Early assessment of heart rate variability is predictive of in-hospital death and major complications during acute myocardial infarction

C. Carpeggianni, M. Emilin, P. Landi, C. Michelassi, A. L'Abbate. CINR Institute of Clinical Physiology, Coronary Unit, Pisa, Italy

Background: Depressed heart rate variability (HRV) at AMI discharge is associated with poor long-term prognosis. However, its early (< 40 hours) predictive value has not been explored extensively. Aim of the study was to investigate, during acute myocardial infarction (AMI), in-hospital prognostic value of HRV.

Methods: Twenty-four hour ECG Holter monitoring was prospectively obtained on admission in 413 patients with AMI. Cardiac death and revascularization were the primary end-points; cardiogenic shock, ventricular tachycardia, post-infarction angina and heart failure the secondary end-points.

Results: A marked reduction in HRV indices but not in LF and HF normalized values was evident. Nine patients died during hospitalization and 13 were revascularized from ventricular tachycardia. Secondary end-points occurred in other 91 patients. At univariate analysis, LF, mean HR interval, WMSI and family history of ischemic heart disease were predictive of combined primary and secondary end-points. At multivariate analysis, only LF and family history were predictive with a relative risk of 2.01 and 1.84 respectively (p < 0.003).

Conclusions: A depressed HRV was present in the early phase of AMI. LF power was an independent predictor of the combined unfavorable short-term events.

Spontaneous ST-elevation resolution in acute coronary syndrome - early and late outcome

H. Feld, S. Gottlib1, M. Green,1, H. Hammerman,2, D. Hadas,2, J. Lee,2, D. Zohrer,2, S. Behar,2 on behalf of The Working Group for Intensive Cardiac Care, Israel Heart Society; 1Sheba Medical Center, Cardiology, Tel Hashomer, Israel; 2Sheba Medical Center, Neufeld Cardio Research Institute, Tel Hashomer, Israel

Background: Patients (pts) with spontaneous ST elevation resolution (SSERT) represent a unique subgroup of STEMI pts, which has received limited attention in the literature.

Aim: To examine the incidence, characteristics, and outcome of patients with STEMI in a large national survey of acute coronary syndrome (ACS) pts.

Methods and Results: The ACSIS 2002 survey included all ACS pts (n=2049). During a two month period in all cardiology departments (n=26) operating in Israel. Out of 1011 STEMI pts, 588 (58%) were treated with reperfusion therapy (thrombolysis or primary PCI), and are referred to as the "ST reperfusion group." Among 425 pts (42%) in whom reperfusion was not performed, early STEMI occurred in 173 (17%), and they constitute the "ST spontaneous resolution group." The characteristics and outcome of both groups are presented in the table. After multiple adjustment for age, sex, past MI, Killip class and peak CK, the risk of death was lower among the ST spontaneous resolution group in comparison with the ST reperfusion group (7 day OR: 0.39, 95% CI: 0.07-1.70; 30-day OR: 0.84, 95% CI: 0.09-9.99; 6 month OR: 0.48, 95% CI: 0.18-1.16)

Conclusions: 1) SSTER occurs in a significant (17%) number of STEMI pts. 2) SSTER is a marker of smaller infarction and lower early and late mortality. 3) The higher incidence of re-infarction and the need for CABG in the SSTER group emphasize the importance of special attention and prompt assessment of this group prior to hospital discharge.

Prognostic value of B-type natriuretic peptide levels on admission in patients with acute ST-elevation myocardial infarction

M. Grabowska, J.J. Filipiak, G. Karpinski, D. Wlodowski, A. Rudzisz, D. Rudzi, R. Glowczynska, G. Opolski. Medical University of Warsaw, Department of Cardiology, Warsaw, Poland

Background: B-type natriuretic peptide (BNP) levels in the first days after the onset of symptoms is predictive of short-term mortality in patients with acute coronary syndromes (ACS). Few data are available for BNP levels obtained on admission in patients (pts) with acute ST elevation myocardial infarction (STEMI).

Objectives: To assess the relation between BNP levels on admission in STEMI and short-term, all cause mortality.

Methods: Blood samples for BNP determination were obtained on admission in 88 pts (mean age 60.6±10.7 years old) with STEMI. In a 15-minute period, BNP was measured by using simple bedside test for rapid quantification of BNP 30 days follow-up was performed.

Results: During the period of follow-up 12 (13.6%) pts died. Mean for BNP was 1011 STEMI pts, 588 (58%) were treated with reperfusion therapy (thrombolysis or primary PCI), and are referred to as the "ST reperfusion group." Among 425 pts (42%) in whom reperfusion was not performed, early STEMI occurred in 173 (17%), and they constitute the "ST spontaneous resolution group." The characteristics and outcome of both groups are presented in the table. After multiple adjustment for age, sex, past MI, Killip class and peak CK, the risk of death was lower among the ST spontaneous resolution group in comparison with the ST reperfusion group (7 day OR: 0.39, 95% CI: 0.07-1.70; 30-day OR: 0.84, 95% CI: 0.09-9.99; 6 month OR: 0.48, 95% CI: 0.18-1.16)

Conclusions: BNP levels obtained on admission are powerful, independent indicator of short-term mortality in pts with STEMI. Rapid tests for BNP assay seem to be new tool in risk stratification of pts with STEMI.

PATHOPHYSIOLOGY AND CLINICAL INTERVENTION

Effects of leonurus heterophyllus sweet on haemorrhage and thrombosis on rat with myocardial ischaemia

J. Yin1, GG. Shi1, HL. Wang2. 1Shantou University Medical College, Pharmacology, Shantou, China; 2Shanghai Second Medical University, Shanghai Institute of Hematology, Shanghai, China

Objective: The object of leonurus heterophyllus sweet injection was observed by means of parameters such as haemorrhage, platelet aggregation rate and extramacular thrombosis on rat with myocardial ischaemia.

Methods: 20 male SD rats (body weight 280-35g) were divided randomly into 2 groups: (1) control group (n=10): rats were anesthetized with 1% sodium pentobarbital (1.5ml/100g body weight, I.p.) and fixed on operation table. Sternum was split open with heart exposed. Left anterior descending coronary artery was ligated at the site of 0.3cm from left auricle, which ST segment rising over 0.5mivol on electrocardiogram demonstrated the model of myocardial ischaemia was successfully constructed. 1 hour later after myocardial ischaemia, 1.0 ml of 0.85% NaCl solution was injected into caudal vein. (2) group treated with leonurus heterophyllus sweet (n=10). all procedures were the same as the control group except changing 0.85% NaCl solution into equal volume of leonurus heterophyllus sweet injection (2.0g/ml). 2 hours later after myocardial ischaemia, blood sample was collected from carotid artery in both groups to be detected blood viscosity, plasma viscosity, ESR, the content of fibrinogens in plasma and platelet aggregation rate, as well as the length, wet weight and dry weight of thrombus formed ex vivo.

Results: Leonurus heterophyllus sweet decreased blood viscosity, plasma viscosity, ESR and the content of fibrinogens in plasma which increased during myocardial ischaemia (p<0.05-0.01, compared with control). Besides this, it also lowered platelet aggregation rate induced by ADP and collagen respectively (p<0.05-0.01, compared with control). In addition, extramacular thrombosis was also inhibited, which showed as shortened length, lighter wet weight and dry weight of thrombus (p<0.05-0.01, compared with control).

Conclusions: Leonurus heterophyllus sweet can improve haemorrhage, inhibit platelet aggregation and extramacular thrombosis, so it has the effect of improving myocardial ischaemia even other thrombosis diseases.