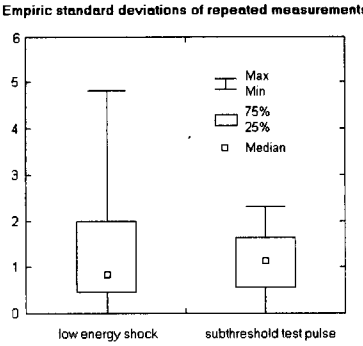
shock (CC=0.73, 95% CI 0.54 to 0.85). Box plots (figure) illustrate intra-individual variability of HVI measurements.



Conclusions: Compared to a low energy shock, HVI measurements using a subthreshold test pulse have a) higer reproducibility and b) higher correlation to HVI measurement using high energy shocks. Safe and painless HVI testing with a subthreshold pulse might therefore help to detect ICD lead failure during routine follow-up.

1092-116 Safety and Efficacy of Coronary Sinus Venography During Iatrogenic Asystole for Biventricular Pacing

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Background: Coronary sinus (CS) anatomy is usually visualized prior to placement of a CS branch lead for left ventricular (LV) pacing. Three methods of coronary sinus venography (CSV) were compared, for safety and efficacy, in 42 patients (pts) undergoing biventricular device implant.
Methods: All pts had congestive heart failure, QRS>120msec, and a mean LVEF of 22.8 ± 7.6% (95% confidence interval). 35 were male. Three methods of CSV were assessed: injection into the main CS during normal sinus rhythm (CSV-NSR), injection during asystole induced with adenosine 6-18mg IV (CSV-A), and balloon-occlusive venography (BOV) using a Swan-Ganz catheter to occlude the CS during distal injection. A total of 87 venograms were compared for adequate visualization of the target branch (where LV lead was placed), and total number of branches seen. The location of the target branch with each method was also assessed.
Results:

	CSV-NSR (n=41)	CSV-A (n=25)	BOV (n=21)
Branches visualized (95% CI)	0.9 ± 0.8	1.8 ± 0.9*	2.4 ± 1.0**
Target branch visualized (95% CI)***	12/41 (18.1% - 45.4%)	20/26 (60.6% - 91.3%)	19/20 (75.1% - 98.8%)
Target branch location, anterior/ lateral	9/12 (75% lateral)	14/19 (74% lateral)	9/21 (43% lateral)

*p<.001 vs CSV-NSR **p= .026 vs CSV-A, paired t-test, 95% CI, ***exact binomial distribution
2 pts suffered minor CS dissection from BOV; 4 pts had a temporary rise in serum creatinine following contrast injection.
Conclusion: 1) CS injection in asystole is the preferred method of CSV, particularly when lateral lead placement is desired; 2) balloon occlusive venography is frequently necessary for anterolateral lead placement, but carries a slightly higher risk.

POSTER SESSION

1093 Noninvasive Testing: Measuring Ventricular Repolarization

Monday, March 18, 2002, 9:00 a.m.-11:00 a.m.
Georgia World Congress Center, Hall G
Presentation Hour: 10:00 a.m.-11:00 a.m.

1093-105 Depolarisation and Repolarization Heterogeneities Differ Between Men and Women

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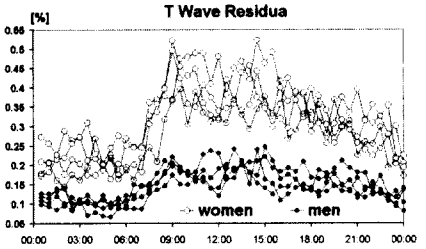
The non-dipolar ECG components (i.e. components that do not represent the cardiac dipole) reflect local electrical irregularities (i.e. electrical heterogeneity). We compared the non-dipolar components of the QRS (QRS residua, QRS-R) and of the T wave (T wave residua, T-R) and their circadian pattern in healthy men and women.
Methods: 24-hour 12-lead digital ECGs (SEER MC, GE Marquette, one ECG every 30 seconds) were recorded 4 times (at baseline, after 1 day, 1 week and 1 month) in each of 46 healthy subjects (22 men, age: men 27±7 years, women 27±8 years). QRS-R and T-R were calculated using singular-value decomposition and were expressed as proportion (%) of the whole energy of the ECG signal.
Results: In all 4 recordings, T-R were significantly greater in women (0.31±0.01 vs 0.15±0.005%, p<0.0000001), while QRS-R were significantly greater in men (0.46±0.003 vs 0.32±0.002%, p<0.0000001). T-R exhibited circadian pattern with midday peak (09:00-15.00), which was more pronounced in women (Figure). There was no detectable circadian pattern of QRS-R.
Conclusions: Depolarisation and repolarisation heterogeneity are gender-dependent. Repolarisation heterogeneity is greater in women, while depolarisation heterogeneity is greater in men. Unlike depolarisation, repolarisation heterogeneity exhibits circadian pattern. These findings might have a link to the gender differences in repolarisation-related ventricular arrhythmias and to the circadian pattern of the frequency of cardiac events.



1093-106 Characteristics of Activation Recovery Interval Dispersion From the Whole Chest in Normal Children and in Children With Prolonged QT

Naomi Izumida, Yuh Asano, Shouzaburoh Doi, Hiroko Wakimoto, Tadahiro Yoshikawa, Masatoshi Imamura, Natsuko Suzuki, Seiko Kawano, Tohru Sawanobori, Masayasu Hiraoka, *Tokyo Medical and Dental University, Tokyo, Japan.*

Background: To determine inhomogeneity in ventricular repolarization, which relates to the genesis of arrhythmias, QT dispersion of 12 leads ECG has been used. However, it has several problems as difficulty of offset determination of T wave and small number of leads to cover entire heart. Activation recovery interval (ARI) well correlates to the local action potential duration and it can be determined more accurately as a peak of first derivative (dV/dt) wave during STT than T wave offset. Therefore we studied the usefulness of ARI dispersion from 87 leads on whole chest in children.
Method: As to control values, 100 healthy children of 0-15 years old were compared to 20 children with QT prolongation (PQT: QTc> 0.45) of 6 -15 years old. Healthy children were divided into 3 subgroups by age. Children with PQT were classified into asymptomatic with no family history (aPQT group, 15 cases) and those with syncope or familial history (sPQT group, 5 cases). ECGs of 87 leads on whole chest were recorded using a mapper (HPM-6500 or VCM-3000) and ARI was measured as the interval between minimum dV/dt during QRS and maximum dV/dt during ST-T. ARI dispersion (ARId) was defined as a difference of the maximum and the minimum value of ARI of 87 leads and the values were also corrected by Bazett formula (ARIcd).
Results: Heart rate, ARId, and ARIcd of 0-4 years subgroup (37cases) were 103±13 beat/min, 116±25 ms, and 152±30 ms (mean ± SD), respectively. In 5-9 years subgroup (35 cases), they were 84±10, 129±16, 153±22, and 10-15 years subgroup (28 cases) 76±14, 130±17, 145±21, respectively. In control group, heart rate and ARId changed with age, whereas ARIcd showed the constant value independent of age. In 14 of 15 aPQT group, ARId and ARIcd were within mean±2SD values, whereas ARId and ARIcd in sPQT group were larger than mean+2SD values of age matched control subgroup. The sensitivity, specificity, and accuracy of ARId and ARIcd for detection of sPQT group were 100%, 83%, and 95%, respectively.
Conclusion: ARId and ARIcd were significantly large in symptomatic prolonged QT children. ARId and ARIcd may reflect inhomogeneity of the repolarization and they are applicable to predict the risk of children with prolonged QT.

1093-107 Beta-Adrenergic Influences on T Wave Alternans During Pacing in Patients With and Without Ventricular Tachyarrhythmia

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Backgrounds: T wave alternans (TWA) is a measure of ventricular vulnerability. Relation of TWA to adrenergic activity is not assessed clinically. This study was to evaluate (1) whether adrenergic influence on TWA is observed clinically, and if so, (2) whether responses of TWA to changes in adrenergic activity are relevant to patients (pts) with ventricular tachyarrhythmia (VT).
Methods: 35 pts (28 M, 7 F; 58+/-14 years) consisted of 24 with supraventricular arrhythmia and 11 with VT are included. The magnitude of TWA in lead Vector Magnitude (eMV) was measured during atrial pacing of 90 and 110 ppm. Adrenergic influence on TWA was examined comparing eMV of on baseline and after 2 mg/kg of propranolol (PRO) infusion. In 12 pts (5 with VT, 7 without VT), eMV was also measured during 0.01 microgram/kg/min of isoproterrenol (ISP) infusion.
Results: The eMV in whole 35 pts decreased from 1.42+/-1.14 to 0.61+/-0.87 (p<0.05) by PRO at 110 ppm, and ISP increased to 3.64+/-3.25 . Effect of PRO and ISP on eMV in pts with and without VT were summarized in Table. On baseline, eMV was larger in VT pts (p<0.05). However, after PRO, a greater diminution of eMV was observed in VT pts (p<0.05). Contrarily, ISP caused a lesser increase of eMV in VT pts.
Conclusion: TWA was regulated, at least partly, by beta-adrenergic activity. Characteris-