Impact of Diabetes Mellitus on Thrombolyis in Myocardial Infarction Risk Score, Procedural Utilization, and Clinical Outcomes in Minorities and Women as Compared to White Men With Non-ST-Segment Elevation Acute Coronary Syndrome

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Introduction: It is well-recognized that diabetes with coronary heart disease, compared to non-diabetics, are at significantly increased risk for subsequent cardiac events, but it is unclear whether diabetics who present with non-ST-segment elevation (NSTE) acute coronary syndrome (ACS) have differential rates of procedural utilization, TIMI Risk Score (TRS) and clinical outcomes among various gender and racial subsets. Accordingly, the purpose of the present study was to assess TRS, procedural utilization rates of cardiac catheterization, and clinical outcomes using composite major adverse clinical events (MACE) for diabetic and non-diabetic subsets of whites, non-whites, men and women patients hospitalized with NSTE ACS.

Methods: A total of 2,432 NSTE ACS patients could be classified according to the published TIMI risk score. Clinical outcomes using a MACE composite (death, MI, stroke, need for urgent revascularization) were assessed for diabetic and non-diabetic subsets of varying race and gender.

Results: Diabetics presented with a significantly higher TRS when compared to non-diabetics (4.02 vs. 3.96; P<0.001). Non-diabetics underwent more cardiac interventions compared to diabetics (P=0.005). However, as expected, diabetics were more likely to experience MACE (P=0.05) when compared to non-diabetics during follow-up ranging from 30-180 days. Diabetics who did not undergo cardiac catheterization had a significantly higher incidence of MACE (P<0.01) compared to non-diabetics, but there was no significant gender and racial differences in MACE rates in the diabetic subgroup.

Conclusion: Although diabetic patients who present with NSTE ACS have significantly higher TRS Risk Scores at hospitalization and higher MACE during follow-up compared to non-diabetics, our single-site experience revealed that there were no significant gender or racial differences noted among white and non-white men or women. Paradoxically, we noted that diabetic patients with NSTE ACS were less likely to undergo cardiac catheterization than non-diabetics, but importantly, diabetics who did not undergo cardiac catheterization appeared to fare worse than those who underwent intervention.

Is Metabolic Dysfunction Equivalent to Diabetes as a Prognostic Marker in Acute Coronary Syndrome?

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Background: Diabetes mellitus (D) is a known prognostic marker in patients with acute coronary syndromes (ACS). Recently, a constellation of lipid and non lipid risk factors linked to insulin resistance was described and termed metabolic syndrome. We have previously demonstrated the independent prognostic value of a metabolic score (MS), but its interaction with D, as a prognostic marker in ACS, is not yet established.

Methods: We studied 302 patients with non-ST segment elevation ACS. A MS was calculated using the following variables collected on admission: obesity (BMI>30kg/m²); Blood pressure>130/85mmHg; Triglycerides>150mg/dl; HDL<40mg/dl (or <50mg/dl in women); blood glucose >/=110mg/dl. With the cut-off identified for the MS (>3 variables), we divided our population into 4 groups: D & MS; D & No MS; No D & MS; No D & No MS. The endpoint used was the combined incidence of death and myocardial infarction at 1 year follow-up.

Results: Patients D & MS (n=30) had the highest study endpoint (23.3%), and the lowest incidence was 10.3% for No D & No MS (n=204). The incidence of the study endpoint was similar in the other 2 groups: 22.7% for ND & MS (n=22) and 21.7% for D & NMS (n=46).

Conclusions: The presence of metabolic dysfunction in non-diabetic patients, was associated to a poorer prognosis, as observed in diabetic patients. In patients with diabetes, detection of metabolic dysfunction, as evaluated with the best cut-off for this score, seems to add no additional prognostic information.

Metabolic Syndrome: A Major Risk Factor for Acute Myocardial Infarction in Patients < 45 Years of Age

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Introduction: Premature coronary artery disease (CAD) is not fully explained by traditional global risk scores. Less than 25% of young adults with acute myocardial infarction (MI) meet NCEP III criteria for pharmacotherapy. As insulin resistance is associated with the increased risk of myocardial infarction (MI), we hypothesized that the metabolic syndrome (MS) is a major unrecognized risk factor for MI in young patients. Methods: We studied 196 consecutive patients (<45yrs old) with acute MI treated at Bridgeport Hospital from January 1999 through July 2003. MI was defined as both ST elevation or non-ST elevation MI by the usual criteria. MS was defined according to NCEP III guidelines (≥3 of five criteria with a body mass index ≥30kg/m2 substituted for waist circumference).

Results: For the entire cohort the mean age was 41.3 years, with a BMI of 29.8, LDL of 124 mg/dl, HDL of 36 mg/dl and triglycerides of 216 mg/dl. Of the 165 patients in whom all 5 criteria for MS were evaluable at or before the time of MI, 63(38%) met the diagnostic criteria for the MS in the absence of diabetes (DM). An additional 38 patients (23%) had newly diagnosed or previously recognized DM. A history of cigarette use was seen more frequently in non-MS as compared to MS patients (81% vs 66%; p<0.01), while a family history of accelerated CVD, total cholesterol, and LDL levels were similar in both groups. Only 19% met MS criteria based on an elevated fasting glucose. The mean 10 year Framingham risk score in non-diabetics was 9.3% (only 17.1% had scores greater than 20%). Conclusion: MS and/or overt DM are present in nearly 2/3 of young patients with acute MI. The presence of the MS should alert physicians to the need for aggressive risk factor and lifestyle modifications, even in the absence of high global risk scores.

Metabolic Syndrome: An Underecognized Risk Factor for Myocardial Infarction in the Young


Background: Risk factors for coronary heart disease (CHD) typically associated with acute myocardial infarction (MI) in the young (<45yrs of age) are smoking and familial hypercholesterolemia. We hypothesized that metabolic syndrome (MS) is an underecognized major risk factor in these patients.

Methods: We studied 132 consecutive young patients with acute MI (ST and non-ST elevation) treated with primary percutaneous intervention at Lahey Clinic from June 2001 to May 2003. Of the 132 patients studied, 85 had all 5 necessary variables to determine the presence of metabolic syndrome. Metabolic syndrome was defined by meeting ≥3 (or greater) of 5 criteria as outlined by NCEP Body Mass Index (BMI) greater than 28.8kg/m2 was substituted for waist circumference. Results: 50 of 85 (58.8%) patients met the NCEP diagnostic criteria for metabolic syndrome. Of these 50 patients, 4 had prior history of diabetes. Twelve (26%) new diagnoses of diabetes were made in those with metabolic syndrome. Of the other 35 patients, two had a prior history of diabetes and two new diagnoses of diabetes were made. The mean Framingham Risk Score for those patients with MS was 6 and for those without MS was 5.

Conclusion: Metabolic syndrome is an underecognized global risk factor for the development of myocardial infarction. Metabolic syndrome is highly prevalent in young patients with MI. Conventional risk assessment tools may not adequately identify "global" coronary risk in such patients.
### Table 1: Fasting glucose, HDL, TRIS, BMI, and Total Chol.

<table>
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<th>Category</th>
<th>Fasting glucose (mg/dl)</th>
<th>HDL (mg/dl)</th>
<th>TRIS (mg/dl)</th>
<th>BMI (kg/m²)</th>
<th>Total Chol. (mg/dl)</th>
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### Poster Session 1021-T01

**Association of Glomerular Filtration Rate on Presentation with Subsequent Mortality in Non-ST Elevation Acute Coronary Syndromes**

Raphaelle Dumaine, C Michael Gibson, Duane S. Pinto, Sabina A. Murphy, David A. Morrow, Hans-Peter Hubbach, Stephen D. Wiviott, Christopher P. Cannon, Elliott M. Antman, Eugene Braunwald, TIMI Study Group, Boston, MA

**Background:** Renal function impairment is associated with poor prognosis in the setting of ST-elevation myocardial infarction.

**Methods:** We hypothesized that decreased glomerular filtration rate (GFR) was associated with poor short- and long-term prognosis in patients with non-ST-elevation acute coronary syndromes (NSTE-ACS). Data were pooled from NSTE-ACS TIMI trials, and patients were divided in 3 groups: normal (GFR >60 ml/min/1.73m²), 1 group (n=4952), mildly decreased (60-89 ml/min/1.73m²), group 2, n=6242) and moderately to severely decreased GFR (<60 ml/min/1.73m²), group 3, n=2993) on presentation.

**Results:** Mortality increased stepwise with decreasing GFR: 1.27%, 2.11%, and 5.02% at 30 days and 2.47%, 3.79%, and 9.53% at 6 months in groups 1, 2, and 3 respectively (p<0.001 for both). The combination of TIMI risk score (TRS) tertiles and decreasing tertiles of GFR provided further mortality stratification with highest 6-month mortality rate (15.44%) in lowest GFR combined with highest TRS (figure). Furthermore, decreased GFR was associated with mortality independent of TRS (at 30 days, OR=1.41 in group 2, p=0.03; OR=3.11 in group 3, p<0.001). In addition, stroke incidence at 30-day increased with decreased GFR: 0.33%, 0.59% and 1.27 % in groups 1, 2, and 3 respectively (p<0.001).

**Conclusion:** In the setting of NSTE-ACS, impaired GFR is associated with increased 30-day and 6-month mortality independence of TRS, and is associated with increased stroke incidence at 30 days.

### Figure: 6-Month Mortality, by GFR and TIMI risk score.

### Poster Session 1022

**New Observations From Acute Myocardial Intervention Trials I**

Sunday, March 07, 2004, Noon-2:00 p.m.
Morial Convention Center, Hall G
Presentation Hour: 1:00 p.m.-2:00 p.m.

**1022-79**

Is Early Prehospital Administration of Abciximab Superior to Periprocedural Therapy in Patients With ST-Segment Elevation Myocardial Infarction and Planned Percutaneous Coronary Intervention? Early and Late Results From the Randomized REOMOBILE Pilot Study

Hans-Pichard Arots, Joachim Schröder, Klaus Pels, Bernhard Witzelbichler, Peter Schwimmeck, Dirk Müller, Heinz-Peter Schulteis, Benjamin Franklin Medical Center, Berlin, Germany

**Background:** Pre-treatment of pts with STEMI with abciximab already in the mobile intensive care unit (MICU) is believed to facilitate percutaneous coronary intervention (PCI) and improve outcome.

**Methods:** We randomised 100 pts with STEMI (age <80 yrs, symptoms <6hrs) to receive weight adjusted abciximab at the scene (PTx, n=52) or at intervention in the cath lab (HTx, n=48). All pts received 500 mg aspirin and 70 U/kg heparin in the MICU.

**Results:** Groups were balanced for sex (19% female), age (median 63 yrs), localisation of MI (38% anterior) and symptom duration to arrival of MICU (median 50 min). Median duration of symptoms until abciximab injection was 68 min in pts with PTx and 164 min with HTx. Symptom duration to 1st visualisation of infarct related artery was 142 min in pts with PTx and 152 min with HTx respectively. Segment resolution after 60-90 min (before PCI with PTx) was <30% in 39%, 30-70% in 37% and >70% in 24% of pts, compared to 56%, 14%, and 30% with HTx respectively. With PTx initial TIMI-flow 0/1 was present in 48%, and TIMI-flow 2/3 in 52%, compared to 52% and 48% with HTx respectively. Blush grade before intervention with PTx was 0/1 in 62%, 2/3 in 37%, compared to 66% and 34% with HTx respectively. Stents were successfully placed in 93% of pts. TIMI-flow 3 was achieved in 88% of pts with PTx and 82% with HTx. None of the differences were significant. Results tended to be in favour of PTx in pts who were treated within the 1st hour after symptom onset independent of the time interval between start of treatment and 1st visualisation of IRA. One HTx-pt died on day 4 after prolonged reocclusion, two pts had major bleeds (1 PTx, 1HTx). Urgent CABG was performed in 7 pts (4 PTx, 3 HTx) until day 5. Until day 180, three pts with PTx had reinfarctions, two within 30 days, one during month 4. Ten pts had ischemia driven re-PCI of IRA (3 PTx, 7 HTx), three of these within the first 30 days after the index event.

**Conclusion:** Pre-hospital application of abciximab is safe and feasible. However, in some contrast to previous reports we found only minor advantages of abciximab pre-treatment in pts with STEMI and planned PCI. Also fast-track pre-hospital procedures in general may have added essentially to the excellent outcome of the pts.