

## POSTER SESSION

1091

**Predictors of Implantable Cardioverter Defibrillator Therapy**

Monday, March 08, 2004, Noon-2:00 p.m.  
 Morial Convention Center, Hall G  
 Presentation Hour: 1:00 p.m.-2:00 p.m.

1091-207**Primary and Secondary Prevention Implantable Cardioverter Defibrillator Patients Have Similar Proportions of Ventricular Tachyarrhythmia Detections and Equivalent Risk for Spurious Therapies: Results From PainFREE Rx II**

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**Background:** ICDs reduce mortality in primary (Prim) and secondary (Second) prevention pts. However, "overtreatment" in Prim remains a concern, potentially at the cost of spurious therapies for inappropriate ventricular detections due to SVT. We compared appropriate and inappropriate ventricular detections in 584 pts (Prim = 202, 35%; Second = 382, 65%) in PainFREE Rx II, a prospective randomized study of antitachycardia pacing (ATP) or shocks for fast VT (FVT).

**Methods:** All ICDs were identically programmed at implant with 3 zones (VT < 188 bpm; FVT = 188-250 bpm; VF > 250 bpm) but with either ATP or shock for FVT. An expert panel adjudicated all detected episodes that had stored electrograms. GEE methods were used to account for multiple episodes/pt and are reflected in percentages and p-values.

**Results:** Prim pts were significantly older, had lower EF and more CAD. Gender, b-blockers, antiarrhythmic drugs, and length of follow-up were similar between groups. During follow-up of 11 ± 3 months, 1670 ventricular episodes were detected as: 738 VT, 391 FVT, 123 VF, and 418 SVT. The distribution of VT, FVT, and VF was similar between Prim vs Second (VT: 99/276 [44%] vs 639/976 [46%], p=0.77; FVT: 138/276 [41%] vs 253/976 [39%], p=0.71; VF: 39/276 [15%] vs 84/976 [14%], p=0.86). Proportion of pts with ≥1 appropriate episode was similar in Prim vs Second (21% vs 27%, p=0.13). But among pts with appropriate episodes, the median number of episodes per pt was significantly lower for Prim than for Second (1 vs 3, p=.05). The proportion of pts with ≥1 inappropriate episode was similar in Prim vs Second (16% vs 15%, p=0.81), and the proportion of inappropriate episodes was greater in Prim but the difference was not significant (Prim, 121/397 [42%] vs Second, 297/1273 [34%], p=.21).

**Conclusions:** Similar proportions of Prim and Second pts have appropriate detections for potentially life-threatening VT, FVT and VF but with less frequency in Prim. Inappropriate detections account for more than one-third of all ventricular episodes in both groups. Prim pts do not appear to be "overtreated" compared to Second pts and are at equivalent risk for spurious therapies.

1091-208**Syncope in Implantable Cardioverter Defibrillator Patients: Predictors and Outcomes**

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**Background:** The ability of ICD to terminate ventricular tachyarrhythmias and to reduce the rate of sudden death is well established. However, syncope may still occur and impact quality of life and survival. The purpose of this study was to identify predictors of syncope development in patients with ICD therapy using clinical and electrophysiological characteristics.

**Methods:** We retrospectively reviewed a prospectively collected ICD database of 309 pts with primary ICD implants at our institution between 1999 and 2002. 139 pts developed ICD therapy during a mean follow-up period of 21.7±11.6 months. There were 108 males and 31 females (av. age 65.2±11.8) with the following presenting arrhythmias: 56 (40.3%) - sustained monomorphic ventricular tachycardia (MVT); 19 (13.7%) - ventricular fibrillation (VF), 44 (31.7%) - non-sustained ventricular tachycardia (NSVT); and 20 (14.4%) - syncope. Groups of pts with syncope during ICD therapy and without syncope were compared for clinical and electrophysiological variables and outcomes.

**Results:**

| Variables                       | Syncope n=30 | No Syncope n=109 | P-value |
|---------------------------------|--------------|------------------|---------|
| Age                             | 65.3±10.8    | 63.6±12.5        | 0.463   |
| Gender M/F                      | 23/7         | 85/24            |         |
| Lowest EF %                     | 23.1±15.6    | 30.7±16.8        | 0.05*   |
| Inducible VT (%)                | 15 (50%)     | 77(70.6%)        | 0.05*   |
| Ischemic Heart Disease          | 21(70%)      | 74(67.9%)        | 0.83    |
| ICD treated VT cycle (ms)       | 237.5±50.1   | 309.3±32.55      | 0.001*  |
| More than 1 shock of ICD        | 5(16.7%)     | 29(26.6%)        | 0.22    |
| ICD proarrhythmia %             | 5 (16.7%)    | 7 (6.4%)         | 0.05*   |
| Syncope at presentation %       | 18 (60%)     | 42 (38.5%)       | 0.042*  |
| Mortality %                     | 11 (36.7%)   | 19(17.4%)        | 0.05*   |
| Mortality in less than 6 months | 2/11(18.2%)  | 6/19 (39.6%)     | 0.42    |

\* p < 0.05

**Conclusions:** Syncope is not uncommon at the time of ICD device therapy and occurs in older patients with more depressed EF. Patients with syncope during ICD therapy are more likely to have syncope at presentation. ICD related proarrhythmia occurs more frequently, and the rate of ICD treated VT is faster in patients with syncope. The total mortality also appears to be greater in ICD patients who experience syncope at the time of device therapy.

1091-209**Cardiac Resynchronization Therapy Results in a Lower Arrhythmia Burden**

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**Introduction:** Patients at high-risk for ventricular tachycardias due to dilated cardiomyopathy who are treated with an Implantable Cardioverter Defibrillator (ICD) may progress to severe heart failure. These patients may become eligible for cardiac resynchronization therapy (CRT) by means of biventricular pacing. We hypothesized that CRT can affect the number of arrhythmic events. The aim of this study was to evaluate whether long-term CRT influences the number of ventricular tachycardias in patients with dilated cardiomyopathy implanted with a CRT-ICD.

**Methods:** Seventeen ICD patients (13 men, age 60 ±11yrs, 59% ischemic heart disease) were studied. The NYHA class was 3.2±0.4, with a left ventricular ejection fraction (LVEF) of 19.5±7 %. Each patient underwent an upgrade to a CRT-ICD device. The number of ICD therapies was obtained by analyzing the ICD printouts, which were acquired every 3 months during the year before and the year after upgrading. Clinical data were obtained during outpatient clinic visits and by chart-review.

**Results:** At 12-month follow-up after CRT treatment NYHA class improved to 2.2±0.5 (p<0.01) and LVEF improved to 23.5±9% (p<0.01). During the year before implantation of the ICD-CRT device, 8 of 17 patients (47%) experienced 242 VT episodes. After implantation of the CRT device 3 of 17 patients (18%) experienced 19 VT episodes (p =0.01). None of the patients experienced an episode of ventricular fibrillation during the evaluated period.

**Conclusion:** Upgrade to CRT-ICD improves heart failure status and LVEF, and reduces the number of ventricular arrhythmias.

1091-210**The World Trade Center Attack: Increased Frequency of Defibrillator Shocks for Ventricular Arrhythmias in Patients Living Remotely From New York City**

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**Background:** A two-fold increase in the frequency of implantable cardioverter defibrillator (ICD) shocks for potentially life-threatening ventricular arrhythmias was reported among patients living in New York City in the month following the attack on the World Trade Center (WTC) compared to the month before the tragedy. However, whether this effect also occurred in patients living geologically distant from New York is unknown. We sought to determine whether the attack on 9/11/01 had an effect on the occurrence of ventricular arrhythmias among patients with ICDs living in Florida at that time.

**Methods:** This was an observational study in which the population consisted of 132 consecutive ICD patients who presented to the University of Florida and the Veterans Affairs (VA) Hospital in Gainesville, Florida for routine ICD follow-up around the time of the WTC attack. The occurrence of ventricular tachyarrhythmias that triggered ICD therapy in the 30 days before and after 9/11/01 constituted our primary end point.

**Results:** In the 30 days following the WTC attack a total of 14 patients (11%) had ventricular tachyarrhythmias, compared to only 5 patients (3.5%) in the preceding 30 days. This represents a 3.14-fold increase in risk. Patients with ventricular arrhythmias both before and after 9/11/01 demonstrated a rate increased of 2.38 events per patient (95% CI=0.05-0.40 p=0.00042)

**Conclusions:** The frequency of ventricular arrhythmias requiring ICD treatment increased by more than 3-fold among patients living in Florida around the time of the WTC attack. Moreover, patients with ventricular arrhythmias in the 30 days before and after 9/11/01 experienced at least a doubling of the rate of arrhythmia. These findings suggest that stress related arrhythmogenesis due to the WTC tragedy was not restricted to the geographical location of the attack. Additionally, the attacks likely caused more significant levels of morbidity because they affected a larger number of patients than previously estimated. A major national tragedy may cause a widespread increase risk of potentially life-threatening ventricular arrhythmias.

1091-211**Heart Rate Dynamics Before the Onset of Ventricular Tachyarrhythmias: Results of the Cardioverter Defibrillator Registry MARITA**

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**Background:** Implantable Cardioverter-Defibrillators (ICDs) are the standard therapy in patients with ventricular tachyarrhythmia (VTA) and provide a unique opportunity to analyze beat-to-beat (RR)-interval variability (HRV) before the onset of such life-threatening event. The aim of this study was to assess the ability of a Multivariate Analysis of RR-Intervals to predict these VTA (MARITA Trial).

**METHODS:** One hundred eighty-six patients (153 men, mean age 61.0±10.4) with an implanted ICD (Biotronik, 9000 RR-intervals capacity) for recurrent VTA provided 257 heart rate recordings before a VTA (94 patients) and 645 series during control conditions: recordings at follow-up date without VTA. From these time series we analysed 107 VTA and 422 control recordings which were in sinus rhythm, more than one hour long and had