Patients' Personality and Spouses' Ways of Giving Support: Which Contributes More to the Recovery after First ACS?

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Background: In married couples the support provided by the spouse can be an important element in the healing process of the patient. Few studies have looked at the spouses' styles for giving support in the clinical context of recovery from an acute coronary syndrome (ACS). Coyne and Smith (1991, 1994) categorized three possible support styles of the spouse: active engagement, protective buffering and overprotection. They predicted that only the active engagement would be beneficial for the patients, however this was not empirically verified. Based on the person-environment fit model (Martire, Druley, Stephens & Wojno, 2002), our assumption was that support from the spouse will be beneficial for the patient recovery only as a function of the patient own personality characteristics.

Objective: The current study's main goal was to explore, in a prospective format, the nature of the interaction, between the spouses' ways of giving support and the patients' attachment personality style, to recovery outcomes of patients six months after their first ACS.

Method: The target population consisted of Jewish men, with the diagnosis of first ACS, admitted to the cardiac care unit at Meir medical center, Kfar Saba, Israel, between March 2005 and July 2006 (N=216). The study sample consisted of all patients and spouses who agreed to participate in the study and who completed the study questionnaires at Time 1-during hospitalization (N= 77), and at Time 2- six months after hospitalization (N=69). At time 1, the spouses completed the *Ways of Giving Support Questionnaire* (WOGS: Bunnk, et al, 2006), and the patients completed the *Experiences in Close Relationships* scale (ECR; Brennan, Clark & Shaver, 1998). Outcomes measured were: depression and anxiety reduction, BMI reduction, blood lipids improvement, Hs-CRP reduction, smoking cessation, rehabilitation program attendance and resuming work

Results: No main effect was found for attachment style in the prediction of the dependent variables. Two main effects were found for ways of giving support: active engagement predicted decrease in patients' BMI and over-protectiveness predicted non attendance in rehabilitation programs. Ten significant interactions were found between the patients' attachment styles (anxiety or avoidance) and the three ways of giving support of the spouses (active engagement, protective buffering and overprotection). These interactions correlated mostly with the patients' behaviors (i.e. smoking cessation, rehabilitation attendance and resuming work).

Conclusions: The interpersonal dynamics determining appropriate behavior following a medical crisis are complex and are an important element for further study. It is recommended that cardiac rehabilitation programs take in to consideration the contribution of the spouses' supportive style to the behavior and recovery of the male patient.

Factors Affecting non Attendance in Cardiovascular Rehabilitation Programs.

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Background: Attendance in phase-II cardiac rehabilitation program (CPR) is poor, and dropout rates of patients who start participation is unacceptable.
Aim: To identify factors influencing patients' decisions to attend cardiac rehabilitation programs.
Methods: Semi-structured interviews were conducted with 33 patients attending CPR, compared with 25 dropout patients that contacted the CPR.
Results: The age was of attending patients were 59.3±8 years, 73% were males.
Most of attending patients, 82% (n=29) could identify a reason for the cardiac event vs. only 36% (n=9) among non attending (p= 0.0002). Social environment in the rehabilitation center was identified as supporting further attendance among 68% of attending patients. Employment and distance from rehabilitation center was a reason for not participating in 90% of non attending patients. Surprisingly, health improvement was a minor factor influencing attendance decision in both groups. Information and encouragement delivered by the GP's were minimal and non influential in both groups. Factors not affecting attendance were: gender, employment, physical activity, spouse support and income.
Comments: Strategies should be developed for encouraging greater attendance by training GP's to identify and encourage eligible patients for CRP. Rehabilitation at out of work hours may enhance attendance. Distance is still a major obstacle of attendance, suggesting the importance of home-based rehabilitation.

Use of Attenuation Correction to Improve Accuracy of SPECT Myocardial Perfusion Imaging. Initial Experience at Hadassah Hospital

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Objective: To assess prospectively the impact of attenuation correction (AC) on SPECT myocardial perfusion imaging (MPI) diagnostic accuracy.

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Patients: Thirty two patients were referred to MPI: 11 patients for chest pain without known ischemic heart disease and 21 because of persistent chest pain after myocardial infarction and/or revascularization,

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Methods: In addition to routine MPI, an x- ray tomography (GEMS –Hawkeye CT) was performed. Slice thickness was 1 cm. The CT Hounsfield units were transformed, for each pixel, into the corresponding attenuation coefficient for the used radioisotope (Tl-201 or Tc-99m). Ordered subsets expectation maximization (OSEM) algorithm was used for SPECT computer reconstruction to generate images with and without AC. The AC and non AC images were interpreted separately by 2 nuclear medicine physicians. A 6 to 12 months follow up period included close clinical follow up and, if necessary, coronary angiography. A consensus panel composed of cardiologists and NM physicians correlated the SPECT AC and non AC interpretations with the clinical and angiographic data.

Results: 1) Eight patients with normal AC MPI experienced no cardiac event during the follow up period. Seven of them showed
9 perfusion abnormalities on the non- AC data: in the infero-septal wall (5/7), apex (2/7) and anterior wall (2/7, male pts). 2) Eleven patients had inferior wall abnormality on the non-AC images and underwent angiography. Seven of them with abnormality seen also on the AC images had significant coronary disease in the RCA/Circumflex arteries. The other four with normal AC images had normal angiography of those arteries. 3) Two women with anterior wall perfusion abnormality on both AC and non AC images had a normal LAD coronary artery angiography. 4) In 10 patients with multiple perfusion abnormalities in territories other than the inferior wall, the correlation of angiography was better with the AC than with the non-AC images.

Conclusions: AC MPI may not perfectly correct for anterior wall defects, in particular for breast artifacts. However AC greatly improves the diagnostic accuracy of MPI SPECT and should be considered as becoming standard practice.

A Novel Noninvasive Digital Arterial Pulse Wave Analysis During Deep Breathing as an Indicator of Significant Coronary Artery Disease – A Two Center Study.

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Background: Previous studies have indicated that fluctuations in pulse wave amplitude (PWA) might be a predictor of coronary artery disease (CAD). Therefore analysis of the respiratory modulation spectral response (RMR) of the PWA during deep breathing at a frequency of 0.1 Hz can be performed by the novel Cardiometer® device, utilizing a photo plethysmograph sensor, attached to the patient's finger and proprietary software. We evaluated this noninvasive simple test as an indicator of significant CAD

Methods: The RMR results of 195 consecutive pts; (mean age 63.1 ± 11.6 years, 73% male) referred for coronary angiography in two academic medical centers (97 pts in Rabin MC and 98 pts in Barzilai MC), were compared with their coronary angiography results. Patients with luminal stenosis of ≥ 70%, or left main stenosis ≥ 50% were classified as having significant CAD. The Cardiometer RMR test was performed in the recovery room of the catheterization laboratory prior to the procedure, excluding CABG and STEMI. RMR was analyzed after baseline 20 seconds spontaneous breathing, followed by 70 seconds of guided deep breathing at 0.1 Hz. The test was repeated post procedure in 152 pts following PCI or diagnostic catheterization.

Results: The RMR (normal ranges 78% [best] to 0% [worst]) was significantly lower in pts with significant CAD (n=118) vs. pts with non-significant CAD (n=77) (14.57±23.15 vs. 38.75±19.68, P<0.001). The improvement in post procedure RMR was significantly higher in pts who had undergone successful PCI (n=107) as compared to pts (n=88) who had only diagnostic catheterization only (27.51± 23.45 vs. 20.00 ± 25.91, P<0.05). RMR was lower in pts (29/195) with recent MI (14.35 vs. 25.83, P<0.05). By using a receiver operating characteristic analysis, we identified an RMR<29% (sensitivity 81.4%, specificity 76.6%; positive and negative predictive values: 84.2%, 72.8%, respectively) to be the optimal cut-off value for predicting significant CAD. The clinical characteristics and the RMR results were similar in the two centers.

Conclusions: The novel digital PWA analysis test during deep breathing using the Cardiometer device is a simple, non-invasive bedside or office based test to detect significant CAD and to monitor patients with CAD post PCI.

Association between HbA1c and Erectile Dysfunction in Non-Diabetic Men with and without Ischemic Heart Disease

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Introduction: HbA1c is biomarker of endothelial dysfunction in non-diabetics. Endothelial dysfunction is implicated the pathophysiology of erectile dysfunction (ED) as well as ischemic heart disease (IHD). Although HbA1c levels are associated with ED in diabetic men, the association between HbA1c levels, ED and IHD has never been studied in non-diabetic men.

Methods: A total of 119 men underwent coronary angiography and filled the Sexual Health Inventory for Males questionnaire (SHIM). Excluded were men with diabetes mellitus and men with chronic inflammatory process. SHIM scores 21 or less represented ED.

Results: Included were 70 men, mean ages 59.4±13.3 years. Mean SHIM scores were 16.8±8.1 and mean HbA1c levels were 5.6±0.6% for the whole cohort. HbA1c levels were associated with SHIM scores (r=-0.34; p=0.004) for the whole cohort. HbA1c levels were not higher among men with IHD (n=52) compared with men without IHD (n=18), and among men with ED (n=47) compared with men without ED (n=23).

Conclusions: HbA1c levels are associated with ED among non-diabetic men with and without IHD. This finding sheds a new light on the clinical use of HbA1c in non-diabetics, and in men with IHD in particular.

Clinical Pharmacology in the Coronary Cathlab: Incidence of Drug Related Problems in Patients Undergoing Coronary Angiography

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Background:
Drug related problems (DRP's) are underreported and consequently are an underestimated cause of morbidity and mortality. Recent epidemiologic evidence estimates that DRPs are the fourth to the sixth leading cause of death in USA. Important risk factors for adverse drug events or reactions included polypharmacy, female sex, drugs with a narrow therapeutic range, renal failure and advanced age. Over 50% of DRP is estimated as preventable. Interventional cardiology deals with relatively sick patients that are under polypharmacy therapy. The objectives of this study were to evaluate the frequency and the predictors for medication errors and adverse drug events in this high-risk population.

Methods:
Consecutive patients undergoing coronary angiography were interviewed and their records surveyed by a clinical pharmacologist for DRP (defined as adverse drug events, drug interactions, medication errors, dosage problems, frequency problems, drug- illness interaction, drug- age interaction, lack of drug in therapy and partial therapy problems). Detected DRP were further evaluated by a clinical cardiologist familiar with the patient.

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Results:
165 patients were studied, 108 DRPs were detected in 64 patients (40%). DRPs were detected in older patients (65±10 vs. 59±1, $p<0.01$) that were treated with more drugs (7.46±2.7 vs. 6.6±2.5). Patients with DRPs had a higher incidence of co-morbidities including diabetes mellitus and previous organ transplantation and were significantly under-treated with beta blockers, statins and aspirin.

Conclusions:
Drug related problems are very frequent in patients undergoing coronary interventions and may significantly affect morbidity in this already sick population. Meticulous screening for DRP may reduce their incidence and improve patient care and well being.

Detection of Significant Coronary Artery Diseases Employing a Novel, Non-Invasive Finger Pulse Wave Analysis During Deep Breathing Exercise: a Validation Study

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Introduction: Previous studies have indicated that fluctuations in pulse wave amplitude can predict coronary artery disease (CAD). Recently we demonstrated that respiratory modulation response (RMR), a spectral analyzing of pulse wave amplitude change derived from finger photoplethysmograph sensor during deep breathing at a frequency of 0.1 Hz. can detect the presence of significant CAD. The purpose of the study was to evaluate whether pre specified RMR value defined in a previous study can be used as a test to detect significant CAD.
Methods: The RMR test was prospectively performed in 102 consecutive patients referred for coronary angiography prior to the procedure, excluding only STEMI and prior CABG patients. Their RMR was analyzed by proprietary software, after baseline 20 seconds of spontaneous breathing, followed by 70 seconds of guided deep breathing at 0.1 Hz. The physician performing the angiography was blinded to RMR results. Based on the previous study, the pre-specified cut-off on RMR for indicating significant CAD was 30%. Receiver operating curve (ROC) methodology was used to assess RMR accuracy vs. % stenosis; 50% or 70% for each separately. **Results:** Valid RMR signal was achieved in 98 (96%) patients, 68.4% male, mean age 64.6 ± 11.3. Angiographiclly, 77.6% of patients demonstrated coronary artery stenosis >50% and 66.3% stenosis >70% in one or more major epicardial vessels. ROC analysis yielded area under the curve (AUC) of 0.80 (95% CI: 0.71 – 0.89) and 0.82 (0.73 – 0.91) respectively for Stenosis >50% and >70% ($p < 0.001$ for both). The table demonstrates RMR 30% accuracy in detecting significant CAD. **Conclusion:** RMR is an accurate, non-invasive, simple and safe test for detecting significant CAD.

Accuracy of RMR Classification by Stenosis %

	Coronary Angiography Stenosis	
Accuracy Parameter	> 50%	> 70%
Sensitivity	72.4%	80.0%
Specificity	86.4%	81.8%
Positive Predictive Value (PPV)	94.8%	89.7%
Negative Predictive Value (NPV)	47.5%	67.5%