CHARACTERIZATION OF A NEW CLINICAL PHENOMENA: SHOCK FOLLOWING CARDIAC IMPLANTABLE ELECTRONIC DEVICE EXTRACTION

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Introduction: Cardiac implantable electronic devices (CIED) extraction is a complex procedure associated with morbidity and mortality. We observed that some cases present with a procedural course without unexpected complications but develop shock during the first 24 hours suggesting vasopressor support. We sought to characterize and evaluate the predictors leading to this serious clinical condition.

Methods: We retrospectively analyzed data of 221 consecutive patients who underwent CIED extraction between 2010-2015. Ten Patients were excluded since they were lost to follow up. The primary and post shock was within 1 day post procedure, defined as pain/hypotension with a drop of >60% in the mean arterial pressure for at least 30 min, requiring the use of vasopressor. Patients who were hemodynamically unstable during the extraction procedure were excluded. Baseline characteristics and mortality rates were compared between the 2 groups. Major adverse event were defined as: intubation, sepsis, worsening of total function, and death.

Results: Thirty one patients (15%) group A fulfilled the definition of primary endpoint. Reasons for shock were a bot of sepsis (38%) or no apparent cause (62%). Patients in group A had significantly lowest GFR (median GFR 35 vs. 72 ml/min respectively; P < 0.01), and had more signs of septic infection prior to extraction (6% vs. 35%, P < 0.01), bacteremia (76% vs. 45%) and leukocytosis (25% vs. 57%, P < 0.05 for all). Group A also developed more major complications (19% vs. 1% ; P < 0.01) and higher mortality rates at one month (35% vs. 6%, P < 0.01). Similar, acute, short term since implantation, and tools used during the extraction procedure did not affect our primary end point.

Conclusions: We describe a new clinical phenomena of shock occurring after CIED extraction but within 24 hours of the procedure. Despite vasopressor support complication and mortality rates remain high in this group. Whether patients with features for this condition at baseline should be sought and treated aggressively is yet to be determined.

Conflict of interest: none

SURVIVAL OF PATIENTS WITH BIVENTRICULAR DEVICES AFTER DEVICE EXTRACTION

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Purpose: To analyze the survival of patients with biventricular device infections.

Methods: We analyzed a cohort of 250 patients who presented device infections between 2003 and 2015. CIED pocket infections and LV lead endocarditis in presence of LV lead dislocation were not included. The primary end point was shock within 24 hours of the extraction. Device related infections could not be identified as persistent bacteremia or sepsis in the absence of another identified source or infection over the leads or valves in the presence of a CIED. A minimum time course of intravenous antibiotics is prescribed for all CIED infections, and longer depending on the presence of infective endocarditis and bloodstream infection. Ammunition selection is based on culture data from blood, pocket, and lead tip cultures and the result was reviewed by an infectious disease specialist.

Results: There were 2 periods of hospitalization: The first period: battery replacement 4p, heart failure 2p; lead migration 4p; pocket infection 4p and lead protrusion 2p. The second period: battery replacement 2p, heart failure 2p; lead migration 3p; pocket infection 2p and lead protrusion 2p.

Conclusions: Hospital admissions, especially battery replacement and leads protrusions carry more risk of infections. The cause of the infection is not significant (p long rank = 0.765).

Conflict of interest: none

CORRELATION OF QRS DURATION AND SERUM APOPTOSIS MARKERS WITH VENTRICULAR HISTOLOGICAL REMODELLING IN PATIENTS WITH SEVERE HEART FAILURE AND ISCHAEMIC AND DILATED CARDIOMYOPATHY

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Background: We evaluated if serum apoptosis markers and QRS Duration correlate with ventricular histological remodeling in patients with severe heart failure and if there are differences in patients with ischemic and dilated cardiomyopathy.

Methods: A total of 58 patients with severe heart failure (HF) and sinus rhythm (SR) with indication for Cardiac Resynchronization Therapy Dilettanthe (CRT-D) undergoing device implantation were enrolled. QRS Duration, Serum concentrations of FasL (apoptosis-stimulating markers) and QRS Duration, Serum concentrations of FasL (apoptosis-stimulating markers) and QRS Duration, Serum concentrations of FasL (apoptosis-stimulating markers) were measured. Right ventricular tissue was obtained at five different areas before procedure. Apoptosis was assessed after 48 hours using TUNEL assay. Degree of fibrosis was assessed using Masson's trichrome stain.

Results: The average degree of fibrosis was 13.67% and the average ventricular apoptosis was 8.51% using Masson's trichrome stain. The average degree of fibrosis was 13.67% and the average ventricular apoptosis was 8.51% using Masson's trichrome stain. The average ventricular apoptosis was 8.51% using Masson's trichrome stain. The degree of structural remodeling does not reflect the duration of QRS. Pearson's correlation coefficient for QRS Duration and Fibrosis was r = -0.03 (P < 0.82), for QRS Duration and Apoptosis r = 0.06 (P = 0.67).

Conclusion: Fas-L can be helpful to evaluate the degree of fibrosis and apoptosis in patients with severe HF. Fas-L and apoptosis correlated highly in patients with severe HF. Ventricular apoptosis and fibrosis were significantly higher in patients with ischemic cardiomyopathy and Duration of QRS does not reflect the degree of ventricular apoptosis and fibrosis. These results may help to improve the understanding of remodeling in patients with HF and suggest an evaluation of Fas-L for patients with HF in a clinical setting.

Conflict of interest: none

RIGHT VENTRICULAR DYSFUNCTION COMPLICATES PREDICTION OF RESPONSE TO CARDIAC RESYNCHRONIZATION THERAPY BY MEANS OF DYSYNNCHRONY PARAMETERS: COMBINED CLINICAL-MODELING APPROACH

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Purpose: Right ventricular (RV) function is an important marker of prognosis in heart failure. RV failure can cause left ventricular (LV) dysynchrony through interventricular interaction. We investigated whether RV dysfunction affects cardiac resynchronization therapy (CRT) response through the worse baseline condition or through altered mechanical dyssynchrony.

Methods: In 122 CRT-candidates (LV ejection fraction 19 ± 6%, QRS-width 168 ± 21 ms), echocardiography was performed before and 6-months after CRT and LV volumes and dimensions were measured. RV dysfunction was defined as RV fractional area change (RVFAC) < 35%. Spectral tracking longitudinal deformation of LV and RV free wall and the septum was assessed. Dyssynchrony time-to-peak strain between septum and LV lateral wall [Strain-L], interventricular mechanical delay [IVMD], mechanical discoordination (internal stretchfraction [ISF], and septal systolic rebound stretch [SRonsept]) were measured. Computer simulations using the CircAdapt model were used to investigate the influence of LV and RV myocardial contractility on RV systolic function, LV dysynchrony and CRT response.

Results: Higher baseline mechanical dysynchrony, discoordination, and RV function all predicted LV reverse remodeling (i.e. reduction in LV end-systolic volume) in univariate analysis (R² = 0.06, 0.42, 0.41, 0.35 and 0.43, all p < 0.01 for SRonsept, Strain-L, IVMD, ISF, and RVFAC, respectively). RV function had independent and incremental predictive value on top of mechanical dysynchrony, by increasing R² from 0.36 to 0.41, p = 0.003. Baseline LV volumes and/or function did not have additional predictive value on top of RV function. In 39 patients with RV dysfunction no mechanical discoordination or discoordination parameter could predict reverse remodeling after CRT (all p = NS). CircAdapt simulations demonstrated that RV systolic dysfunction could arise from decreased LV contractility, and was related to alterations in LV mechanical dyssynchrony that influenced the association with CRT response.

Conclusions: RV failure is related to LV failure and complications predict response of reverse remodeling by parameters of mechanical dysynchrony.

Conflict of interest: none