time and timing of the T wave maximal ascending slope (although ns when corrected by the heart rate).

**Conclusions:** T wave amplitude is higher, T wave slopes are steeper and initial parts of the T wave are earlier before ventricular arrhythmia compared to baseline. Detection of T wave changes prior to VT/VF might be useful in predicting imminent arrhythmia occurrence.

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**Example of T wave changes before VT**

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**Predictive factors of difficult implantation procedure in cardiac resynchronization therapy**

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No studies have been published regarding factors related to difficult CRT implantation procedure and primary left ventricular (LV) lead implant failure.

**Objectives:** The aim of this prospective study was twofold: (1) to evaluate the prevalence and predictive factors of prolonged CRT implantation procedure; (2) to identify the predictive factors of primary LV lead implantation failure.

**Methods and Results:** Between November 2008 and September 2009, 106 pts underwent primo CRT implantation. Population characteristics were a mean age of 69±10 years; 28.3% female; NYHA class 3.2±0.3; LVEF (29±6%); QRS width 146±23 ms. Primo CRT implantation was obtained in 96/106 pts (90.5% primary success). A second procedure was successfully attempted in 6/10 pts with a second more experienced operator (5.7%). Among the remaining 4 pts, 1 pt required an epicardial LV lead implantation, and the implantation was not reattempted in the other 3 pts. The overall success rate of CRT implantation was 96.2% (102/106 pts). Procedure parameters were as follows: LV threshold (1.4±0.9 V); LV wave amplitude (15±8 mV); LV impedance (874±2150 mH); median procedure fluoro time (skin to skin), 55 min. [45-80] and median of procedure fluoro time, 11 min. [6-2-29]. In 24 patients (22.6%), difficult procedures requiring 85 min of implantation duration occurred. By univariate analysis, predictive factors of difficult implantation were LV ejection fraction (25.6±6% vs. 30.2±8 %; p=0.02), LVEDD (72.4±11 vs. 66±11 mm; p=0.01), LVESD (72.4±11 vs. 66±11 mm; p=0.04) and the operator’s experience (very experienced operator vs. less experienced operator; p=0.01). By multivariate analysis, only primary LV lead implantation failure, LVESD and operator’s experience were independently associated with difficult procedures. In this patient subset with primary LV lead implant failure (n=10), the only independent predictive factor was the LVESV (p=0.03).

**Conclusions:** In this study, the rate of difficult CRT device implantation procedures approached 25%. Both the degree of LV dysfunction and the operator’s experience were independent predictors of surgical difficulties.

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**T wave alternans in short QT Syndrome**

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**Introduction:** T wave alternans (TWA) is a reliable marker of risk for malignant ventricular arrhythmias whose prognosis value has been established in many populations. Short QT syndrome (SQTS) is a recently described and very rare channelopathy defined by a decrease in repolarisation duration and carrying a risk of ventricular fibrillation. TWA in SQTS has not been evaluated at yet.

**Methods:** 6 patients with SQTS (QT 310 ± 16 ms, QTc 329 ± 11 ms) underwent microvolt TWA measurement using spectral analysis. TWA testing was performed using HeartWare II (Cambridge Heart™) during bicycle exercise and classified as negative, positive or indeterminate according to the published standards for clinical interpretation.

**Results:** there were 6 men (mean age 24 ± 2 yo): 4 asymptomatic, 1 with previous sudden cardiac death and 1 with unexplained syncope. 3 patients belonged from the same family. Familial history of SQTS was present in 4 (2 families) and history of unexplained sudden death was found in both families. Ventricular fibrillation was induced in 2 of 5 investigated patients. Two patients were implanted with an ICD without any appropriate therapy during follow-up. No patient was on any medical therapy. Genetic analysis was pending in each but without result at yet. TWA was negative in each patient except in one inductible asymptomatic patient (indeterminate due to too fast heart rate). Maximal negative heart rate was 113 ± 5 bpm.

**Conclusions:** Conversely to what is observed in other settings, TWA testing is negative in most SQTS patients even in the symptomatic or indoluble ones. This may be explained by the longer diastolic interval according to the restitution curve theory. Measurement of TWA for risk stratification in SQTS is therefore useless.

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**Outcome of patients over 75 years old receiving a pacemaker to treat sinus-node dysfunction.**

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**Background:** The prognosis of patients over 75 years old receiving a pacemaker in the context of sinus-node dysfunction is unclear.

**Objective:** This study sought to evaluate the incidences of atrial fibrillation (AF), heart failure (HF) and death in this population and the role of the pacing mode in their prognosis.

**Methods:** This was a retrospective study on 102 patients over 75 years old (mean 82.2 ± 8.6 years) who received a pacemaker in the context of sinus-node dysfunction.

**Results:** During the follow-up period (mean: 806 days), 36 patients (35.3%) experienced HF and 47 patients (46.1%) an episode of paroxysmal AF, 19 patients (18.6%) progressed to chronic AF, and 29 (28.4%) died, the fatal event being sudden death or of cardiac origin in almost half these patients (44.8%). Patients assigned to dual-chamber minimal ventricular pacing showed a significantly lower rate of HF episodes (p=0.023), and a lower all-cause mortality (p<0.001) than those assigned to conventional dual-chamber pacing. In contrast, the two groups did not differ with regard to either paroxysmal or chronic AF, regardless of whether or not the algorithms designed to prevent AF were activated.

**Conclusion:** In patients with a high risk of mortality and morbidity, the use of dual-chamber pacemakers incorporating an algorithm minimizing ventricular pacing seems to decrease the number of HF episodes and mortality. On the basis of this finding, the implantation of such devices even in this age group seems justifiable.

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**Incidental extracardiac findings on cardiac computed tomography performed before radiofrequency ablation of atrial fibrillation.**

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Background: Radiofrequency ablation has become a validated technique to cure symptomatic refractory atrial fibrillation (AF). Cardiac computed tomography (CT) is used to evaluate the left atrial (AT) anatomy in order to improve the ablation technique. The analysis of non-cardiac structures during cardiac CT may identify clinically significant incidental findings (IF). The objective of this study was to determine the prevalence of IF in patients undergoing AF catheter ablation.

Methods: Between February 2006 and March 2010, patients undergoing a procedure of AF or left atrial tachycardia (LAT) ablation were enrolled and underwent a cardiac CT scan. Extracardiac IF were considered to be present if an abnormality was identified without previous clinical suspicion or known disease.

Results: 250 patients (55.2 ± 9.6 years of age, 82.4% men) were enrolled (133 paroxysmal, 43 persistent, 58 permanent AF and 16 LAT). Fifty-eight patients (23.2%) had a total of 76 IF. Patients with IF were significantly older (59.5 ± 8.2 vs 53.8 ± 9.7 years old, p<0.001). No relationship exist between the type of arrhythmia and the existence of IF. The majority of IF were pulmonary (50%). Two lung cancers were discovered.

Conclusions: Cardiac CT scan is a useful tool to evaluate LA and pulmonary veins morphology before AF ablation. However, as a considerable prevalence of IF was found in our study, extracardiac structures should be routinely analyzed to detect unknown diseases.

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188 Characteristics and treatment of inducible flutter associated with typical atrioventricular reentrant nodal tachycardia in pediatric patients

Nicolas Lellouche (1), Kevin Shannon (2), Noel Boyle (2), Jean-Luc Dubois-Randé (1), Kalyanam Shikkumar (2)

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Background: Atrioventricular reentrant nodal tachycardia (AVNRT) and right atrial flutter could have a common area in the perinodal myocardium. We studied the occurrence of inducible flutter in pediatric patients with AVNRT or atrioventricular reentrant tachycardia (AVRT). Moreover we studied the effect of slowpathway ablation on flutter inducibility.

Methods and Results: We included 110 children (mean age=12±4 years), without underlying heart disease, previous ablation or history of atrial flutter or fibrillation, who were referred for supraventricular tachycardia ablation. Thirty-seven (34%) patients had AVNRT and 73 (66%) had AVRT. A standardized protocol of flutter induction was used in all these patients at baseline and after ablation. All patients with AVNRT had immediate successful slow-pathway ablation. Ninety-nine percent of patients with AVRT had immediate successful accessory pathway ablation. Pediatric patients with AVNRT had inducible flutter in 14% of cases whereas no patient with AVRT had inducible flutter (p=0.001). After slowpathway ablation, including a line between the low tricuspid valve and the coronary sinus ostium, no inducible flutter was found in the AVNRT and AVRT group. In the AVNRT group, patients with inducible flutter had shorter baseline AH interval (67±14 vs. 88±21 ms, p=0.04), AV Wenckebach (204±67 vs. 403±101 ms, p=0.021) and VA Wenckebach (298±48 vs. 403±98 ms, p=0.04) compared to other AVNRT patients.

Conclusion: These results suggest that AVNRT and right atrial flutter could share a common area located in the perinodal myocardium. However the slowpathway may not correspond to the slow conduction area during atrial flutter. Large slowpathway ablation could abolish flutter inducibility.

189 Similar implantable defibrillator event rates in patients with unexplained syncope and left ventricular dysfunction whatever the result of electrophysiological testing.

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Objectives: The purpose of this study was to evaluate the ventricular arrhythmias (VA) frequency in patients with unexplained syncope, ischemic or non-ischemic cardiac disease and left ventricular dysfunction (LVEF) and negative electrophysiological study (EP), implanted with cardioverter-defibrillator (ICD).

Background: According to the current guidelines, EP is performed to evaluate syncope in patients with significant altered LVEF, mainly to guide treatment by ICD. Limited data concerning incidence of ventricular events in patients with no inducible arrhythmias is available.

Methods: We evaluated 58 consecutive patients with unexplained syncope who underwent EP. All patients had a depressed LVEF (< 45 %). Sustained VA was only inducible in 28 patients (VF n=8, SMVT n=20). All patients were treated with ICD. We compared primary endpoint of severe VA in patients with negative and positive EP.

Results: Baseline characteristic were similar in the both groups. In the population (97% men), mean age was 67±10 years, 67% had ischemic cardiopathy; mean LVEF was 30±7 % in non inducible group, 32±9 % in inducible group (p = 0.16). During the follow-up (25±22 months), 22 severe VA occurred; Kaplan-Meier analysis of time to first appropriate ICD therapy for severe VA was only inducible in 28 patients (VF n=8, SMVT n=20). All patients were treated with ICD. We compared primary endpoint of severe VA in patients with negative and positive EP.

Results: Baseline characteristic were similar in the both groups. In the population (97% men), mean age was 67±10 years, 67% had ischemic cardiopathy; mean LVEF was 30±7 % in non inducible group, 32±9 % in inducible group (p = 0.16). During the follow-up (25±22 months), 22 severe VA occurred; Kaplan-Meier analysis of time to first appropriate ICD therapy for severe VA was only inducible in 28 patients (VF n=8, SMVT n=20). All patients were treated with ICD. We compared primary endpoint of severe VA in patients with negative and positive EP.

Conclusions: In patients with unexplained syncope, ischemic or non-ischemic cardiopathy and left ventricular dysfunction, severe VA occurs in the follow-up at same rate whatever the result of EP. This study suggests that these patients should be treated with ICD without doing electrophysiological testing.

190 Evolution of the gain in spontaneous conduction between atrio-ventricular delay hysteresis algorithms and a new pacing mode.

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(1) Clinique Saint Hilaire, Rouen, France - (2) Medtronic France, CRDM, Boulogne-Billancourt, France

Most of studies show the interest to decrease ventricular pacing in patients implanted with a dual chamber pacemaker (PM). Algorithms developed to search spontaneous ventricular activity consisted first in increasing AV delay.