**PO-638-02**

INFLAMMATION BY FDG PET IS DISCORDANT WITH SITES OF FOCAL VENTRICULAR TACHYCARDIA IN PATIENTS WITH SUSPECTED CARDIAC SARCOIDOSIS

David Chang MD; David Chang MD; Laura Murphy; David Chang MD; David Chang MD; Clinton J. Thurber MD; Uyanga Batnyam MD; William H. Sauer MD, FHRS, CCDS and Usha B. Tedrow MD, MS, FHRS

**Background:** In pts with cardiac sarcoidosis (CS), late gadolinium enhancement by cardiac MRI predicts development of ventricular arrhythmias. Our previous analysis also suggested a relation between scar regions and focal ventricular arrhythmias (FVA) as determined by FDG PET CT. The role of active inflammation on FDG PET in focal ventricular arrhythmias (FVA) site of origin is unclear.

**Objective:** To assess relationship between FDG PET findings consistent with active inflammation and FVA in pts with suspected CS who underwent catheter ablation.

**Methods:** From 2010 to 2020, consecutive pts with suspected CS who had PET scans and VT catheter ablation were included. VT was classified as focal or reentrant based on procedural findings. Pts with indeterminate VT mechanism were excluded (n=4). FDG PET was independently analyzed (scan was within 17+/-25 days of ablation) and classified as to the location and presence of inflammation (e.g. focal FDG uptake). Diffuse and lateral wall FDG uptake were considered non-specific and excluded in describing the location of the FDG uptake.

**Results:** Twenty-seven (20%) of 135 pts (63 ±12.2 years, 19.4% female) were found to have FVA: aortic root in 8, aortomitral continuity in 6, parahisian/posterior RVOT in 4, papillary muscle in 3, crux in 3, RV lateral wall in 2, and LV anteroseptal wall in 1. Six (22.2%) of 27 pts had focal FDG uptake on the PET scan (OR 0.48 0.19-1.2, p=0.122, NS). One (3.7%) of the automatic VTs was qualitatively from a similar region to that of FDG uptake. 

**Conclusion:** FVA in pts with suspected CS does not correlate well anatomically with specific areas of active inflammation on PET scan and occur in the absence of measurable FDG uptake.

---

**PO-638-03**

ISOLATED PREMATURE VENTRICULAR CONTRACTIONS ARE MORE DYSSYNCHRONOUS THAN PREMATURE VENTRICULAR CONTRACTIONS IN REPEATED PATTERNS

Christina Alhede MD, PHD; Satoshi Higuchi MD; Dwight Bibby; Theodore P. Abraham MD and Edward P. Gerstenfeld MD, FHRS

**Background:** Premature ventricular contractions (PVCs) may lead to cardiomyopathy. Preclinical studies have demonstrated that more dyssynchronous PVCs lead to a greater degree of cardiomyopathy. However, dyssynchrony of isolated PVCs compared to repeated patterns of bigeminy and trigeminy have never been investigated.

**Objective:** To compare left ventricular (LV) myocardial function and LV dyssynchrony in patients with isolated PVCs compared to patients with PVCs in repeated patterns.

**Methods:** We prospectively included 85 consecutive patients referred for PVC ablation due to frequent PVCs. Isolated, bigeminal and trigeminal (PVC every third heart beat) PVCs were defined based on the dominant pattern. LV global longitudinal strain (GLS) and LV dyssynchrony (measured as SD of time to peak GLS) were quantified by 2D strain echocardiography.

**Results:** Of the 85 included patients (age 57 ±16 yrs, 46% female, LVEF 55% [45-60]), 58 had isolated PVCs, 13 had bigeminal PVCs and 14 had trigeminal PVCs, with no difference in PVC burden (20% [15-27] vs. 21% [15-25] vs. 22% [21-25]; p=0.7) or PVC QRS width (155 ms [146-168] vs. 161 ms [146-183] vs. 159 ms [136-174]; p=0.4) among the groups. PVC GLS was comparable (-8 ±6% vs. -7 ±5% vs. -9 ±3%; p=0.4, Figure 2A). However, LV dyssynchrony was significantly greater for isolated PVCs compared to bigeminal or trigeminal PVCs (113 ms [90-137] vs. 86 ms [69-99] vs. 58 ms [58-105]; p=0.001, Figure 2B).

**Conclusion:** In patients with frequent PVCs, isolated PVCs were more dyssynchronous than PVCs in bigeminal and trigeminal patterns, despite similar PVC QRS duration. Our findings indicate that patients with isolated PVCs may be at higher risk of developing cardiomyopathy than patients with PVCs in repeated patterns.
LOW ATRIAL NATRIURETIC PEPTIDE TO BRAIN NATRIURETIC PEPTIDE RATIO WAS ASSOCIATED WITH LEFT ATRIAL REMODELING AND HOSPITALIZATION DUE TO HEART FAILURE IN PATIENTS WITH ATRIAL FIBRILLATION ABLATION

Yasuhiro Matsuda MD; TAKASHI KANDA MD and Masaharu Masuda MD, PhD

Background: Deficiency of atrial natriuretic peptide (ANP) is thought to contribute to hemodynamic deterioration in case with advanced atrial remodeling due to atrial fibrillation (AF). However, little is known about the association between plasma ANP level and severity of left atrial remodeling or prognosis of heart failure in patients with AF.

Objective: The purpose of this study was to investigate the association between ANP and left atrial remodeling or prognosis of heart failure in patients with AF ablation.

Methods: Three hundred and seventy-three consecutive patients who underwent initial ablation for persistent AF (age, 67 ± 10 years; and females, 97 [26%]) were retrospectively enrolled. Plasma ANP and brain natriuretic peptide (BNP) concentration were measured before the procedure and ANP/BNP ratio was calculated. Left atrial appendage emptying velocity (LAAEV), left atrial low voltage areas (LVAs), and left atrial volume index (LAVI) were used as clinical factors of left atrial remodeling.

Results: Median plasma ANP level was 116 (71-178) pg/ml, and median ANP/BNP ratio was 0.65 (0.46-1.00). Plasma ANP levels did not correlated with LAAEV or LVAs. There was significant correlations between ANP/BNP ratio and LAAEV, LVAs, or LAVI. During the 24 months follow-up, freedom from hospitalization due to heart failure was significantly lower in patients with a ANP/BNP ratio ≥0.65 than in those with a ANP/BNP ratio < 0.65 (94.3% versus 99.5%, P<0.01).

Conclusion: The secretion of ANP relative to BNP decrease along with progress of left atrial remodeling in patients with AF ablation. Additionally, hospitalization due to heart failure frequently occurred in patients with low secretion of ANP relative to BNP.

NONLINEAR HEART RATE DYNAMICS IN PAROXYSMAL AF PATIENTS WITH AND WITHOUT RECURRENCE AFTER PULMONARY VEIN ISOLATION

Ting-Wei Ernie Liao; Li-Wei Lo MD, PhD; Yenn-Jiang Lin MD, PhD; Shih-Lin Chang MD, PhD; Yu-Feng Hu PhD; Tze-Fan Chao; Jo-Nan Liao MD; Hui-Wen Yang; Men-Tzung Lo PhD and Shih-Ann Chen MD

Background: Pulmonary vein isolation (PVI) is a cornerstone therapy for paroxysmal atrial fibrillation (PAF). Nonlinear heart rate variability (HRV) parameters have been shown to alter after PVI, however the differences between those with and without recurrences remain unclear.

Objective: We aimed to characterize the HRV before and after PVI in patients with and without recurrence.

Methods: 25 drug-refractory symptomatic PAF patients who received PVI were enrolled. Holter monitoring were done before, 1, 3, and 6 months after PVI, respectively. Patients were classified into: late recurrence group (n=9) and non-recurrence group (n=16). Linear and nonlinear HRV variables, including Poincaré Plot analysis and Detrended fluctuation analysis (DFA), were analyzed.

Results: Both groups showed significant reductions in LF after PVI, when compared to those before PVI, respectively. RMSSD, HF, LF/HF, and SD1 decreased significantly in the non-recurrence group following PVI, whereas same parameters did not alter in the recurrence group, when compared to before ablation, respectively. DFA_slope2 increased significantly after PVI compared to before PVI in the non-recurrence group, but not in the recurrence group. Detailed parameters are shown in the Table 1.

Conclusion: Fractal correlation properties increased (DFA_slope2) significantly only in the non-recurrence group after PVI. Both vagal (RMSSD, HF, and SD1) and sympathetic activities (LF/HF) decreased significantly after PVI in the non-recurrence group, whereas sympathovagal imbalance (LF) decreased significantly in both groups. These findings suggested that neuromodulation and heart rate dynamics play crucial roles in AF recurrence following PVI.