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Association of Metabolic Syndrome with Serum Oxidizability Potential in Patients with Coronary Artery Disease

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Aim-To assess the impact of metabolic syndrome (MB) in comparison to other coronary artery disease risk factors on serum oxidizability potential in patients with coronary artery disease (CAD).

Background – Oxidative stress leading to modification of low-density lipoprotein is a central paradigm of atherogenesis and plaque destabilization. The thermochemoluminiscence (TCL) assay measurement is based on heat induced oxidation of any biological fluid that provides a kinetic curve pattern and a ratio which reflects residual oxidative capacity due to prior in vivo molecular oxidation (i.e. lower curve slope, lower oxidative potential, indicating higher oxidative activity before test)

Methods – 54 chronic CAD patients, of whom 20 (37 %) MB patients underwent oxidative stress assessment using the TCL method. Correlation of TCL with the various CAD risk factors, age, gender, the MS (according WHO diagnostic criteria), previous myocardial infarction, coronary by-pass surgery (CABG), PCI, and LVEF <or> 45%, has been assessed. MS was categorized as type I (diabetes + hypertension + obesity + hypertrigliceridemia), type II (diabetes + hypertension +hypertrigliceridemia), or type III (diabetes + hypertension +low HDL).

Results – The mean TCL ratio was 184%+/- 22s.d., 184%+/-18s.d., and 187%+/-24s.d. in type I, II, & III MS groups compared to 194%+/-21s.d. in patients without MS, $p<0.05$, <0.05, and p=ns respectively. When the various components of MS were analyzed separately then diabetes was found to be the single variable with the strongest association to oxidative stress ($R^2 = 0.813$, $p<0.01$). Other risk factors (smoking, hypertension, and hypercholesterolemia) when analyzed separately in the non - MS group had no association with low oxidizability potential of CAD patients serum. Low LVEV%, and previous CABG exerted similar effects on serum oxidazability as type I MB.

Conclusion – In coronary disease patients, metabolic syndrome has been found to be associated with high in vivo oxidative stress, thus, with low serum oxidizability potential compared to other risk factors.

Women Health Initiative at the Tel Aviv Medical Center - an Effective Clinic for Risk Management

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Background. There is growing awareness of coronary heart disease (CHD) as a leading cause of death in women. Differences in risk factors, clinical presentation, and pathophysiologic mechanisms of the disease in women lead to difficulties in diagnosis, less aggressive therapy and worse outcome in women.

Aim. A new clinic of women's heart health was established at the Tel Aviv Medical Center which is dedicated to the early risk evaluation, diagnosis and treatment of CHD in women.

Methods. We reviewed the data from the clinic's activity during the last year.

Results. There were 258 visits of 187 women in the clinic between July 2007 and June 2008. Mean age of women after hospitalization due to ACS was significantly higher than those who visited in purpose of primary prevention, 68±12 and 52±11, accordingly In 49 out of 84 visits of women (58%) with known hypertension blood pressure levels were not well controlled. In the other 174 visits, optimal BP was found in 75 of the visits, suboptimal in 51 and high in 48 visits. In 28% (20/74) of visits with known dyslipidemia lipids levels were well treated. Out of the other 184 visits 66 were within optimal range, 51 and 33 suboptimal and high, accordingly. In 54 visits no information was recorded. Only 81 visits (31%) women reported about any physical activity, mostly at a low level.

Conclusions. Efforts for increasing the general awareness of CHD risk, personalization of risk, proper diagnosis, and preventive measures within a dedicated clinic may help to improve cardiovascular health in women.

ß2-Microglobulin as a Biomarker in Coronary Artery Disease

Yaron Arbel [1], Ariel Finkelstein [2], Noa Mashav [1], Karyn Geiger [1], Shlomo Berliner [1], Amir Halkin [2], Jacob George [2], Gad Keren [1], Shmuel Banai [2]

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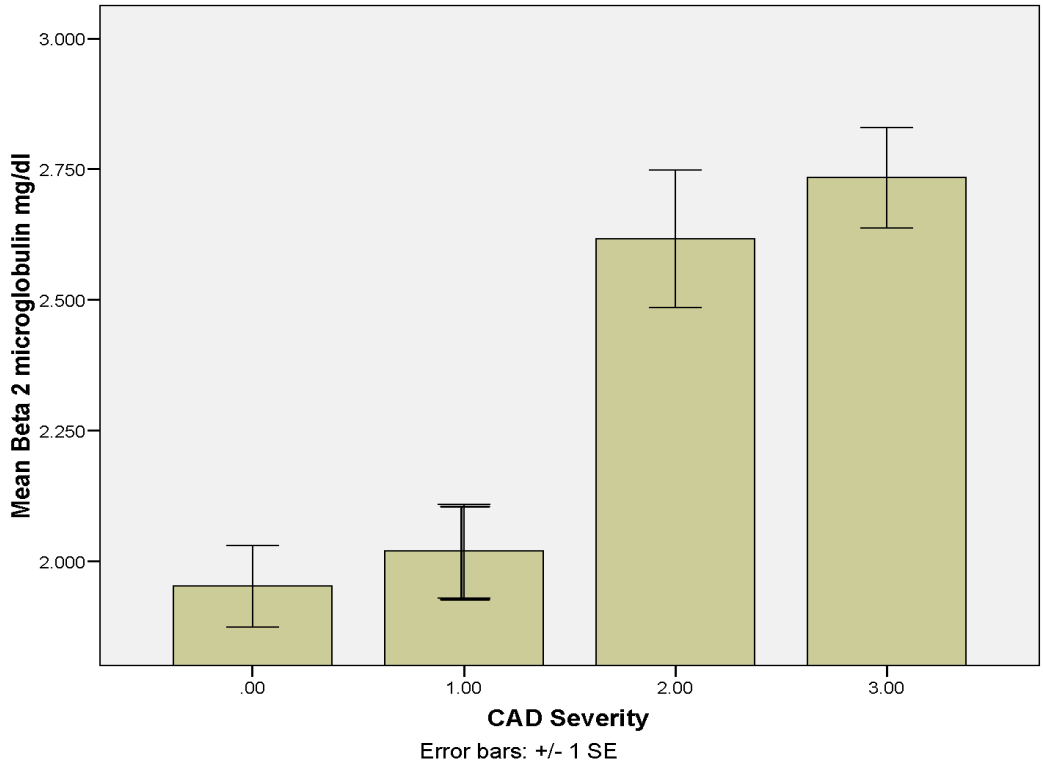
Introduction: The polypeptide β2M is a major histocompatibility complex class I molecules on the cell surface of all nucleated cells. Free β2M circulates in the blood as a result of shedding from cell surfaces or intracellular release, and it is exclusively eliminated by the kidneys. Increased plasma levels of β2M occur renal failure and in a variety of autoimmune, neoplastic, and inflammatory diseases. Recently it was shown that in patients with PVD, circulating β2M is elevated and correlates with disease severity, independent of other risk factors. The association between β2M serum levels and CAD severity has never been evaluated.

Methods: The association between CAD severity and serum β2M levels was prospectively tested in 1010 patients undergoing coronary angiography. In order to ascertain the importance of β2M, a linear regression analysis was conducted with CAD severity as the dependant variable, and WBC, CRP, fibrinogen, troponin, GFR, serum creatinine, glucose, HbA1c, LDL, HDL, and triglycerides levels as the independent variables.

Results: Four variables correlated with CAD severity: β2M (r=0.18, p=0.0001), HbA1c (r=0.1, p=0.008), Fibrinogen (r=0.1, p=0.005), and HDL (r=-0.09, p=0.02). This correlation did not change after dividing the cohort into normal and abnormal GFR.



Conclusion: Circulating β2M is elevated and correlates with the severity of CAD independent of other risk factors. The association of β2M with CAD provides a new biomarker for CAD and an additional insight into the role of its inflammation in the pathophysiology of

Neutrophil / Lymphocyte ratio and the Severity of Coronary Artery Disease

Yaron Arbel [1], Ariel Finkelstein [2], Amir Halkin [2], Noa Mashav [1], Tamar Chundadze [1], Genia Kipervasser [1], Shlomo Berliner [1], Itzhak Herz [2], Jacob George [2], Gad Keren [2], Shmuel Banai [2]

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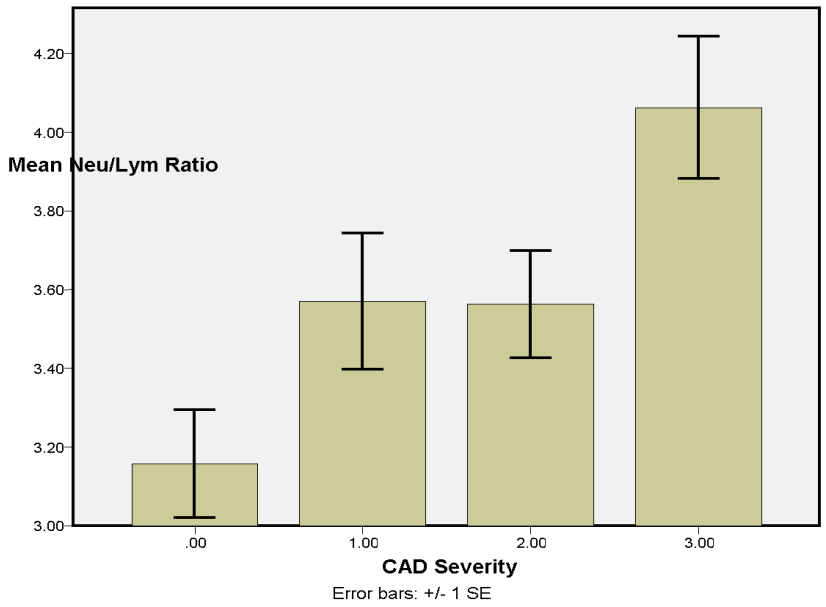
Introduction: The white blood cell count (WBC) is an independent predictor of cardiovascular events and may identify high-risk individuals who are not currently identified by traditional risk factors. WBC also correlates with the severity of coronary artery disease (CAD). The Neutrophil/Lymphocyte ratio (N/L ratio) has recently emerged as a potential new biomarker to single out individuals at risk for future vascular events. However, the correlation between N/L ratio and CAD severity has not been evaluated.

Methods: The association between N/L ratio and CAD severity was prospectively tested in 2069 consecutive patients undergoing coronary angiography. In order to ascertain the importance of the different biomarkers, we conducted a linear regression with CAD severity as the dependant variable, and WBC, CRP, fibrinogen, C3, C4 as the independent variables.

Results: A significant ($p<0.0001$) correlation ($r=0.16$) was noted between the N/L ratio and CAD severity. This correlation was maintained in different clinical sub-groups: Diabetics and non- Diabetics, patients treated or not treated with statins, as well as in those with or without acute coronary syndrome. The N/L ratio was as good if not better than quantitative fibrinogen or CRP in these different subgroups. In a linear regression, N/L ratio was significant while CRP was not.



Conclusion: Higher N/L ratio correlates with more severe CAD. This association gives further evidence for the potential of use of this novel biomarker in ischemic heart disease.

Coronary Revascularization Does Not Impact Smoking Cessation in Patients Following an Acute Coronary Syndrome

Sonia Grandi [1], Andre Gervais [3], Lawrence Joseph [4], Jennifer O'Loughlin [5], Gilles Paradis [6], Louise Pilote [7], Stephane Rinfret [8], Mark Eisenberg [2]

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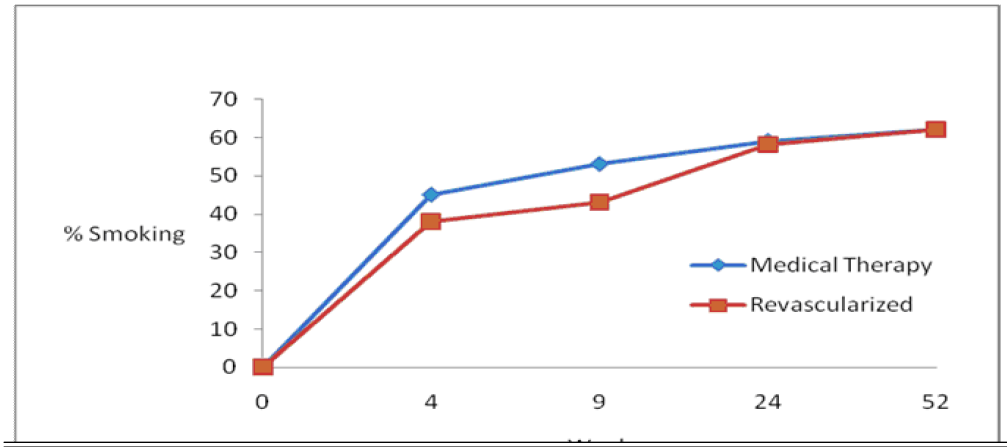
Background: Many smokers who suffer an enzyme-positive acute coronary syndrome (ACS) are revascularized (PCI/ CABG) during hospitalization. However, the effect of undergoing revascularization on smoking behavior in these patients is unknown.
Methods: We examined the efficacy of bupropion in smokers following an ACS in an ongoing double-blind, placebo-controlled randomized clinical trial (RCT). Smoking status was determined by self reports and biochemically-validated carbon monoxide (CO) readings at weeks 4, 9, 24, and 52. Smoking status was defined by CO readings <10 ppm and no cigarettes smoked in the week prior to clinic visits.
Results: At the time of analysis, 52-week follow-up data were available for 90 revascularized patients and 75 medically-treated patients. There were no significant differences in baseline characteristics (including smoking behavior) between the two groups. Among patients who returned for follow-up, the proportion of patients who were smoking was 45% and 48%, in the revascularized and medically-treated patients, respectively. Similar to previous RCTs, the lost to follow-up rate was 33% among revascularized patients and 26% in those treated with medical therapy. When patients lost to follow-up were treated as smokers, the proportion of patients smoking at 52-weeks was 62% among both revascularized patients and medically-treated patients (Figure).
Conclusions: Undergoing revascularization following ACS does not appear to have an effect on the likelihood of quitting smoking at 52 weeks. Because the trial is on-going and treatment is still blinded, actual smoking rates in untreated patients are likely to be even worse than reported here.



Obesity and Coronary Artery Disease as Observed by Computed Tomography Coronary Angiography (CTCA).

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Backgrounds: Overweight is though to be one of the risk factors for the Coronary Artery Disease (CAD). Non-invasive CTCA with high negative predictive value could be excellent modality for detection of CAD in different weight categories.
Objective: To asses the rule of obesity on the incidence of CAD using CTCA
Methods: Subjects without evidence of CAD who had undergone CTCA for the early detection of CAD were categorized according to their body mass index (BMI) in 3 groups; <25 (group-I), 25 to <30 (group-II), and ≥30 kg/m² (group-III), matched in baseline characteristics. In each group the incidence of CAD, number of diseased coronary segments, number of segments with significant (diameter stenosis > 50%) and non-significant (diameter stenosis ≤ 50%) disease and calcium score were calculated.
Results: CTCA finding of 148 subjects; 38 in group-I, 69 in group-II, and 41 in group-III were analyzed. Mean calcium score was significantly higher in group-II and III than in group-I; 187,176 and 96 respectively (p =0.048). The number of disease segments per subject was 3.7, 4.8, 5.1, in group-I, II, III respectively (p=0.77). The number of segments with non-significant stenosis per subject was 3, 3.9, 3.9 (p=0.78) and with significant stenosis was 0.66, 0.9, 1.2 in each group respectively (p =0.008)
Conclusion: Our CTCA data showed that obesity seems to be an independent risk factor for CAD represented by the extent of calcium score and significant disease.

Death-Optimal Physical Conditions

Eliyahu Stoupel[1], Ramune Kalediene[2], Jadviga Petrauskiene[2], Skirmante Starkuviene[2], Evgeny Abramson[3], Peter Israelevich[4], Jaquelin Sulkes[3]

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Background: Death and life are connected. In recent years the studies about close relationship between many biological processes and environmental physical conditions were published. The aim of this study is to explore physical activity factors related to death distribution by time. Time, Solar, Geomagnetic, Cosmic Ray activity were studied in relation to death total and for some groups of causes and for each gender.

Patients & Methods: 718817 deaths in years 1990-2006 in Lithuania were studied monthly for the total and separate death causes groups, for both gender and compared with concomitant physical activity factors mentioned above. The data come from the National Archive of Lithuania; cosmophysical data- from Space Science institutions in the USA, Russia, Finland.

Statistics: Pearson correlation coefficients and their probabilities between compared parameters were obtained. Probabilities of 95% and higher were described as significant. These of 90%-94%- as a strong trend toward significance. Lower as non significant (N.S.).

Results: monthly death number were significantly inverse related to solar activity indices ($r=-0.3$, $p<0.0001$) and related to CRA (Neutron) activity ($r=0.3$, $p=0.0001$) for the total deaths group; this relationship was stronger for men, but also highly significant for woman. These links were seen also for stroke, non cardiovascular deaths, accident victims, oncology (malignant tumors), suicide. The number of traffic accidend deaths was related to solar and geomagnetic activity and inverse related to CRA (Neutron) activity. Death number was annually rhythmic with acrophase for Total deaths in February and suicide in June-July.

Baseline Predictors of Smoking at 52 Weeks Post-Acute Coronary Syndrome

Sonia Grandi [1], Kristian B Filion [2], Andre Gervais [3], Lawrence Joseph [4], Jennifer O'Loughlin [5], Gilles Paradis [2], Louise Pilote [6], Stephane Rinfret [7], Mark J Eisenberg [8]

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Background: Smokers with an enzyme-positive acute coronary syndrome (ACS) are advised to immediately quit smoking. However, many patients return to smoking within 52 weeks. The predictors of smoking relapse in this patient population remain poorly understood.

Methods: Using data from an ongoing multi-center, double-blind, placebo-controlled clinical trial, we examined baseline predictors of smoking status at 52 weeks post-ACS. Smoking was determined by biochemically-validated carbon monoxide readings and self-reports at clinic visits. Multivariable analyses were conducted using multiple logistic regression, and model selection was performed using the Akaike Information Criterion (AIC). Patients lost to follow-up were assumed to have returned to smoking.

Results: At the time of analysis, data were available for 147 patients at 52-week follow-up. Patients were primarily male (86%), and the mean age was 54±10 years. Two-thirds of patients were admitted with a STEMI, and half underwent PCI or CABG during their index admission. Patients at admission smoked a mean of 33±13 years, had a median of 1 previous quit attempt (IQR=0-2), and 33% reported living with other smokers. At 52 weeks, 65% of patients returned to smoking. Similar to previous trials, 31% of patients were lost to follow-up. Previous myocardial infarction (MI) and number of cigarettes smoked per day were found to be independent predictors of smoking (Table).

Conclusions: Prior history of MI and baseline number of cigarettes smoked are important predictors of smoking at 52 weeks post-ACS. These findings highlight the need for aggressive smoking cessation therapy post-ACS.

Variable	Univariable		Multivariable	
	OR	95% CI	OR	95% CI
Prior myocardial infarction (MI)	3.61	1.00-13.0	4.05	1.11-14.7
Number of cigarettes smoked per day	1.04	1.00-1.07	1.04	1.00-1.08

Candidate variables included baseline demographics and clinical characteristics, as well as smoking history.

Stroke Related Death (n=92627) in Changing Montly Cosmophysical Activity. 216 Months Comparison. Lithuania, 1990-2007.

Eliyahu Stoupel[1], Ramune Kalediene[2], Jadviga Petrauskiene[2], Skirmante Starkuviene[2], Evgeny Abramson[3], Peter Israelevich[4], Jaqueline Sulkes[3]

[1] Cardiology Department, Rabin Medical Center, Sackler Faculty bof Medicine, Tel Aviv University, Petach Tikva,Tel Aviv, Israel, [2] Medical Menagement, University nof Medicine, Kaunas, Lithuania, [3] Informatics & Epidemiology, Rabin Medical Center, Petach Tikva, Israel, [4] Geophysics& Planetery Sciences, Tel Aviv University, Tel Aviv, Israel

Background: Environment physical activity is affecting human homeostasis. The **aim** of this study was to explore the cosmophysical (Solar (SA), Geomagnetic (GMA) and Cosmic Ray (CRA) activity links with concomitant monthly stroke related death distribution.
Methods: 7644441 deaths in the Republic of Lithuania were compared with the mentioned physical factors monthly (n-216, 1990-2006); 92627 stroke related deaths (12.1% of total), (34920 men, 57707 woman).
The Space Whether data came from space science centers in the USA, Russia, Finland.
Results: Monthly Stroke related death number was significantly correlated with Year, month of the Year (acrophase second week of February), CRA;
inverse links with SA and absence of significant correlation with monthly level of GMA.
The yearly ratio of deaths from Ishemic Heart Disease (IHD) / Stroke show a significantly negative correlation ($r=-0.74$, $p<00001$), indicating the growing role of the latter in cardiovascular mortality. in both gender..
Conclusion:
1. Monthly stroke related deaths number is growing yearly in comparison to IHD
2 Monthly Stroke death number .correlate with cosmophysical activity levels
3. Stroke mortality is annually rhythmic, with February acrophase in this part of the Globe of the Northern Hemisphere..