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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 (63.6 ± 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.

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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 were quantified by 2D strain echocardiography.

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.