



and the cause of syncope was not clarified. As his brother with similar ECG had died suddenly, he was prophylactically treated with an ICD. However, 14 month later he died suddenly after playing a video game. The ICD recorded VF, which was not converted despite 6 cardioversion attempts by the ICD with 30 J. Progression of myocardial damages and/or elevation of defibrillation threshold may have been the cause of unsuccessful cardioversion.

16.6 COST-EFFECTIVENESS OF CRT-ICD IN HEART FAILURE: HOSPITAL COST IN CALABRIA

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Methods: we enrolled 32 patients, QRS interval >130 ms, EF<35%, NYHA class III-IV, with HF refractory to optimal conventional therapy treated with CRT-ICD. 13 patients reached a 12 months follow-up (age 71.8±5, QRS 172±25 ms, NYHA 3.5±0.56, EF 25%±4.2). We conducted an observational study. Data were obtained retrospectively 1 year before implantation and prospectively for the year thereafter: number of hospitalisations, number of hospital days, and cost of care provided. The data obtained during the follow-up period were compared with those during the year before implantation. Hospitalisations were quantified in term of DRG analysis.

Results: statistical reduction of all measured parameters was observed. The number of hospitalisations reduced from 2.2±1.1 to 0 (p=0.007), the hospital days from 14.56±9.5 to 0 (p=0.008), NYHA class from 3.64±0.45 to 2.50±0.48, (p=0.001) and EF from 26±6% to 36.2±8.26% (p=0.001). As a result, the hospitalisations reduction yields a mean decrease of the cost per patient per year of 6,176 €, despite the initial device cost of 13,944 €.

Conclusion: CRT-ICD results in hospital cost reduction in HF patient managing, and improves patient quality of life and health status. The most interesting result of the study is a considerable reduction in the number of hospitalisations.

16.7 ARE THERE ANY PREDICTORS FOR SUCCESSFUL TRANSVENOUS VENTRICULAR DEFIBRILLATION IN ICD RECIPIENTS?

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The implantation of an ICD is the treatment of choice for patients (pts) with ventricular tachyarrhythmias (VF). To ensure correct functioning, VF is induced and ICD shocks are delivered at least twice intraoperatively.

To determine the outcome and predictors of successful transvenous ventricular defibrillation, we retrospectively analysed pts and device characteristics, medication, and procedure related data of 240 ICD implantations from 201 pts (61 +/-16 yrs, 77% men).

The 1st ICD shock successfully terminated VF in 191/240 (80%) cases, the 2nd shock in 182/191 (95%). There was no difference in pt and device characteristics or medication in respect to outcome. The cycle length of induced VF. (1st shock: 217+/-39vs.200+/-27ms; 2nd shock: 204+/-41vs.188+/-29ms) and the time between 1st and 2nd shock (424+/-40vs.302+/-141s) tended to be shorter when defibrillation was unsuccessful. Fast ICD shock delivery (14.1vs.16.0s) and VF induction by t wave shock (92%vs.78%) were significantly associated with successful defibrillation.

Transvenous ventricular defibrillation is highly successful intraoperatively. Possible predictors for success are induced VF cycle length, VF induction by t wave shock, duration of VF and time between 1st and 2nd shock delivery.

16.8 EVALUATION OF P WAVE SIGNAL AMPLIFICATION IN A SINGLE-LEAD ICD

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The atrial channel of a VDD-ICD system is provided with an additional filtering/amplification stage to improve sensing performance. We compared P wave amplitude measured at implant with a conventional PSA device (unfiltered P wave) with the measure provided telemetrically by the ICD (filtered P wave). Filtered/unfiltered P wave ratio (amplifier factor) was evaluated at implant and during follow-up in 21 patients.

At implant the mean filtered P wave amplitude was significantly higher than the mean unfiltered signals (3.91 ± 0.65 mV vs 1.96 ± 1.64 mV, p<10⁻⁵). The

mean P wave amplifier factor was 2,9 ± 1,8 (range 0,68-7,98). Unfiltered P waves < 1 mV are associated to amplifier factors significantly higher than those associated with P wave > 1 mV (4,46 ± 1,91 vs 1,93 ± 0,68, p<0,001).

At follow-up (176 ± 119 days), the mean P wave value was 3,76 ± 0,91 mV with no difference with value at implant (p=0,90). Undersensing was never observed also during atrial fibrillation (4 patients).

The evaluated VDD-ICD system reliably amplifies P wave amplitudes maintaining this performance during the observed follow-up.

17. ATRIAL FIBRILLATION: PATHOPHYSIOLOGY AND EPIDEMIOLOGY

17.1 CHRONIC LEFT ATRIAL OVERLOAD IN THE GOAT: ELECTROPHYSIOLOGICAL RESEARCH

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In the research for dilatation induced atrial fibrillation (AF), electrophysiological and hemodynamic investigation of the left atrium (LA) was effectuated in a new animal model of chronic LA overload.

In 12 goats, a thoracotomy was performed to implant a vascular graft between the aorta and LA. In a control group, the graft was ligated. Overload was quantified after chronic instrumentation of the LA with ultrasonic crystals, bipolar sensing/pacing electrodes and a LA pressure catheter. Electrophysiological evolution was regularly evaluated in the conscious goats. "Continuing" AF was the ultimate purpose.

After 28.6±13.9days of overload, LA length increased significantly by 43.4±18.0% and LA pressure mounted from 8.6±6.1 to 27.0±10.4mmHg (p<0.05). Three animals presented prolonged AF, 3 sustained AF (>1hour), and 6 "continuing" AF (ongoing after 1week). Compared with the control group, LA overload enhanced significantly the effective refractory period, but did not result in a significant modification in conduction time or initial cycle length.

Chronic LA pressure/volume overload can induce "continuing" AF in a span of weeks. The increased vulnerability to AF cannot be explained by electrophysiological alterations of the LA.

17.2 ANATOMICAL AND ELECTRICAL REMODELLING IN PAROXYSMAL VS. PERSISTENT ATRIAL FIBRILLATION

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Aim: to assess the relation between decremental interatrial conduction properties and atrial dilatation in patients (pts) with paroxysmal (p) vs persistent (P) atrial fibrillation (AF).

Methods: pts without structural heart disease and sustained AF episodes <1 month were included. Parameters: left atrial dimensions, surface (LAS), volume (LAV ellipse formula), right atrial surface (RAS), total atrial surface (TAS=LAS+RAS). To examine atrial electrophysiological properties it was calculated maximum percentage prolongation of interatrial conduction time (iaCT) during premature stimulation of high right atrium using S2 and S3 delivery: decremental index (DI) =iaCT S3-iaCTS1/iaCTS1%.

Results: 27 pAFpts (53±9 years) were compared to 21 PAFpts (55±13 years). Following parameters were significantly higher in PAFpts: DI: 79±25% vs 51±19%, p<0.0001; LAI: 5.5±0.3 vs 5.2±0.3cm, p= 0.01; LAS: 23.5±3.1 vs 19.5±2.4cm², p=0.001; LAV: 59.2±9.3 vs 53.6±10.4 ml, p=0.001; TAS: 41.6±5.1 vs 35.6±6.9 cm², p=0.0001. The simple regression analysis demonstrated a moderate correlation between TAS and DI (r=0,66, r²=0.44, p<0.0001), LAV and DI (r=0,6 r²=0.36, p<0.0001).

Conclusion: This study demonstrates increased atrial stretch in PAFpts compared to pAFpts and that electrical remodelling is associated with anatomic remodelling.

17.3 ATRIAL STRETCH IN PATIENTS WITH PAROXYSMAL JUNCTIONAL TACHYCARDIAS AND ATRIAL FIBRILLATION BUT STRUCTURALLY NORMAL HEART

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