

11:15

"QUALITY OF LIFE": AUTOMATIC CARIOVERTER DEFIBRILLATOR VERSUS DRUG THERAPY IN PATIENTS WITH MALIGNANT VENTRICULAR ARRHYTHMIAS

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The automatic cardioverter defibrillator (ACD) is superior to drug therapy (D) in preventing arrhythmic death. However, the impact of the ACD compared to D on "quality of life" (Q) is unknown. We compared the responses to the Sickness Impact Profile (SIP) a mean of 15 ± 12 months after initiation of electrophysiologic guided treatment for ventricular arrhythmias in 13 pts treated with ACD alone, 30 pts treated with D alone, and 17 patients treated with ACD and D. SIP is a standardized questionnaire designed to assess Q. The higher the numerical score, the greater the impact of illness on Q.

Treatment	SICKNESS IMPACT PROFILE SCORE		
	Psychosocial	Physical	Overall
ACD	9.5 ± 9.2	5.2 ± 5.4	10.5 ± 8.7
D	12.8 ± 16.5	7.4 ± 9.1	12.5 ± 11.2
ACD+D	10.1 ± 12.4	7.4 ± 9.1	12.7 ± 14.1
P Value	NS	NS	NS

Conclusion: In pts with malignant ventricular arrhythmias, the impact of illness on Q is similar in pts treated with ACD and D. ACD treated pts do not appear to experience any more psychosocial problems than D treated pts.

11:30

TRANSIENT ELECTRICAL STORM: PROGNOSTIC SIGNIFICANCE OF VERY NUMEROUS AUTOMATIC DEFIBRILLATOR DISCHARGES

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The occurrence of very frequent defibrillator discharges might be expected to herald a poor prognosis, or subsequent persistent rhythm instability. We identified a group of 12 patients (pts), from a total of 130 pts with automatic implantable defibrillators (AICD) and coronary artery disease, who have experienced an episode of ≥10 appropriate AICD discharges within 48 hours, without associated acute myocardial infarction. The group includes 9 men and 3 women, average age 65 years. The episode of very numerous discharges occurred 7.2±9.4 (range .25-28) months following AICD implantation. Pts experienced 25±18 discharges (range 10 to 59) during a 48 hour period. Prior to that period, the frequency of discharges had been 1±2 per month. Eleven pts had a subsequent change in antiarrhythmic drug therapy, and one had a change in drug therapy for congestive heart failure. One pt also had reprogramming of an antitachycardia pacemaker. With a followup of 22±13 months since that time, no pt has died or experienced myocardial infarction. One pt was hospitalized for unstable angina 12 mo after the episode, and 2 for congestive heart failure 4 and 12 mo after the episode. One pt had been awaiting heart transplantation since the time of AICD implantation, and has since received a transplant. The frequency of AICD discharges since the episode has been 0.2±0.3 per month.

We conclude that an episode of extreme rhythm instability in pts with an AICD and coronary artery disease may reflect transient "electrical storm", and is not necessarily a harbinger of poor prognosis. Empiric changes in antiarrhythmic therapy may be useful in restoring a relatively stable rhythm.

11:45

INCIDENCE OF ANTIARRHYTHMIC DRUG USE IN AICD PATIENTS WITH HIGH DEFIBRILLATION THRESHOLDS

Andrew Epstein, G Neal Kay, Sharon Dailey, Vance Plumb, Kenneth Ellenbogen, Andra Thomas, David Cannom, Peter Chapman, Debra Echt, Richard Fogoros, John Hummel, Joseph Levine, James Maloney, Gerald Naccarelli, and Enrico Veltri. The University of Alabama at Birmingham, Birmingham, AL.

To characterize patients (pts) with high defibrillation thresholds (DFTs) at automatic implantable cardioverter-defibrillator (AICD) implantation, 52 pts from 12 centers with DFTs ≥25J were reviewed. The mean age was 60.3±10.4 years, 54 were male, 41 had ischemic heart disease, 11 nonischemic cardiomyopathy, 3 valvular heart disease, and 1 a normal heart. The presenting arrhythmia was ventricular tachycardia in 30 pts, ventricular fibrillation in 9 pts, and both in 17 pts. The mean ejection fraction was 0.32±0.12 (range 0.11-0.66) and the NYHA class 1.8±0.8. Patch (P) implantation was by: lateral thoracotomy-37 pts, sternotomy-7 pts (4 had coronary bypass, 2 with left ventricular aneurysmectomy), subxyphoid approach-5 pts, subcostal approach-3 pts, and previously placed Ps-2 pts (2 not reported). Ps were extrapericardial in 29 pts (52%). Lead configurations tested (often >1/pt) were: large P (LP)-LP-34 pts, LP-small P (SP)-22 pts, LP-SP-3 pts, LP-spring-12 pts, and SP-spring-6 pts. Final DFTs were: ≥25J-all pts, ≥30J-36 pts, and ≥40J-18 pts. Despite high DFTs, 43 (77%) pts received AICDs, 32 at initial operation. At operation 40 (71%) pts were receiving antiarrhythmic drugs (AADs): Class 1 AADs in 9 (16%) pts, and amiodarone (A) in 31 (55%) pts (alone-20 pts, with 1 class I drugs-8 pts, PA/Mex-1 pts, and in a blinded study-2 pts). In a comparison group of pts with 13,650 AICDs in the manufacturer's voluntary registry, AADs were used in 5,115 (37.4%, p<0.001) and A in 2,801 (20.5%, p<0.001). By 26±23 months, 25 (58%) pts received shocks (19 appropriate) and 9 pts died (5 CHF, 1 perioperative, 1 arrest, 1 suddenly, and 1 cause unknown). Thus: AADs, especially A, are associated with high DFTs and should be used with caution in pts treated with AICD therapy.

Thursday, March 7, 1991

**10:30AM-12:00NOON, Room 215, East Concourse
Physiology of Exercise and Left Ventricular Performance**

10:30

SEISMOCARDIOGRAPHY FOR MEASUREMENT OF LEFT VENTRICULAR PERFORMANCE AT REST AND IMMEDIATELY POST EXERCISE.

Richard Crow MD, David M. Salerno MD PhD FACC, Peter Hannan MStat, John M. Zanetti MS Univ. Minnesota and Hennepin County Medical Center, Minneapolis, MN.

The Seismocardiogram (SCG) is a non-invasive method for recording ultra-low-frequency cardiac vibrations using an accelerometer. Points on the SCG waveform correlate with left ventricular valve opening and closure and are used to quantitate systolic and diastolic events. Fifty-eight low risk asymptomatic subjects, 36 males and 22 females, had SCG at rest and within 2 minutes following symptom limited exercise. SCG waves were measured using a semi-automated program to derive amplitudes, slopes and heart rate adjusted intervals related to total electromechanical systole, left ventricular ejection time (L.VET), prejection period (PEP), PEP/LVET, amplitudes of rapid diastolic filling and atrial systole. We present the following subset of rest and exercise data from cardiac systole and diastole.

Measurement	Literature		SCG	
	Rest Value	Exercise Value	Rest Value	Exercise Value
Total systole(ms)	424(15)	NA	424(21)	416(23)
LV ejection time(ms)	317(13)	NA	322(11)	324(14)
Prejection period(ms)	108(12)	NA	102(11)	100(14)
PEP/LVET	.34(.09)	NA	.32(.05)	.31(.09)
Rapid diastolic filling(g's)	NA	NA	.07(.06)	.06(.05)
Atrial systole(g's)	NA	NA	.06(.04)	.06(.04)

These data agree well with literature systolic values taken at rest. The SCG provides a simple, non-invasive method to record systolic and diastolic function at rest and immediate post exercise. These data provide a normal background to judge rest and exercise left ventricular function by SCG in patients with heart disease.

ms = milliseconds
() = standard deviation
NA = not available
g's = force of gravity