Outcome of Emergency Percutaneous Coronary Intervention for Acute ST-Elevation Myocardial Infarction Complicated by Cardiac Arrest

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Background: The poor prognosis of primary percutaneous coronary intervention (PCI) in patients resuscitated from cardiac arrest complicating acute ST-elevation myocardial infarction (STEMI) may be at least partly explained by the common presence of cardiogenic shock. We examined the effect of emergency primary PCI on outcome in patients without cardiogenic shock who were resuscitated from cardiac arrest before the procedure.

Methods: The study group included 948 consecutive patients who underwent emergency primary PCI at our medical center from 2001 to 2006 for STEMI not complicated by cardiogenic shock. Twenty-one were resuscitated from cardiac arrest before the intervention. Data on background, clinical characteristics, and outcome were prospectively collected in all the patients.

Results: There were no differences between resuscitated and non-resuscitated patients in age, sex, infarct location, or left ventricular function. The total one-month mortality rate was higher in the resuscitated patients (14.3% vs 3.4%, p=0.033), but noncardiac mortality accounted for the entire difference (14.3% vs 1.2%, p=0.001), whereas cardiac mortality was similarly low in the two groups (0% vs 2.0%, p=NS). Predictors of poor outcome in the resuscitated patients were older age (r=0.47, p=0.032), unwitnessed sudden death (r=0.44, p=0.04), longer interval from cardiac arrest to arrival of a mobile unit (r=0.67, p=0.001) or to spontaneous circulation (r=0.65, p=0.001), low glomerular filtration rate (r=-0.50, p=0.02), and the initial Thrombolysis in Myocardial Infarction grade of flow (r=-0.51, p=0.017).

Conclusions: In patients with STEMI not complicated by cardiogenic shock, emergency PCI exerts a similar beneficial effect on cardiac mortality in those who were resuscitated from cardiac arrest and in those without this complication. The higher mortality rate in among resuscitated patients is explained by noncardiac complications.

Twenty Years of Out-of-Hospital Resuscitations
The SHL Experience in Israel

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Background: The Magen David Adom 1988 report on resuscitation outcome of out-of-hospital cardiac arrest victims in Israel revealed that 17% of them were admitted to hospital of whom 7% were discharged alive from hospital. The most common heart rate recorded upon arrival of the Mobile Intensive Care Unit (MICU) at the scene was asystole or severe bradycardia.

Objective: To report the 1987-2007 experience of resuscitation of out-of-hospital cardiac arrest victims, who were 'SHL' subscribers, by SHL-Telemedicine MICU teams.

Methods: The medical records, including MICU reports and reports by MICU physicians containing specifics of CPR maneuvers and outcome of patients who underwent resuscitation, were analyzed. In addition, each patient who had been resuscitated and transported to hospital was followed by telephone calls and report of hospital discharge or expiration in the hospital.

Results: A total of 1810 patients (67% males) with a mean age of 76±12 years (16-104) were resuscitated. One-third (597, 33%) were admitted to hospital and 279 (15.4%) were discharged alive. Factors associated with successful resuscitation included witnessed collapse and ventricular defibrillation. A history of heart failure, diabetes, hyperlipidemia, stroke or advanced age adversely affected results. Noteworthy, transtelephonic instructions for basic CPR were given to and performed by laymen on 121 patients of whom 13 (10%) survived to hospital discharge.

Conclusions: The knowledge of the availability of the SHL-Telemedicine call center for prompt response in the setting of out-of-hospital sudden collapse enabled witnesses to summon rapid medical assistance for victims by directly contacting the SHL call center.

The Relationship of Plasminogen Activator Inhibitor-1 Levels to the ST Deviation Pattern of Acute Myocardial Infarction

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Background: Myocardial infarction (MI) may be classified as ST elevation MI (STEMI) or non ST elevation MI (NSTEMI). In STEMI the culprit artery is usually completely occluded by a thrombus, whereas in NSTEMI it is usually patent with a non-occlusive thrombus. Procoagulants such as Plasminogen activator inhibitor-1 (PAI-1) as well as markers of inflammation such as C-reactive protein (CRP), serum amyloid A (SAA) and interleukin-6 (IL-6) are elevated in acute coronary syndromes however, no study has examined whether levels of these markers differ in patients with STEMI as opposed to NSTEMI.

Objective: To determine whether there are differences in plasma levels of PAI-1, CRP, SAA or IL-6 in patients with STEMI as compared to patients with NSTEMI.

Methods: Consecutive 76 patients presenting with an acute MI (37 with STEMI and 39 with NSTEMI) were prospectively enrolled. Blood samples were obtained from patients within 6 hours from presentation and plasma PAI-1, CRP, IL-6 and SAA concentrations were measured.

Results: Plasma levels of PAI-1 were significantly higher in patients with STEMI as compared to NSTEMI: 85.7 ± 5 vs 61.3 ± 5 ng/ml ($p < 0.001$), while CRP, SAA and IL-6 levels were not significantly different in STEMI as compared to NSTEMI.

Conclusions: Higher plasma PAI-1 levels in STEMI patients may contribute to the predilection of these patients to occlusive thrombi and STEMI.

Serum Anti CRP Antibodies,CRP and Coronary Atherosclerosis in Patients with Acute Coronary Syndromes

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Background: Serum **CRP** concentrations levels are correlated with the presence and severity of **CHD**. Anti **CRP** antibodies were first described in 1985 in the sera of patients with different rheumatic conditions, including 23% of **SLE** patients.

A positive correlation was demonstrated between anti CRP antibodies and SLE activity, yet the relation between anti **CRP** antibodies and **CHD** have not been established

We tested the presence and potential association of anti-**CRP** antibodies with **CRP** and with the incidence and extent of coronary atherosclerosis in patients with acute coronary syndromes (**ACS**)

Methods: between September 2004 and December 2005 we collected the sera of 324 patients admitted to the hospital due to **ACS** and underwent cardiac catheterization, and tested the levels of **CRP** and anti- **CRP** antibodies. The extent of coronary vessel disease was assayed from admission cardiac catheterization.

We also prospectively evaluated major cardiac events in this population 24 months post admission

Results : We observed a direct association between **hsCRP** levels and the extent of coronary atherosclerosis. Interestingly, we have found a negative correlation between antibodies to **CRP** and vessel affliction. There was also an inverse correlation between circulating anti **CRP** levels and **hsCRP** levels. Neither **hsCRP** nor antibodies to **CRP** predicted MACE in the **ACS** patients over a two year follow up period.

Conclusions: This is the first description of antibodies to **CRP** in patients with **ACS**. It appears that anti **CRP** antibodies are inversely correlated with **hsCRP** levels and with coronary atherosclerosis. The significance of this finding remains to be elucidated.

Shortcuts:

CRP- C Reactive Protein

hsCRP- High Sensitive CRP

CHD- Coronary Heart Dissease

SLE – Systemic Lupus Erythematosus

ACS- Acute Coronary Syndrome

Pre Hospital Anti Platelet Regimen and Angiographic Predictors of Spontaneous ST Resolution in Acute ST Elevation Myocardial Infarction

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Background:
The favorable outcome of Spontaneous ST segment resolution (STR) during acute ST elevation myocardial infarction (STEMI) is well known. However the predictors of this phenomenon are not well established.

Objectives:
To evaluate the role of pre hospital anti platelet treatment and angiogrphic predictors of STR in patients with acute STEMI prior to primary PCI.

Methods:
We conducted a retrospective chart review of all patients admitted with STEMI between January 2002 to June 2006. Pre hospital anti platelet therapy and angiographic data were collected.

Results:
Among 227 patients studied, 37 patients (16%) showed spontaneous STR. 12/227 (5%) deaths were reported, non of them belong to the STR group.
Pre hospital clopidogrel treatment was found to be an independent predictor for STR (p=0.0488, OR 2.10, 95% CI 1.00 to 4.40),however, GP IIb/IIIa inhibitors and aspirin were not found to be independent predictors of this phenomenon. Stepwise logistic regression analyses identified the following angiographic independent predictors of STR: single vessel disease (p=0.0157, OR 2.85, 95% CI 1.22 to 6.7), collaterals (p=0.0020, OR 4.28, 95% CI 1.70 to 10.80), circumflex culprit vessel (p=0.0080, 95% CI 1.49 to 14.97)and thrombus (p=0.0065, OR 5.76, 95% CI 1.63 to 20.39).

Conclusion:
Early clopidogrel treatment was found to be an independent predictor for STR. Patients with single vessel disease , collateral flow, thrombus and circumflex as the culprit vessel were more likely to have STR.

Primary Coronary Intervention Reduces the Incidence of Significant Mitral Regurgitation in Patients with Acute Inferior Myocardial Infarction

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Ischemic mitral regurgitation (MR) is associated with worse outcome and increased mortality. Thrombolysis reduces the incidence of significant MR after first myocardial infarction. **Aim**: To test the hypothesis that primary percutaneous coronary intervention (PPCI) reduces the incidence of MR. **Methods**: Prospective study of **225** patients with first inferior myocardial infarction. PPCI was performed in **82 (36.4%)**, with pain to balloon time 5.3+3.4 hrs, thrombolytic therapy was administered to **93** patients **(41.3%)**, with average pain to needle time 4.5+2.8 hrs and **50 (22.3%)** patients were managed without reperfusion therapy. Transthoracic Doppler-echocardiography was performed in all within 48 hrs, and repeated after 7-14 days in 198 patients, and at 30-45 days in 176 patients. MR grade ≥ 2 MR was considered significant. **Results**: The incidence of significant MR in all the subjects within 24 hours, 36 of 225 (16%) was similar to that at 7-14 days, 35 of 198 (18%), p=ns, but decreased after 30-45 days and at 21 of 176 subjects (12%), p<0.05. In patients with PPCI the incidence of significant MR at 24 hrs evaluation 2.7% was less than in those without PPCI, 13.3%, p<0.002. Evaluation at 7-14 days revealed lower incidence of MR in PPCI patients 2.5% vs 15.2% in those without, p<0.001. After 30-45 days MR incidence was 1.7% in PPCI patients compared to 13% without, p<0.0001. PPCI reduced the incidence of significant MR compared with thrombolysis, at 24 hrs, 2.7% vs. 5.3%, p<0.012, at 7-14 days 2.5% vs. 6.6%, p<0.01, and after 30-45 days 1.7% vs. 5.7%, p<0.01. In PPCI patients, MR grade 3 developed only in 2 compared to 11 patients in those without. **Conclusions**: PPCI reduces the incidence of significant MR in patients with first inferior myocardial infarction and was superior to thrombolysis.