Variable	RTD	Variable	RTD
QTD (n = 17)	0.67**	T-peak-to-T-end$_{endo}$ (n = 11)	0.63*
QTcD (n = 17)	0.58*	QT peak/QT$_{endo}$ (n = 11)	0.69*
T wave area (n = 17)	0.12	QTp/QT (V3)$_{endo}$ (n = 11)	0.77**

Results: The table shows the correlations of RTD with selected ECG dispersion variables (**p < 0.01, *p < 0.05). T wave area discriminated between LVH and normals but did not correlate with RTD. QTD and related variables were able to discern LVH only when U waves were included in the measurements.

Conclusion: QTD and the T-peak-to-T-end interval correlate reasonably well with myocardial dispersion as does the QTpeak/QT ratio from a single lead (V3).

1106-96 Apoptosis of Myocardial Cell Is Associated With the Abnormal Signal-averaged ECG in Patients With Idiopathic Dilated Cardiomyopathy

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Background: Abnormal signal-averaged ECG (SAE) in idiopathic dilated cardiomyopathy (DCM) was reported to be associated with increased myocardial fibrosis, which might be induced in part by apoptosis of myocardial cell. To elucidate the pathogenesis of the abnormal SAE in DCM patients, we examined the relation between apoptosis and abnormal SAE in 24 DCM patients.

Methods: Spectral turbulance analysis of SAE was performed using Del Mar Avionics 183 CEWS. SAE was defined as abnormal if at least 3 of 4 standard parameters (low slice correlation ratio, interslice correlation mean, interslice correlation standard deviation and spectral entropy) were beyond the normal range, according to Kelen's criteria. Left ventricular endomyocardial biopsy was performed, and the expression of apoptosis of myocardial cells was examined by use of immunofluorescence-staining (by TUNEL method). The number of positive stained cells per 10 different high power field (HPF) (x 400) randomly selected was counted over all specimens.

Results: Twelve of 24 DCM patients had abnormal SAE. The mean number of apoptosis positive stained cells was significantly greater in patients with abnormal SAE than those with normal SAE (15.8 ± 16.3 vs 4.0 ± 6.2 count/HPF, p < 0.03). On the other hand, 11 of 24 DCM patients had ventricular tachycardia (VT). DCM patients with VT had more apoptosis positive stained cells than those without VT (17.1 ± 16.8 vs 3.9 ± 4.9 count/HPF, p < 0.02).

Conclusion: Apoptosis of myocardial cells might be involved in genesis of abnormal SAE in DCM patients.

1106-97 Prediction of the Effectiveness of Long-term β-Blocker Therapy for Dilated Cardiomyopathy by Signal-averaged Electrocardiography: A Prospective Study

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Abnormal signal-averaged electrocardiograms (SAE) in dilated cardiomyopathy (DCM) was reported to be associated with increased myocardial fibrosis. To elucidate whether the effectiveness of long-term β-blocker therapy for DCM could be predicted by SAE, we prospectively studied 16 consecutive DCM patients without bundle branch block. At the entry, 8 of the 16 patients had normal SAE, which was defined in our retrospective study to have more than two following findings, "filtered QRS duration > 130 ms", "root-mean-square voltage of the terminal 40 ms < 20 μV", or "low amplitude signal > 40 ms", and the remaining 8 patients had abnormal SAE. The effectiveness of long-term β-blocker therapy was assessed again by echocardiography 12 months after the administration of metoprolol. Left ventricular end-diastolic dimension significantly decreased (64.0 ± 9.1 to 56.8 ± 6.4 mm, p < 0.01) and ejection fraction significantly increased (0.328 ± 0.014 to 0.526 ± 0.119, p < 0.01) in patients with normal SAE, while there were no significant changes in left ventricular end-diastolic dimension (63.1 ± 3.2 to 61.8 ± 5.2 mm) or ejection fraction (0.401 ± 0.091 to 0.424 ± 0.114) in patients with abnormal SAE. Seven of the 8 patients with normal SAE showed a good response to the β-blocker therapy (showing an increase in ejection fraction of ≥0.10), while 6 of the 8 patients with abnormal SAE showed a poor response without such improvement. A significant relation was observed between SAE findings and the effectiveness of the β-blocker therapy (chi-square = 6.24, p = 0.01). Normal SAE gave a sensitivity of 78% and a specificity of 86% for the detection of the β-blocker therapy responder. Thus, SAE could be useful for prediction of the effectiveness of long-term β-blocker therapy for DCM.

1107 Electrocardiographic Changes With Exercise

Tuesday, March 31, 1998, 9:00 a.m.–11:00 a.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 10:00 a.m.–11:00 a.m.

1107-71 A Chest Pain Center Stress Testing Algorithm: A One-Year Experience

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Background: There is limited experience in stress test selection for patients undergoing a rapid evaluation for acute cardiac ischemia (ACI) in a Chest Pain Center (CPC). To minimize inconclusive results and maximize the efficiency of a rapid diagnostic evaluation, patients were prospectively selected by use of an algorithm for an individually appropriate stress test.

Methods: We evaluated 1,927 patients in the CPC following a non-diagnostic emergency evaluation for ACI from February 1, 1996 through February 10, 1997. All patients underwent various prospectively selected provocative testing per algorithm if results would impact clinical decision making. Fourteen day follow-up was obtained for all clinical events, hospitalizations, further tests, and subsequent diagnosis.

Results: Of the patients transferred to the CPC, 1,599 underwent further provocative testing. Additional testing was inappropriate in 328 patients. The diagnostic rate was 99% (1069/1080) for stress echocardiography, 95% for standard GXT (321/337), 98% (127/130) for dobutamine echo, and 100% (35/35) for stress thallium. At 14 day follow-up 9/16 and 4/11 non-diagnostic GXT and SE patients respectively, had received a final diagnosis of ACI, of which 1/9 and 1/4 underwent revascularization. Following a negative test, mortality was zero and rate of MI was 0.07% at 14 days.

Conclusion: A prospectively directed stress test algorithm can reduce the number of non-diagnostic stress tests. A non-diagnostic stress test has a high rate of subsequently developing ACI and requires close follow-up.

1107-72 Does Age Affect the Predictive Value of the Magnitude of Exercise-related ST Depression for Thallium Results in Women?

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Background: Women are known to have a high incidence of false positive EKG exercise tests. Older women have an increased incidence of coronary disease, which by Bayesian analysis would be expected to affect the predictive value of exercise parameters. In this study, the SPECT Th-201 scans of 144 women with ≥1 mm ST depression (horizontal/downsloping) during symptom-limited exercise (treadmill) thallium testing were reviewed to determine the usefulness of the magnitude of exercise-related ST depression for predicting thallium results and the effect of age on this parameter.

Methods: Patients with baseline ST-T changes or a prior abnormal exercise test as a reason for referral were excluded. The group was stratified based on age (above or below 65 years) and the degree of ST depression (1–2 mm vs >2 mm). The incidence of reversible thallium defects (ThPOS) was then determined for each group.

	1–2 mm ST depression	>2 mm ST depression	P
AGE ≤ 65	12/63 ThPOS (19%)	7/23 ThPOS (30%)	NS
AGE > 65	14/40 ThPOS (35%)	8/18 ThPOS (44%)	NS

Results: There was no significant difference in the incidence of reversible thallium defects between women with 1–2 mm ST depression and women with >2 mm ST depression (26/103 vs 15/41, P = NS). Despite the higher prevalence of ThPOS in women >65 years compared to women ≤65 years (40% vs 22%, P = 0.06), the magnitude ST depression did not have significantly greater predictive value for ThPOS in either age group.

Conclusion: In women with an abnormal exercise EKG, increased magnitude of ST depression (1–2 mm vs >2 mm) does not result in significant additional predictive value for thallium results. Increased age (≤ 65 years vs >65 years) affects the incidence of ThPOS, but does not result in a significant increase in the predictive value of magnitude ST depression for thallium results.

1107-73 ST Heart-rate Slope Indices Are Better Predictors of Functionally Significant Coronary Artery Disease Than ST Alone

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Heart-rate (HR) correction of the ST segment response to exercise (Ex) may