

## MTWA at Cardiostim 2008

Cardiostim is an international scientific event focused on cardiac electrophysiology. It takes place every two years in June in the Acropolis Congress Center in Nice, France.

This year, several abstracts on MTWA were presented at Cardiostim. Below are summaries and key takeaways for Cambridge Heart; full abstracts are included on the following pages.

1	<b>Implantable Cardioverter-Defibrillator Shocks are not a Surrogate for Sudden Cardiac Death in Survivors of Malignant Arrhythmia</b> <b>Key Takeaway:</b> This abstract adds to the existing literature which supports the idea that ICD shocks, even those deemed appropriate, are not a good surrogate for SCD in clinical trials. This issue is particularly relevant to the MASTER trial which used ICD shocks as the primary endpoint.
2	<b>Microvolt T-Wave Alternans May be Used as a Risk Stratifier in Post Myocardial Infarction Patients without Left Ventricular Systolic Dysfunction</b> <b>Key Takeaway:</b> This abstract is an important addition to the MTWA literature because it addresses patients with preserved LV function. In a study of 52 post-MI patients with EF $\geq$ 40%, MTWA correlated with inducibility at EPS, particularly when the alternans began at a HR $\leq$ 100 bpm.
3	<b>ICD Referral Rate from a Cardiomyopathy Clinic</b> <b>Key Takeaway:</b> This abstract highlights the significance of reluctance to ICD therapy, citing patient preference as the most common reason an ICD was not implanted in otherwise indicated patients treated at a heart failure clinic in Los Angeles.

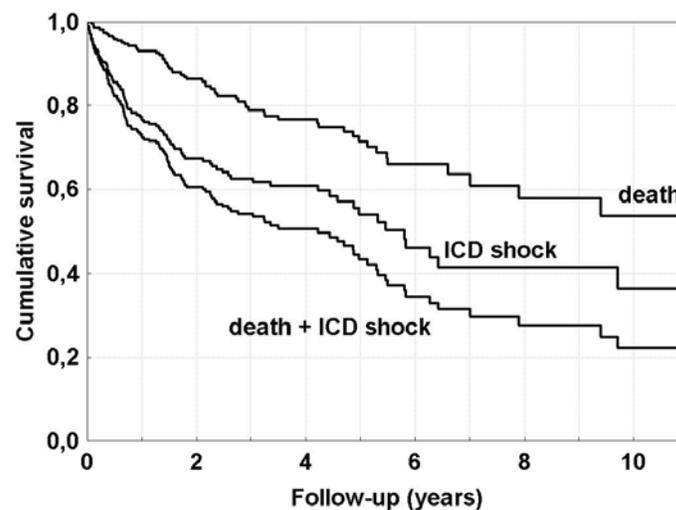
For more information on this conference, see the Cardiostim website:  
<http://www.cardiostim.fr>

**Presentation Title:** Implantable Cardioverter-Defibrillator Shocks are not a Surrogate for Sudden Cardiac Death in Survivors of Malignant Arrhythmia  
**Author Block:** Pavlikova K, Psenicka M, Anger Z, Wichterle D; Department of Cardiology and Angiology, First Faculty of Medicine, Charles University; Prague; Czech Republic

**Introduction:** It was shown that counting of appropriate ICD shocks over-estimates approximately twofold the benefit of prophylactic ICDs in patients with nonischemic cardiomyopathy. We investigated this controversial issue of equating ICD therapy with mortality in single-centre population of patients with ICD implanted for secondary prevention of sudden cardiac death (SCD).

**Methods:** Total 277 patients (231 males; age  $63 \pm 12$  yrs; 75% ischemic heart disease, LVEF  $37 \pm 12$  %) were followed for  $39 \pm 34$  months (median 28 months). Cumulative total mortality, incidence of first appropriate ICD shock, and incidence of combined endpoint (death or first appropriate ICD shock) were analyzed using Kaplan-Meier analysis and Cox regression model of proportional hazards.

**Results:** Patients experienced 376 appropriate ICD shocks. Total of 62 patients died after  $25 \pm 22$  months following the implantation. Cumulative incidence of individual endpoints is shown in the Figure. When combined endpoint was considered a surrogate for all-cause mortality in the hypothetical absence of defibrillator, ICD therapy was associated with relative risk reduction of -64% for total mortality. In the model, in which random selection of only 25% of all ICD therapies were considered an equivalent of SCD, ICD therapy was associated with relative risk reduction of -27% for total mortality that was more consistent with the findings of other secondary prevention ICD trials.



**Conclusions:** Approximately 25% of ICD shocks were life-saving in non-selected population of patients with ICD implanted for secondary prevention of SCD. Majority of ventricular arrhythmias would likely have terminated spontaneously in the absence of the ICD.

**Presentation Title:** Microvolt T-Wave Alternans May be Used as a Risk Stratifier in Post Myocardial Infarction Patients without Left Ventricular Systolic Dysfunction

**Author Block:** N. Radio, D. D Ionescu Military Hospital ,Timisoara, Roumania, Cardiology Center, Craiova, Roumania

**Background:** Microvolt T wave alternans (MTWA) has been increasingly used for Sudden cardiac death (SCD) risk assessment. Recently published studies have shown that, in patients with LVEF < 35%, MTWA has limited clinical value. We sought to know if MTWA can be used as a risk stratifier in post MI patients without left ventricular systolic dysfunction.

**Methods and results:** 52 patients, LVEF > 40%, without prior documented ventricular arrhythmias and no residual myocardial ischemia, had exercise MTWA testing, 8 to 12 weeks after acute myocardial infarction (AMI). MTWA was positive in 16 patients, negative in 25 patients and indeterminate in 11 subjects. MTWA positive patients were evaluated by programmed ventricular stimulation (PVS), with up to two ventricular extra stimuli. Rapid monomorphic ventricular tachycardia (MVT) was induced in 6 patients (37.5%) after the first extra stimulus. Inducibility of MVT was correlated with: 1. alternans onset below 100 b/min and 2. alternans voltage > 4 mV.

**Conclusions:** 1. Repolarisation alternans is associated with ventricular arrhythmia vulnerability in post- AMI patients without LV systolic dysfunction. 2. The risk of ventricular arrhythmias is greater in patients with a lower onset heart rate of significant MTWA 3. MTWA may be used as a screening test, in selecting patients for PVS and ICD implantation in post MI patients with LVEF> 40%.



CARDIOSTIM 2008 - 16TH WORLD CONGRESS  
IN CARDIAC ELECTROPHYSIOLOGY AND  
CARDIAC TECHNIQUES

**Presentation** ICD Referral Rate from A Cardiomyopathy Clinic

**Title:**

**Author Block:** Jared Salvo\*, Malcolm M. Bersohn, VA Greater Los Angeles Healthcare System, \*Cedars-Sinai Medical Center, and UCLA, Los Angeles, CA, USA

**Background:** ICDs are now indicated for primary prevention of sudden cardiac death in most patients with established cardiomyopathy with an EF <35%. This retrospective study examined the rate of ICD implantation in patients being followed in a Cardiomyopathy/Congestive Heart Failure specialty clinic at a large academic VA Medical Center, where cost was not a barrier to access.

**Methods:** All 205 patients who were seen in the VA Greater Los Angeles Healthcare System Cardiomyopathy Clinic between 1/1/04 and 11/7/06 were screened. The cardiomyopathy clinic enrolled patients with cardiomyopathy and refractory heart failure and patients post heart transplant. All patients were evaluated for appropriateness for ICD referral including the need for revascularization and the use of optimal medical therapy including beta blockers and ACE inhibitors (I) or angiotensin receptor blockers (ARB).

**Results:** Of the 205 patients that were screened, 79 were excluded for an ejection fraction greater than 35%, including 35 patients s/p heart transplant. The remaining 126 patients met current guidelines for ICD implant. They were evenly divided between ischemic and non-ischemic cardiomyopathy, had a median age of 69 and a median EF of 20%. Medical therapy included beta blockers for 98% of patients and ACEI or ARB for 94%. Of the 126, 69 (55%) had an ICD (including 29 CRT-ICDs) while 57 (45%) patients did not. Reasons that the patients were not given an ICD were patient preference (42%), not a candidate for other clinical reasons (11%), lost to follow-up (9%), initial evaluation not completed (9%), and death during medication titration (3%), but for 26% of those without ICDs there was no documentation of a decision by either patient or provider to withhold an ICD.

**Conclusions:** In a clinic specializing in heart failure management, patient choice was the most common reason that an ICD was not implanted, but one fourth of patients eligible but not implanted were never referred for an ICD. It is possible that some of these patients did not want an ICD, but that choice was not documented in the medical record. To optimize the utilization of a potentially life-saving therapy, improving provider education remains an important approach.



**CARDIOSTIM 2008 - 16TH WORLD CONGRESS  
IN CARDIAC ELECTROPHYSIOLOGY AND  
CARDIAC TECHNIQUES**