Only clinical CRT responders, placebo effect or micro-responders?

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Background: Echocardiographic response to cardiac resynchronization therapy (CRT) is not very high; however, the clinical course of patients without echocardiographic response is variable and clinical response sometimes results from a subjective assessment.

Purpose: The aim of this study was to evaluate the clinical progress and prognosis of patients without echocardiographic response to CRT during follow-up.

Methods: We studied retrospectively 192 patients with a CRT device implanted between January 2009 and December 2013 in our center, according to the current guidelines recommendations. At 6 months follow-up, 52 (27%) patients were non-echocardiographic responders (with a LVEF improvement lower than 5%). These patients were divided in 2 groups, according to the improvement of their NYHA functional class: clinical responders (improvement of ≥1 functional class) and non-responders (no improvement). The primary outcome was major cardiovascular events (MACE) during follow-up (cardiovascular death and heart failure hospitalization).

Univariate analysis was performed with Cox proportional hazards methods.

Results: The mean age of the study population (n=52) was 63 ± 10 years, 79 men, 25% had ischemic cardiomyopathy and mean preimplantation LVEF was 27 ± 7%. Patients in the group of clinical responders (36, 69%), had a mean NYHA functional class reduction from 2.3 ± 0.55, to 1.67 ± 0.67 (p<0.001). During 24 months follow-up, 15 patients (29%) experienced major cardiovascular events (3 of 36 in the clinical responders group and 12 of 16 in non responders). In univariate analysis, MACE were significantly associated only with the absence of clinical response to CRT (p<0.001). In this group, 5 patients died, 3 due to cardiovascular death and 2 due to heart failure hospitalization. The rest of the patients had a significant number of inappropriate therapies, particularly in the group of non responders (p<0.067).

Conclusion: In the clinical responders group, only patients with clinical improvement had a significant clinical outcome during follow-up. This could be useful to select the patients that will benefit from CRT.

Abstract P450 Figure.

Evolution of arrhythmic profile in patients with severe heart failure after cardiac resynchronization therapy.

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Purpose: Although cardiac resynchronization therapy (CRT) is expected to reduce the risk of arrhythmics in heart failure patients (pts) by the induction of reverse remodeling, its real impact in severe arrhythmias is not clear. Aim of the study was to analyze the arrhythmias ensuing in pts receiving CRT therapy combined with ICD (CRTD).

Methods: The study population consisted of 66 severe heart failure pts with CRTD, (9 ± 57.), mean age 61 ± 14 years, with underlying disease ischemic cardiomyopathy in 34 and dilated cardiomyopathy in 32. Forty six pts received CRTD as primary prevention (group A) and 20 pts as secondary prevention (group B). Eight pts had permanent atrial fibrillation (AF) and 13 pts sustained at least one episode of PAF before device implantation. We analyzed the occurrence of ventricular tachycardia including appropriate VT therapies and atrial fibrillation as well.

Results: Forty eight pts were clinical responders, 8 super responders and 10 pts poor responders. After 10 years follow-up including at least one device replacement, we found almost similar incidence of sustained ventricular tachycardia (VT) (15%) and AF (29%) in both groups, irrelevant to clinical improvement and underlying substrate. Seven patients died of pump failure. Pts who received CRTD as secondary prevention, although good responders, continued to experience VT and appropriate therapies. In all groups development of electrical storm and resistant fast AF was a hallmark of heart failure deterioration.

Conclusion: Due to electrical and mechanical heterogeneity among severe heart failure pts the antiarrhythmic effect of CRTD is unpredictable. The arrhythmia risk in CRT pts is independent to CRT-induced improvement of the failing heart and irrelevant to heart failure origin.
Abstract P453 Figure. CD/CB Length per patient.

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Impact of dynamic physical exercise on the progression of arrhythmogenic cardiomyopathy
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PURPOSE: Arrhythmogenic right ventricular cardiomyopathy/dysplasia (ARVC/D) is an inherited cardiomyopathy characterized by fibrofatty replacement of predominantly the right ventricular myocardium.

The variable phenotype and incomplete penetrance of ARVC mean that the progression of the phases may be different in each individual, suggesting that determined environmental factors may have an influence.

The aim of our study was to discover the impact of dynamic exercise on the progression of 36 patients with high risk ARVC/D

METHODS: Collection of data on physical activity at the time of diagnosis was conducted at an in-person clinical interview where patients were asked about their dynamic activity. The frequency of the activity was classified in accordance with the mean frequency of weekly training sessions in the five years prior to diagnosis and into the following three groups of dynamic activity: high/competitive (more than three hours per week), moderate (1-3 hours) and minimal/inactive (less than one hour per week).

RESULTS: The majority were male (28 patients, 77.8 %) with a mean age on diagnosis of 44.89 ± 17.69 years. All had definite ARVC according to the Task Force criteria modified in 2010, regardless of genetic outcome.

The intensity of dynamic activity was classified into three groups based on the frequency of weekly training: 8 of high intensity, 9 moderate and 19 inactive. There were statistically significant differences regarding the relationship between exercise intensity and the first major arrhythmic event, which presented earlier in the high intensity exercise group (28.88 ± 11.62 years), followed by the moderate intensity group (37.3 ± 11.5 years) and at a later age in the low intensity/inactive group (59.03 ± 14.7 years), as Figure 1 illustrates.

During a mean follow-up of 6.83 ± 5.02 years, 23 patients (63.89%) had at least one appropriate arrhythmic event. Athletes were significantly associated with the onset of appropriate events in follow-up

CONCLUSIONS: 1. Dynamic physical activity has been associated with the progression and bad prognosis of this disease
2. The first arrhythmic event was found earlier in the high intensity exercise group, followed by moderate intensity patients and was latest in the inactive group.
3. Moderately dynamic, non-competitive exercise could be associated with a faster progression of the disease and an earlier arrhythmic event.

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Assessment of left atrial strain rate together with left atrial fibrosis in cardiac MRI in patients undergoing pulmonary vein isolation
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Introduction: Atrial fibrillation (AF) is considered one of the most common of cardiac arrhythmias. Triggers from the pulmonary veins play a crucial role in its onset, yet structural and electrical changes in the atrial myocardium additionally contribute to the perpetuation of the arrhythmia. The left atrial fibrosis can be assigned a key role.

Abstract P455 Figure. Acquisition of left atrial strain rate.