprenaline approach (IA): starting with the supposed “culprit artery”, or a contralateral one (CA) was left to the operator. Differences between the two approaches and their influence on reperfusion time, especially in diabetic patients, as well as on revascularization strategy were analyzed.

Results: Right coronary artery (RCA) was the responsible in 41.8% of cases, left anterior descending in 41.5%, circumflex in 15.5% and LM in 1.3%. IA was preferred in 53.06% of cases and CA in 46.94%. There were no differences between two approaches regarding baseline features of patients, reperfusion time, radiation exposure, mortality or hospital stay. With IA a higher volume of contrast was used (189±170 cc; p=0.018) When the left coronary artery (LCA) was the responsible, IA was more frequent (76% vs 24% vs IA), but when it was the RCA, CA was preferred (IA 23.5% vs PB 76.5%; p<0.0001). With CA, metal stents (BMS) were used more than drug eluting (BMS 53.8% vs DES 34.6%) inversely than with IA (BMS 39.3% vs DES 55.7%); p<0.0001. With CA there were more patients with LM or multivessel disease in which revascularization was completed with surgery (4.13% vs 2.4%, p<0.0001).

Conclusions: Initial CA does not involve higher reperfusion time or clinical events. On the contrary, the overall knowledge of coronary anatomy could imply a change in management: greater use of BMS and programmed cardiac surgery. Moreover, ECG is not always definitive to determine the culprit artery, specifically in inferior myocardial infarctions. Despite the need to individualize each case, contralateral approach may be the first option with the exception of unstable patients.

TCT-51

Peak Troponin Level May Overestimate Infarct Size after First ST-elevation Myocardial Infarction in Patients with Chronic Kidney Disease

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Background: Asymptomatic patients with chronic kidney disease (CKD) often exhibit elevated levels of cardiac troponins. Therefore, we hypothesized that the systemic release of troponin after first ST-elevation myocardial infarction (STEMI) will be disproportionally higher than that of creatine kinase (CK) in patients with CKD.

Methods: We retrospectively reviewed consecutive 480 patients with STEMI from January 2007 to August 2013. Among 480 patients, 203 patients were excluded—30 had a prior history of myocardial infarction, 25 did not result in CK elevation and 148 did not have sufficient data for analysis. Troponin I and CK levels were measured at 6-hour intervals. The peak troponin to peak CK ratio (TCR) was calculated. High TCR was defined as TCR greater than 1SD. CKD was defined as estimated glomerular filtration rate ≤ 60 ml/min/1.73m2 based on the creatinine value on admission. Echocardiography was performed before discharge. Non- obstructive coronary artery was defined as less than 50% stenosis. Clinical characteristics and echocardiographic findings were compared between the patients with and without CKD.

Results: Among 277 patients, 56 (20.2%) patients had CKD and 35 (12.6%) had high TCR. Patients with CKD had a higher prevalence of hypertension, diabetes and hyperlipidemia. Peak troponin I levels were higher in the CKD group compared to the non-CKD group (median 157.2±62.8 pg/ml vs 42.1±9.9 pg/ml, p<0.001). TCR was defined as estimated glomerular filtration rate ≤ 60 ml/min/1.73m2 based on the creatinine value on admission. Echocardiography was performed before discharge. Non- obstructive coronary artery was defined as less than 50% stenosis. Clinical characteristics and echocardiographic findings were compared between the patients with and without CKD.

Conclusions: Peak troponin level after first STEMI was higher in patients with CKD compared to patients without CKD, whereas peak CK level and cardiac troponin were comparable between the patients with and without CKD.

TCT-52

The impact of collateral connection between chronic total occlusion and infarct related artery on early clinical outcomes in acute ST elevation myocardial infarction

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Background: The effects of collateral circulation between chronic total occlusion (CTO) and infarct related artery (IRA) in acute ST elevation myocardial infarction (STEMI) remains unknown. We aimed to assess the influence of this connection on early clinical outcomes after primary percutaneous coronary intervention (PPCI) in acute STEMI.

Methods: From March 2013 through May 2014, a total of 534 consecutive acute STEMI patients who underwent PPCI were enrolled in the study. After PPCI, 62 (11.6%) patients with concurrent CTO were divided in two groups. Accordingly, after restoration of antegrade flow, the new appearance collateral circulation to the CTO were classified as CTO-IRA connected group. The others were classified as CTO-IRA unconnected group.

Results: In this study, we found the adverse effects of collateral circulation in CTO-IRA connected group. This group was associated with higher incidence of Killip class ≥ 2 at presentation, lower rate of post procedural thrombolysis in myocardial infarction (TIMI) 2/3 flow and myocardial blush grade (MBG) 3 compared to CTO-IRA unconnected group. There was no difference between groups concerning the percentage of in-hospital and hospital mortality.

Conclusions: After restoration of antegrade blood flow in PPCI, detectable collaterals from IRA to CTO has an unfavourable effect on procedural success, enzymatic infarct size, pre- and post procedural haemodynamic conditions in acute STEMI patients. Furthermore these collaterals can predict the early clinical outcome.