CE-544-03

INCIDENCE AND PREDICTORS OF ACQUIRED LV DYSFUNCTION IN PATIENTS WITH ASYMPTOMATIC FREQUENT PREMATURE VENTRICULAR COMPLEXES: A LONGITUDINAL CMR STUDY

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Background: Frequent PVC can cause LV dysfunction, a condition known as PVC-induced cardiomyopathy (PIC). The predictors of PIC have been retrospectively investigated by comparing patients presenting with PIC to those with preserved LV function, but there are no longitudinal data evaluating the incidence and predictors of PIC.

Objective: In this longitudinal CMR study we sought to determine the incidence and predictors of PIC in patients initially presenting with PVC and normal LV function.

Methods: We included 107 asymptomatic patients (pts) (43 ± 11 years, 60% males) with 24-hour PVC burden ≥20% and normal heart by CMR imaging including LGE and native T1-mapping as indicators of interstitial fibrosis. Reassessment of LV adverse remodeling was performed every 6-months alternating echocardiography and CMR.

Results: In 37 pts, beta-blockers and/or class IC antiarrhythmic drugs were given despite absence of symptoms and no evidence of LV adverse remodeling, a potentially due to lack of efficacy or intolerance. After a median follow-up of 7-years, 12 (11%) pts developed PIC (LVEF ≤50%). The median time to PIC onset was 3 years (range 1-5 years) and the median LVEF was 44% (range 38-50%). All pts who developed PIC underwent RF ablation which resulted in a significant decrease in PVC burden (≥80% reduction) and a normalization of LV function within 6-months. Male gender (HR 2.33, 95% CI 1.08-3.41, p = 0.01), PVC burden (HR 1.11, 95% CI 1.03-1.17, p < 0.01) and PVC-QRS duration (HR 1.58, 95% CI 1.02-2.10, p < 0.01) were all independent predictors of PIC. No significant difference was found in the baseline T1-time between pts who developed PIC and those who did not (975 ± 18ms vs. 950 ± 20ms, p = NS) nor between baseline and the time of PIC onset among those who developed PIC (960 ± 22ms vs. 980 ± 24ms, p = NS). No development of LGE was observed over follow-up. A PVC burden ≥32% (Sn 89%; Sp 63%) and a PVC-QRS duration of ≥153 ms (Sn 91%; Sp 58%) best predicted development of PIC.

Conclusion: In this longitudinal CMR study, the incidence of PIC in pts with asymptomatic frequent PVC was 11% at a median follow-up of 7 years. Incident PIC was predicted by male gender, PVC burden and PVC-QRS duration. The development of PIC was not associated with myocardial structural changes as evidenced by no new areas with LGE or variation in T1-times.

CE-544-04

HABITUAL COFFEE CONSUMPTION AND INCIDENCE OF ARRHYTMIAS: A LARGE POPULATION STUDY

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Background: General perception is that arrhythmias are increased in coffee drinkers. In contrast, meta-analyses report beneficial effects of coffee on incident arrhythmias. However, earlier studies are limited by smaller sample sizes.

Objective: To evaluate associations between coffee intake and incident arrhythmias utilising the UK Biobank.

Methods: The UK Biobank is a large prospective cohort with outcomes measured >10 years linked to ICD-10 codes. Coffee intake, obtained from questionnaires, was divided into 0, 1-2, 3-4, 5-6 cups/day. Cox regression modelling with hazard ratios (HR) determined associations with incident any arrhythmia, atrial fibrillation/flutter (AF/flutter), SVT, and ventricular tachycardia/fibrillation (VT/VF).

Results: The cohort included 382,535 individuals (age 57 ± 13yrs, 52% female, hypertension 28%). U shaped relationships exist between higher coffee intake and incident any arrhythmia, AF/flutter, and SVT. After adjustment for co-variables age, gender, alcohol intake, tea intake, obesity, diabetes mellitus, hypertension, physical activity, OSA, smoking status, the lowest risk for any arrhythmia was seen in those who consumed 2-3 coffee cups/day, with HR 0.92 (CI 0.88-0.95, p < 0.01). Risk of AF/flutter and SVT were lowest at 4-5 cups/day, with HR 0.88 (CI 0.83-0.94, p < 0.01), and HR 0.82 (CI 0.71-0.95, p < 0.01), respectively. Lowest VT/VF risk was seen with 4-5 cups/day (HR 0.81, CI 0.67-0.96, p = 0.02).

Conclusion: Mild-moderate regular coffee intake was associated with significant reductions in the incidence of any arrhythmia, AF/flutter, SVT and VT/VF. Daily coffee intake should not be discouraged but rather considered part of a healthy diet.

ABSTRACT CI-569:

Conduction System Pacing: What is New?

Sunday, May 1, 2022
2:15 PM - 3:15 PM

CI-569-01

RIGHT VENTRICULAR FUNCTION DURING LEFT BUNDLE BRANCH AREA PACING - LONG-TERM ECHOCARDIOGRAPHY STUDY

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Background: Left bundle branch area pacing (LBBAP) maintains or restores synchronous activation of the left ventricle, however at the same time, it introduces delay in activation of the right ventricle (RV) — expressed by R/r wave in lead V1.

Objective: To evaluate the effects of LBBAP on RV function as measured with 2D-echocardiography.

Methods: Consecutive patients receiving LBBAP with significant ventricular pacing burden (>40%), R/r wave in lead V1 and at least one-year echocardiographic follow-up were included. Echocardiographic examination was focused on RV morphology and function and tricuspid valve function; final follow-up values were compared with baseline.

Results: A total of consecutive 100 patients were studied: age 76.7 ± 10 years, female 41%, left ventricular ejection fraction 53 ±12%, ventricular pacing burden 87.6 ±20% and follow-up 21 ±7 months. There was no change in RV anatomy measured with RV basal, proximal or distal diameter (37 ±5 mm vs 37 ±4 mm, 29 ±4 mm vs 29 ±4 mm, 27 ± mm 4 vs 29 ±4 mm, respectively). There was no change in RV systolic function measured with S’ (13 ±3 vs 13 ±3) and fractional area change (41 ±11 vs 42 ±10) but there was a significant increase in tricuspid annular plane systolic excursion (22 ±5 mm vs 23 ±4 mm). Tricuspid regurgitation (TR) progression from low to moderate was observed in 8 patients. TR improved from severe to moderate in 2, and from moderate to low in 12 patients. There was no significant change in estimated TR maximal jet velocity (2.3 ±0.6 m/s vs 2.4 ±0.6 m/s).

Conclusion: Despite introduction of some delay in electrical activation of RV during LBBAP, the mechanical RV function seems to be unaffected.

CI-569-03

LEFT BUNDLE BRANCH AREA PACING FOR CARDIAC RESYNCHRONIZATION THERAPY: A MULTICENTER PROSPECTIVE STUDY

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Background: The societal guidelines recommend physiologic pacing for patients who are anticipated to require high burden ventricular pacing. This includes patients with a) AV block and LVEF between 35-50%, b) tachy-cardiomyopathy undergoing AV node ablation, c) chronic RV pacing induced cardiomyopathy, and d) failed CS lead implants as a rescue CRT strategy. There are limited data on the utility of left bundle branch area pacing (LBBAP) as an alternative to CRT in this patient sub-groups.

Objective: To evaluate the feasibility and outcomes of LBBAP in patients eligible for CRT.

Methods: Patients referred for pacemaker implantation at two academic centers between 02/2019-07/2021 were considered for LBBAP. LBBAP was performed by implanting the 3830 lumenless lead using the C315 fixed curve or C304 His deflectable sheath (Medtronic, MN). Implant success rates, complications, electrophysiological and echocardiographic parameters were assessed.

Results: LBBAP was successful in 135/161 CRT eligible patients (84%). Mean age was 75 ±9 years and 34% were women. Failed cases were more likely to be men and had wider QRS duration at baseline (163 ±34 vs. 137 ±32, p<0.001) compared with successful cases. Among successful cases 20%