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Functional Mitral Regurgitation after a Non-ST Segment Elevation Acute Coronary Syndrome

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BACKGROUND: Mitral regurgitation (MR) after acute myocardial infarction (AMI) is a recognized and a frequent complication which negatively affect survival. Fibrinolysis and primary angioplasty reduces post-MI MR. However, few data exist regarding MR after non-ST-segment elevation acute coronary syndrome (ACS).

AIM: TO investigate the prevalence, predictors and prognostic implications of MR in the setting of non-ST-segment elevation ACS.

METHODS: Sixty four consecutive patients, (57.4 % men, mean age 65.4 ± 12 years) admitted to our cardiology department for a non-ST-segment elevation ACS, were studied. Echocardiographic studies were performed within 24 hours after admission and after percutaneous coronary intervention (PCI).

RESULTS: MR grade 0-1 was detected in 42 patients (65%), grade 2 in 16(25%), and grade 3-4 in 6(9%). More severe MR was encountered in older patients, (76 ± 5 vs. 69.9 ± 10 years, $p=0.029$) and lower left ventricular ejection fraction (LVEF), (38 ± 6 % vs. 49.7 ± 9 , $p=0.039$). MR severity did not change significantly after PCI.

CONCLUSIONS: 1. Advanced age and lower LVEF predicted worse MR.

2. PCI did not decrease MR severity.

Acute Hyperglycemia is not Associated with Spontaneous Reperfusion in Acute ST-Elevation Myocardial Infarction

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Background: Spontaneous reperfusion (SR) of the infarct-related artery may occur in patients with ST elevation myocardial infarction (STEMI) prior to therapeutic reperfusion therapy. Hyperglycemia is common on admission in patients with STEMI and is associated with a worse prognosis whose mechanisms remain unclear but may include impairment of coronary flow. The objective of this study was to examine whether acute hyperglycemia was associated with SR in a cohort of patients with STEMI.

Methods: All patients who presented to our institution with acute STEMI with measurement of glucose levels on presentation were eligible. SR was defined as a combination of significant relief of chest pain associated with an at least 70% resolution of ST segment elevation on follow-up ECG prior to reperfusion therapy.

Results: 465 patients were studied of whom 77 patients met criteria for SR. Average glucose levels were not significantly different between the SR and non-SR groups (10.0 ± 5.6 mmol/L vs. 10.1 ± 5.3 ; $p = \text{NS}$). When patients were divided into normoglycemic and hyperglycemic groups, there was no significant difference in the percentages of such patients in the SR and non-SR groups. (52% vs. 54%; $p = \text{NS}$).

Conclusions: Acute hyperglycemia on admission does not appear to predict the occurrence of SR.

Carotid Ultrasound and Doppler in the Setting of Acute Coronary Syndrome

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Carotid atherosclerosis is associated with coronary atherosclerosis. Moreover the culprit ruptured and unstable atherosclerotic plaque causing the acute coronary syndrome (ACS), frequently is associated with other unstable coronary plaques remote from the culprit lesion as shown by intra-coronary ultrasound. Aim: Prospective evaluation carotid ultrasound and Doppler findings in patients presenting with ACS.

Methods: Seventy consecutive patients presenting with ACS were evaluated. For all patients carotid ultrasound and complete intrathoracic echocardiographic evaluation were performed. Review and analysis of medical history, drug treatment, blood laboratory results were undertaken.

Results: Intima-media thickness was greater than normal in almost all subjects. The prevalence of carotid plaques was significantly greater in patients with aortic regurgitation 64% versus 36%, $p < 0.05$. Carotid ruptured plaques were not encountered. Significant associations between patient presentation, drug treatment, laboratory results and carotid ultrasound findings were not found.

No significant association was found between distribution of atherosclerotic lesions in the coronary arteries and the carotid findings.

Conclusions: Intima-media thickness was increased in patients with ACS. Carotid atherosclerotic plaques were more prevalent in patients with aortic regurgitation.

Clinical Presentation of Stress Related Acute Heart Conditions Depends on Cardiac Background and Patients' Demographics

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Background: Apical ballooning syndrome (ABS), ACS and life-threatening situations such as arrhythmias (VT, VF) or pulmonary edema (PE) could be triggered by stress.

Aim: To evaluate the influence of cardiac backgrounds and patients' demographics on manifestation of acute heart conditions related to stress.

Methods: Clinical manifestation, ECHO, angiographic data and long term MACE were evaluated in 17 patients who developed heart disease triggered by stress.

Results: All patients were divided into 3 groups. STEMI group included 8 patients with typical clinical and ECG criteria and documented coronary lesions. ABS group included 6 patients with a reversible course of apical CMO and open coronaries. A third group included 3 patients requiring critical care due to fulminate pulmonary edema and/or recurrent VT.

	ABS	STEMI	Critical situations
Trigger	Emotional stress during 5 days before admission		
N	6	8	3
Gender	F only	M only	F only
Age	45 – 65	48 – 66	68 - 76
Previous history	Apical ballooning (n=1)	IHD + PCI (n=1)	IHD after MI (n=1) MR (n=1) Long term HTN (n=1)
Previous information about LV function (ECHO)	Normal (n=1)	Normal (n=2)	Decreased LV function (n=3) Significant MR (n=2)
Clinical presentation	Apical ballooning sm (n=6)	Ant wall MI (n= 5) Inf wall MI (n=3)	Pulm. edema (n=2) VT storm (n=2)
Angiography	Normal coronaries (n=6)	Culprit lesion: LAD (n=5), RCA (n=2), CX (n=1)	TVD (n=2), Not performed (n=1)
Treatment	Medication	Medication Coronary Stenting (n=8)	Medication Revascularization (n=1), AICD (n=1)
Follow up (months)	8(4 – 19)	9 (3 – 14)	5 - 13
Hospitalizations	0	1	2
Interventions	0	0	0
Mortality	0	0	1

Conclusion: Patients' demographics and cardiac backgrounds are significant factors influencing the clinical form of heart disease triggered by stress.

Different Physical Conditions Concomitant with Acute Myocardial Infarction (AMI) and Intermediate Coronary Syndrome (ICS) (Codes 410/versus 411 ICD 10)

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In recent studies it was shown that blood coagulation and inflammation markers are raising at high geomagnetic activity; acute myocardial infarction and all its subtypes, mostly related to atheromatous plaque disruption –with higher Cosmic Ray (Proton) activity. The **aim** of this study was to explore physical conditions related to monthly distribution of AMI and ICS.

Patients and methods: the data was a part of MONICA study in Kaunas, Lithuania in years 2000-2005 (72 consecutive months). 4633 patients with AMI (2461 men) and 961 with ICS (654 men), (age up to 65) were studied. For comparison four indices of Solar (SA), three of Geomagnetic (GMA), Cosmic Ray (CRA) measured by Neutron activity imp/min. were used. Cosmophysical data were from space science institutions in the USA and Russia. Pearson correlation coefficients and their probabilities were obtained.

Results: monthly number of AMI and ICS show different links with the physical parameters: AMI were significantly inverse related to SA ($r=-0.37$, $p=0.0021$) and direct to CRA (Neutron) activity ($r=0.23$, $p=0.048$). ICS was not correlated with these two parameters, but show significant links to GMA ($r=0.246$, $p=0.037$). Gender differences were evident, men more close related to changes in the mentioned physical parameters.

Conclusion: monthly number of AMI and ICS are different related to fluctuations of environmental physical parameters.

The described connections can affect differences in the pathogenesis of these two forms of Acute Coronary Insufficiency.

Effect of Mild Hypothermia on Neurological Outcome in Patients After Out of Hospital Resuscitation.

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Background: Cardiac arrest (CA) followed by no-flow period and global hypoperfusion state after restoration of spontaneous circulation (ROSC) cause cerebral ischemia and leads to severe and potentially irreversible neurologic damage. We describe our initial experience on the neurological outcome of mild therapeutic hypothermia in patients after out of hospital CA.

Methods: Inclusion criteria were a witnessed CA, VT/VF as the presenting rhythm, age 18 to 75 years. Patients with prolonged (>30 minutes) resuscitation or hypotension, temperature less than 35 ° C, poisoning or terminal illness were excluded. The cooling protocol included: induction phase by combined intravenous 4° C fluids with external cooling (CritiCool System, MTRE) and 24 hours maintenance phase supported only by the external system. The temperature goal was 32-34° C. The last phase, controlled re-warming, programmed at rate of 0.5-1°C per hour. To prevent shivering, paralysis was induced by intravenous tubocurarine added to the sedation archived by propofol. The temperature monitoring was made with an external skin and endotracheal probe.

Results: In the past four months 3 patients were eligible to be treated with mild systemic hypothermia. The first patient was 21 year old lady presenting with CA in a public bus. Bystander resuscitation initiated, and after 18 minutes VF was recognized and successfully converted by electrical shock (DC). The second patient was 64 year old man, his son started the chest compression and after 15 minutes, VF was successfully converted to NSR after DC. Both patients were in deep coma on admission, with objective evidence of anoxic brain damage. The mean time to reach the therapeutic temperature was 4-6 hours. In these two cases after the re-warming phase the patients were awake, without clinical neurological impairment at time of discharge. In a third recent patient, therapy failed to alter the initial neurological state.

Conclusion: In appropriate cases of CA, controlled mild therapeutic hypothermia may attenuate neurological damage as result of prolonged anoxic state. Further experience is needed to assess this promising technique.

Conduction System Alterations in Acute Extensive Anterior Myocardial Infarction

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Background:

Extensive anterior MI may be complicated by alterations in the conduction system, resulting in bradyarrhythmias. These alterations may affect the QRS morphology and ST-T segment, and thus may delay or interfere with early recognition and therapy. We sought to investigate the prevalence of conduction abnormalities in these patients and the effect of reperfusion therapy.

Methods: We identified 74 consecutive patients admitted to the ICCU with extensive anterior STEMI between January 2005 – October 2007. ECG was performed upon admission and after reperfusion therapy.

Results

: Of the 74 patients (59 males, 15 females, age 25-85 years). 28 (37.8%) had conduction system alterations. Three (4%) had LBBB, in 2 it persisted after reperfusion. Fifteen (20.2%) had RBBB, in 8 (10.8%) it remained after reperfusion. In 5 (6.7%) IRBBB was observed, in 4 (5.4%) it persisted after reperfusion. In 3 patients (4%) LAHB, in 2 still remaining after reperfusion. In 3 (4%) RBBB+LAHB was present and it persisted after reperfusion. Complete AV Block occurred in 1 patient. LVEF in all patients with conduction abnormalities was lower than similar patients without conduction disturbances and their in-hospital mortality rate was higher.

Conclusions

: Conduction system alterations in patients with acute extensive anterior MI are more frequent than previously recognized. Their presence, and in particular their persistence after reperfusion therapy is associated with worse prognosis.