

EP9

Longitudinal Exercise Capacity Change is Associated with Cardiovascular Risk Profile Alterations

Leshem-Rubinow, Eran; Steinvil, Arie; Shmueli, Hezzy; Shapira, Itzhak; Zeltser, David; Berliner, Shlomo; Rogowski, Ori
Tel Aviv Sourasky Medical Center, Internal Medicine “D” and “E”, Tel-Aviv, Israel

Background: Higher metabolic equivalents (METS) categories during cardiorespiratory fitness testing are significantly associated with lower cardiovascular disease (CVD) risk factors. We questioned whether exercise capacity change over time will be associated with changes in CVD risk profile among a subpopulation of relatively healthy individuals.

Methods: We enrolled attendees of a health screening program between September 2002 and November 2010. Only individuals attending more than once and performing cardiorespiratory fitness testing at least twice during the study period were included in the analysis.

Results: Data regarding 3511 individuals (2402 males and 1109 females) with 2 different metabolic equivalents (METS) assessments were analyzed. Median (25th - 75th percentiles) time difference between cardiorespiratory fitness testing was 2.9 (2.0 - 4.2) years. We found negative correlations with the change in weight ($r=0.177$), with the change in resting heart rate, systolic and diastolic blood pressure measurements, as well as with the change in fasting glucose, triglycerides and low-density lipoprotein cholesterol (LDL-C). In addition, we found negative correlation with inflammatory markers such as hs-CRP and white blood cell count. Following adjustment for age, change in resting heart rate (fitness surrogate) and change in weight, only the correlations with the change in triglyceride and LDL-C remained significant.

Conclusions: In a large cohort of apparently healthy individuals, longitudinal change in exercise capacity measured by METS, was inversely associated with a change in resting heart rate, blood pressure, glucose, triglycerides and LDL-C levels but not with HDL-C. The association with the change in triglycerides and LDL-C was independent from the change in weight and fitness (resting heart rate).

Alanine Aminotransferase as a Prognostic Factor in Patients with ST Elevation Myocardial Infarction

Eisen, Alon; Kornowski, Ran; Vaknin- Assa, Hana; Bental, Tamir; Brosh, David; Teplitsky, Igal; Rechavia, Eldad; Lev, Eli Israel; Battler, Alexander; Assali, Abid
Rabin Medical Center, Cardiology Department, Sackler Faculty of Medicine, Tel-Aviv University, Petach-Tikva, Israel

Background: Elevated transaminases are associated with increased inflammation and oxidative stress and are more common in patients with non-alcoholic fatty liver disease as well as in patients with the metabolic syndrome. The predictive value of elevated transaminases for atherosclerosis and future coronary events is well known, yet there are little data of the prognostic value of alanine aminotransferase (ALT) elevation in the setting of acute myocardial infarction. We therefore aimed to examine the prognostic implication of elevated ALT in patients admitted with ST- segment elevation myocardial infarction (STEMI).

Methods: We performed a retrospective analysis of STEMI patients who were admitted to the Rabin Medical Center during the years 2001-2011 and underwent primary percutaneous intervention (PCI) within 12 hours from the beginning of symptoms. Patients with cardiogenic shock were excluded. ALT level which was documented within a month prior to the PCI was the basis of our study.

Results: are shown in Table.

	ALT≤40U/L (n=779)	ALT>40 U/L (n=419)	p value
Age (years)	62±12	59±13	0.001
Male	79%	87%	0.006
Diabetes Mellitus	28%	25%	0.2
Dislipidemia	54%	49%	0.1
Hypertension	52%	51%	0.8
Current Smoker	41%	45%	0.5
Basal mass index	27.5±5.0	28.3±6.0	0.01
Anterior wall MI	43%	55%	0.001
LV ejection fraction<40	32%	55%	0.001
2/3 vessel disease	59%	60%	0.6
TIMI 3 post PCI	96%	94%	0.1
CPK (max)	1300U/L±1400	2900U/L±2200	0.001
Cadillac score	3.9±3.5	4.7±3.8	0.006
30-day mortality	2.3%	4.8%	0.02
6-month mortality	3.6%	7.6%	0.002
1-year mortality	4.6%	9.4%	0.001

In multivariate analysis adjusted to the Cadillac score, ALT level was associated with 30-day, 6 month and 1-year mortality with an odds ratio of 1.4 (95% CI 0.7-2.9, p=0.3), 1.6 (95% CI 0.9-2.9, p=0.09) and 1.6 (95% CI 0.96-2.8, p=0.07), respectively.

Conclusion: In patients with STEMI, the presence of prior elevated ALT is associated with

unadjusted higher mortality rate. ALT was not found to be an independent predictor for short-term mortality after STEMI, rather, there is a trend towards its prediction for long-term mortality. Further investigation is needed to better understand this association.

STS Risk Classification: A Better Predictor than the EuroSCORE for COPD Patients' Operative Risk?

*Ben-Avi, Ronny; Barac, Yaron; Berger, Gidon; Cohen, Oved; Yigla, Mordechai; Bolotin, Gil
Rambam Health Care Campus, Haifa, Israel*

Objective: We hypothesized that the severity of COPD estimated by the pulmonary function test (PFT) should have a correlation with the patient's EUROscore calculated risk.

Methods: From January 2007 until August 2010, 1541 patients underwent open heart surgery at our institute, 204 (13%) of whom were elective patients who underwent a pre-operative PFT examination due to a previous diagnosis of COPD or a history of smoking. A propensity score matching group of 101 patients with similar cardiovascular parameters and comorbidities was selected as a control group.

Results: Of the 204 patients who performed PFT, 101(49%) had a pathological PFT. Mortality in the moderate-to-severe airway obstruction group was higher compared to patients defined as mild or no airway obstruction, 8.7% vs 0.9% ($p<0.008$).

Conclusions: Pre-operative moderate-to-severe pulmonary obstruction was found to be a better predictor of post-cardiac surgery. A previous diagnosis of COPD alone with no PFT conformation or a diagnosis of COPD with normal or mild obstructive PFT is not a risk factor for higher morbidity and mortality. Furthermore, a misdiagnosis of COPD in patients undergoing cardiac surgery may incorrectly increase the calculated surgery risk. This may imply a possible advantage of the STS score as compared to the EuroSCORE.

Lipoprotein Phospholipase A2 (LpPLA2) Levels Among Morbid Obese Patients-Identifies Cardiac Risk

Izhaki, Alexander¹; Shechter, Pinchas²; Shimonov, Mordechai²; Matas, Zipora³; Boaz, Mona⁴; Vainstein, Julio⁵; Chaimi, Tova³; Rozenman, Yoseph¹

¹The Edith Wolfson Hospital, Heart Institute, Holon, Israel; ²The Edith Wolfson Hospital, Surgery A, Holon, Israel; ³The Edith Wolfson Hospital, Biochemistry Lab, Holon, Israel; ⁴The Edith Wolfson Hospital, Epidemiology, Holon, Israel; ⁵The Edith Wolfson Hospital, Diabetes Clinic, Holon, Israel

Introduction: Lp-PLA2 -a vascular-specific inflammatory biomarker of cardiovascular (CV) risk below the low 200's ng/ml has a high negative predictive value of about 95% for future CV event rates - suggesting plaques have been stabilized by treatment and that there is low (5%) residual CV risk. Conversely, patients above 223 ng/ml had a significant doubling of risk for CV events, fully adjusted for traditional risk factors, lipids and also and NT-pro-BNP. A recent study (JNC 2011; 18:886-92) of 383 patients (aged 42±10, BMI 49±8, 23% diabetic, 1 CAD) referred for myocardial SPECT prior to bariatric surgery disclosed abnormal results in 20 (5%) only. The authors implied that routine pre-op stress testing may be redundant.

Objective: Compare PLAC test serum levels (Diadexus PLAC Test ELISA Kit) of the bariatric group versus those of acute STEMI and other acute chest pain syndromes.

Population & Methods: LpPLA2 was determined in sleeve gastric surgery candidates (BMI-40.9 ± 10.5, samples drawn at 24h prior to operation), acute ST - Elevation MI and "non-specific" acute chest pain (TnI =0.0ng/ml) groups.

Table A compares groups' baseline data.

	Group A : Sleeve n=26	Group B: STEMI, n=16	Group C, n=20	p: A versus B	p: A versus C
Age(y)	47.7 ± 12.2	62.7 ± 11.5	57.5 ± 13.1	0.0003	0.013
Females (%)	12(46)	1(6)	3(15)	0.007	0.03
Creatinine (mg%)	0.86 ± 0.31	1.08 ± 0.33	0.99± 0.19	0.06	0.1
Diabetes Mellitus(%)	14(54)	4(25)	2(10)	0.11	0.002
Known CAD (%)	2(8)	2(13)	6(30)	0.62	0.06
Statin Therapy	12(48)	6(55)	11(55)	0.75	0.77
Total Cholesterol (mg%)	197 ± 38	174 ± 43	159 ± 30	0.10	0.001
HDL-C (mg %)	40± 9	38 ± 9	42± 11	0.39	0.73

Table B compares respective (groups A, B and C) LpPLA2 levels.

	A	B	C	p: A versus B	p: A versus C
Mean ±SD	254 ± 47	282 ± 82	296 ± 87	0.22	0.056
>223ng/ml (%)	18(69)	14(88)	15(75)	0.44	1.0

Conclusions: In contrast to our colleagues impression, the high PLAC levels (= high cardiovascular risk) observed in our bariatric population (54% diabetic) emphasize need for pre-operative testing, appropriate life-style modifications and aggressive therapy following surgery.

The Effect of Renal Denervation on Systemic Hypertension and Left Ventricle Diastolic Function

Ghanim, Diab; Hasin, Yonathan

Baroch Padeh Poria, Cardiology, Tiberias, Israel

Background: Sympathetic nervous system(SNS) activation is involved in the development and progression of systemic hypertension. The response of the kidneys to SNS signaling increases blood pressure by increase of rennin secretion, decrease of sodium excretion and induction of renal vasoconstriction. Activation of the renal somatic afferent nerves leads to elevated central sympathetic drive. First experience with bilateral renal artery denervation showed significant decrease of the systolic and diastolic blood pressure in resistant hypertension .

Hypothesis: Bilateral renal artery denervation can reduce significantly blood pressure in patients who are resistant to at least three antihypertensive medications and can improve left ventricle diastolic function.

Methods and results: Nine patients with resistant hypertension were treated with catheter-based approach by using radiofrequency energy delivered through the Simplicity catheter of Medtronic to both renal arteries. Blood pressure, pulse, systolic and diastolic left ventricle function measurements were scheduled after one month, three months and six months follow up.

Results: The mean systolic blood pressure at baseline was 169 ± 19 mmhg, mean diastolic blood pressure 81 ± 15 mmhg. The mean systolic blood pressure one month after renal denervation was 134 ± 21 mmhg ,mean diastolic blood pressure 77 ± 11 mmhg. By using paired t test there was significant reduction of the systolic blood pressure by 21% with P value of 0.005 .There was nonsignificant 5% reduction in diastolic blood pressure (P value=0.638). There was no effect on the left ventricle diastolic function after one month but we expect improvement of the diastolic features in the medium and long term.

Conclusion: Bilateral renal arteries denervation is associated with significant reduction in systolic blood pressure one month after this intervention. Results of the effect of renal denervation on left ventricle diastolic function will be available in three to four months.

Gender Effect on Vascular Inflammation Following Bariatric Surgery

Blum, Arnon¹; Tamir, Snait²; Hazzan, Davis³; Podvitzky, Oxana¹; Sirchan, Rizak¹; Keinan Boker, Lital⁴; Blum, Nava⁵; Shaich Suliman, Laylee⁶; Geron, Nissim⁷

¹Baruch Padeh Poria Hospital, Tiberias, Israel; ²MIGAL-Galilee Technology Center, Laboratory of Human Health and Nutrition Sciences, Kiryat Shmona, Israel; ³Carmel Medical Center, Surgery, Haifa, Israel; ⁴School of Public Health, Haifa University, Epidemiology, Haifa, Israel; ⁵School of Public Health, Haifa University, Occupational Health, Haifa, Israel; ⁶Ruth and Baruch Rappaport Faculty of Medicine, Technion Institute of Technology, Haifa, Israel; ⁷Baruch Padeh Poria Hospital, Surgery, Tiberias, Israel

In most surgical series the majority of patients were women, and men had higher post operative mortality and morbidity regardless of weight. Our primary end point was to study gender effects on vascular inflammation following bariatric surgery for weight loss.

Methods: A prospective study evaluated vascular inflammation in obese patients before and 3 months after bariatric surgery.

Results: 73 women and 29 men (40.5±12.3 years old) underwent bariatric surgery for weight loss. ICAM-1 levels and hs-CRP levels were decreased (0.0001). Gender differences: in women both ICAM-1 levels (p=0.002) and hs-CRP levels (P=0.0001) were decreased. In men following bariatric surgery both ICAM-1 levels and hs-CRP levels were non-significantly changed (both P=0.09).

Discussion: Our study examined gender effects of bariatric surgery on vascular inflammation. Bariatric surgery had no significant effect on biochemical inflammatory markers in male patients while females undergoing the same kind of bariatric surgery for weight loss had a significant decrease in these markers of inflammation. These results may explain the epidemiologic data that described higher morbidity and mortality among obese men undergoing bariatric operation for weight loss. This is the first study that has demonstrated a gender difference in the inflammatory responses that may affect clinical outcome and the cardiovascular morbidity and mortality.