

1206-174 **Aging and Patient Preferences Regarding Invasive Cardiac Care**

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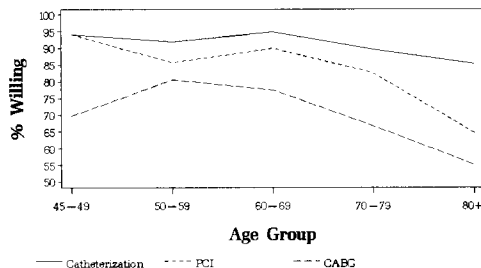
**Background:** The declining use of invasive cardiac procedures with advancing age is well documented. The extent to which pts health preferences explain this pattern of care is unknown.

**Methods:** We surveyed 678 pts admitted for chest pain prior to referral for cardiac catheterization (CC) (age < 75yrs, n=404; ≥75yrs, n= 274). Surveys assessed willingness to consider CC, PCI or CABG if recommended (5pt scale) as well as functional status, personal traits, knowledge of cardiac procedures, and risk-tolerance for CABG mortality using a standard gamble (SG). The effect of age on being unwilling to consider CABG was determined after adjustment.

**Results:** Elderly pts (age ≥75yrs; mean 80.3yrs) had similar health perceptions, medical knowledge, and severity of illness as younger pts. They were less likely than younger pts to probably or definitely consider cardiac catheterization (82.6 vs. 91.4%), PCI (70.7 vs. 86.9%) or CABG (55.2 vs. 72.5%) (figure, p for trends <0.05) if recommended by their physicians. Elderly pts were also more risk-averse (SG: 13.9 vs. 26.1%, p<0.001). After adjustment, age (older), risk-aversion (lower SG), and general health (better) were independently predictive of being unwilling to consider CABG.

**Conclusions:** While willingness to consider invasive procedures and accept risk declines with advancing age, the vast majority of elderly pts will still consider these treatments when recommended. Thus, pt preferences are unlikely to explain age-related declines in cardiac procedure use.

**Willingness to Consider Invasive Cardiac Care**  
By Age



POSTER SESSION

1207 **Newer Methodologies in Exercise Testing**

Tuesday, March 19, 2002, 3:00 p.m.-5:00 p.m.

Georgia World Congress Center, Hall G

Presentation Hour: 3:00 p.m.-4:00 p.m.

1207-149 **Abnormal Myocardial Phosphorus Metabolism in the NIH-NHLBI Sponsored Women's Ischemia Syndrome Evaluation (WISE): Final Phase I Results**

**Steven D. Buchthal**, Delia Johnson, Hee-Won Kim, Jan A. den Hollander, Kate N. Scott, Noel Bailey-Merz, Sheryl F. Kelsey, Carl J. Pepine, Gerald M. Pohost, *University of Alabama at Birmingham, Birmingham, Alabama.*

**Background:** In our initial report, 7 of 35 women (20%) who had chest pain but no angiographic CAD showed abnormal myocardial <sup>31</sup>P metabolism during mild handgrip exercise. This suggested that ischemia secondary to microvascular disease may be the cause of the chest pain in this population. We now report the <sup>31</sup>P spectroscopic findings from the phase I portion of the WISE.

**Methods:** Informed consent was obtained from 95 women entered in WISE with chest pain but no or minimal (<50%) CAD. <sup>31</sup>P NMR data was obtained before, during and after handgrip exercise.(30% maximal voluntary contraction).

**Results:** Eighteen of the 95 women(19%) showed a ≥ 2SD decrease in phosphocreatine(PCr)/ATP ratios during stress. There was no correlation between degree of stenosis and change in PCr/ATP. In those women with no CAD (≤20%), correlations were noted between an abnormal decrease in PCr/ATP ratio and several individual risk factors.(Table) However, an analysis of risk factors using the NHLBI risk assessment tool showed no difference in ΔPCr/ATP in women using a score of 3 as a threshold. (-6.9%±12.7 v -7.5%±15.4, p=.52)

**Conclusions:** These results demonstrate 19% of women with no or minimal CAD showed abnormal phosphorus metabolism during mild handgrip exercise. Interestingly, despite having a high number of traditional risk factors for obstructive CAD, there were no correlations between the risk factors and the <sup>31</sup>P results. This suggests a non-atherosclerotic mechanism for symptoms in this patient population.

**Mean ΔPCr/ATP with ≤20% Stenosis by Risk Factor**

	Hx Hypertension (n=45)	Fam Hx CAD (n=43)	BMI >30 (n=45)	Current Smoker (n=45)
Risk Absent	-10.0±15.2	-17.7±14.5	-4.2±12.1	-5.7±14.7
Risk Present	-4.0±12.9	-3.5±13.0	-10.4±16.2	-11.2±11.4
p(Wilcoxon)	0.18	0.008	0.09	0.22

1207-150 **Peripheral Arterial Tonometry: A New Method for Improving the Diagnosis of Exercise-Induced Myocardial Ischemia**

**Jacob Sheffy**, Pierre Chouraqui, Itzik Dvir, Alan Rozanski, Alexander Arditti, Jerome Saef, Robert P. Schnall, *Itamar Medical Ltd, Caesarea, Israel.*

**Background:** This study examines a possible link between exercise induced myocardial ischemia and peripheral arterial tone (PAT) changes, and evaluates the possible added diagnostic value this might have when combined with stress ECG, using SPECT diagnosed exercise induced myocardial ischemia as a reference.

**Methods:** Pulsatile volume changes of the finger's arterial vessels were recorded using a new finger plethysmograph based device specifically designed to optimize the measurement. Studies were performed in a double blind fashion in 1085 patients (78% males), age 56 +/- 11, referred for diagnostic exercise stress testing with SPECT at 4 centers in the US and Israel. A subset of 345 patients was randomly selected as a training set to develop an automated algorithm, based on PAT signal features and ECG result, for identifying myocardial ischemia.

The method's effectiveness was then validated in the remaining 740 patients (validation set).

**Results:** Of these 740 patients 708 completed the study according to protocol. Less than 1% of patients were non-diagnostic by PAT, 6.8% of the ECG tests were non-diagnostic and 10.7% equivocal. PAT analysis was combined with ECG results when ECG was either ischemic, non-ischemic or equivocal and was used without ECG when classified as non-diagnostic. An overall two state score of normal or abnormal was determined.

A receiver operating characteristics (ROC) curve describing the sensitivity vs. specificity for the PAT data was constructed. At a specificity of 68%,(equal to that of the ECG), PAT combined with ECG gave a sensitivity of 62% compared to 44% for the ECG alone (p<0.001). This improvement was similar to that of the training set (20%).

While only 82.5% of patients obtained conclusive ECG outcomes, ECG combined with PAT gave a conclusive diagnosis for over 99%, while maintaining improved accuracy.

**Conclusion:** PAT is a new, simple noninvasive method which may improve the diagnosis of exercise induced myocardial ischemia when used with ECG exercise stress testing. Improvement was shown by both enhancing sensitivity without impairing specificity, and by increasing the percentage of definitive test results.

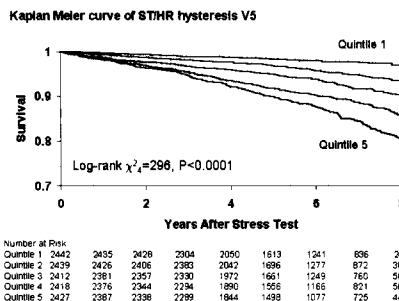
1207-151 **ST-Segment Heart Rate Hysteresis as a Predictor of Mortality**

**Michael S. Lauer**, Peter Okin, Jari Viik, Claire E. Pothier Snader, Christopher R. Cole, Eugene H. Blackstone, Rami Lehtinen, *Cleveland Clinic Foundation, Cleveland, Ohio, Tampere University and University Hospital, Tampere, Finland.*

**Background:** ST/HR hysteresis is a computer-derived measure of the average difference in ST-segment depression at equivalent heart rates during exercise and the first three minutes of recovery. Its ability to predict all-cause mortality as compared to other ST-segment measures has not been assessed.

**Methods:** We followed 12,138 patients (age 57±11 years, 71% men) for 6 years. All had interpretable ST-segments, while none had heart failure, valve disease, or atrial fibrillation. ST/HR hysteresis and ST/HR index were measured in 6 leads (inferior and lateral) based on recordings obtained every 10 seconds during exercise and recovery.

**Results:** During follow-up there were 942 deaths. By model chi-square values, ST/HR hysteresis measured in lead V5 was the strongest predictor of death, while ST/HR index and standard ST measures were weaker. Values of ST/HR hysteresis in lead V5 by quintiles were < -1.25, -1.24 to -0.68, -0.67 to -0.30, -0.29 to 0, and > 0 mV, respectively. Increasing ST/HR hysteresis was predictive of death (Figure).



Even after adjusting for age, gender, standard risk factors, cardiac history, exercise capacity, and exercise heart rate changes, and taking into account an age interaction, ST/HR hysteresis remained predictive of death (adjusted risk ratio [RR] quintile 5 to quintile 1 for age ≥ 65 RR=1.6, 95% CI 1.3-1.9; for age < 65 RR=3.9, 95% CI 2.6-5.8; both P<0.0001). **Conclusion:** ST/HR hysteresis is an independent predictor of death and predicts death better than ST/HR index or standard ST measures.

Cardiac Function and Heart Failure