TEMPORAL RELATIONSHIP OF ATRIAL ARRHYTHMIAS WITH THE DIAGNOSIS OF CARDIAC SARCOIDOSIS

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Background: Atrial arrhythmias are common in cardiac sarcoidosis (CS). Whether atrial arrhythmias are provoked by inflammation without established structural disease is unknown. The temporal relationship between atrial arrhythmias and other CS manifestations is unknown.

Objective: To determine the incidence of atrial arrhythmias in patients with CS and the timing of atrial arrhythmias relative to the onset of high grade heart block (HB), ventricular arrhythmias/sudden death (VA), and heart failure (HF).

Methods: Patients at Duke University Medical Center (2000-2020) with CS by Heart Rhythm Society and/or Japanese Circulation Society criteria were included if they had at least one episode of sustained tachyarrhythmia of atrial origin, captured on 12-lead ECG, ambulatory monitor, or cardiac implantable electronic device.

Results: Of 98 CS patients, 47 (48%) had atrial arrhythmia(s), including atrial fibrillation (AF) in 32 (68%), atrial flutter in 3 (6%), atrial tachycardia in 7 (15%), and other supraventricular tachycardias in 5 (11%). Mean age at diagnosis was 49 ± 6.1 years, 16 (34%) were women, and 27 (57%) had pulmonary sarcoid. At atrial arrhythmia onset, 22 (47%) were on immune suppression. Atrial arrhythmia preceded all major traditional CS manifestations (HB, VA, or HF) in 10 patients (10% of CS cohort), with median time to diagnosis of HB, VA, or HF of 10.8 months (25th, 75th percentile 2.9, 21.0) (Figure). In this group, left atrial diameter was 3.2 ± 0.5 cm (8 patients) and 7/10 had ≥1 common AF risk factor. Mortality was 14.9% in CS patients with atrial arrhythmias and 5.7% in those without atrial arrhythmias (p = 0.13).

Conclusion: Atrial arrhythmias are the first cardiac manifestation in a subset of CS patients. Active surveillance for possible CS should be considered in young individuals with incident atrial arrhythmias in the absence of traditional risk factors, particularly in those with known extracardiac sarcoid.

GUIDING CATHETER ABLATION COMBINED WITH LEFT ATRIAL APPENDAGE OCCLUSION PROCEDURE BY FLUOROSCOPY WITH OR WITHOUT TRANSESOPHAGEAL ECHOCARDIOGRAPHY ACHIEVED COMPARABLE OUTCOMES

Zhongyuan Ren MS and Dongdong Zhao

Background: Several studies published the safety and efficacy of performing catheter ablation (CA) combined with left atrial appendage occlusion (LAAC) guided by transesophageal echocardiography (TEE). However, intra-procedural TEE monitoring could be difficult as some patients are intolerant.

Objective: To compare safety and efficacy of guiding CA combined with LAAC by digital subtraction angiography (DSA) with or without TEE.

Methods: From February 2019 to December 2020, 138 patients with non-valvular atrial fibrillation (AF) underwent CA combined with LAAC procedure were consecutively included, and two cohorts were built according to intra-procedural guidance (DSA or DSA with TEE). Periprocedural and follow-up outcomes were compared to investigate the feasibility and safety between the two cohorts.

Results: Of 98 CS patients, 47 (48%) had atrial arrhythmia(s), including atrial fibrillation (AF) in 32 (68%), atrial flutter in 3 (6%), atrial tachycardia in 7 (15%), and other supraventricular tachycardias in 5 (11%). Mean age at diagnosis was 49 ± 12 years, 16 (34%) were women, and 27 (57%) had pulmonary sarcoid. At atrial arrhythmia onset, 22 (47%) were on immune suppression. Atrial arrhythmia preceded all major traditional CS manifestations (HB, VA, or HF) in 10 patients (10% of CS cohort), with median time to diagnosis of HB, VA, or HF of 10.8 months (25th, 75th percentile 2.9, 21.0) (Figure). In this group, left atrial diameter was 3.2 ± 0.5 cm (8 patients) and 7/10 had ≥1 common AF risk factor. Mortality was 14.9% in CS patients with atrial arrhythmias and 5.7% in those without atrial arrhythmias (p = 0.13).

Conclusion: Atrial arrhythmias are the first cardiac manifestation in a subset of CS patients. Active surveillance for possible CS should be considered in young individuals with incident atrial arrhythmias in the absence of traditional risk factors, particularly in those with known extracardiac sarcoid.

**Table I.** Serial changes in the HVF parameters between 2 groups.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Nonhemorrhage Group (n = 16)</th>
<th>Resuscitation Group (n = 9)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change (%)</td>
<td>1-6 months post (n = 16)</td>
<td>6-12 months post (n = 16)</td>
<td></td>
</tr>
<tr>
<td>HVF</td>
<td>88.2±6.94 98.05±7.96</td>
<td>73.8±7.95±6.94</td>
<td></td>
</tr>
<tr>
<td>2 (± 4)</td>
<td>24.0±2.16 25.0±2.09</td>
<td>24.0±2.16 25.0±2.09</td>
<td></td>
</tr>
<tr>
<td>2 (± 4)</td>
<td>170.06±14.79 137.33±66.55</td>
<td>75.14±14.75±66.55</td>
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</tr>
<tr>
<td>2 (± 4)</td>
<td>5.9±1.24 5.23±1.24</td>
<td>5.9±1.24 5.23±1.24</td>
<td></td>
</tr>
<tr>
<td>2 (± 4)</td>
<td>14.29±7.25 11.04±5.43</td>
<td>7.14±7.25 7.14±7.25</td>
<td></td>
</tr>
<tr>
<td>2 (± 4)</td>
<td>325.04±19.80 297.04±19.80</td>
<td>247.04±19.80 247.04±19.80</td>
<td></td>
</tr>
<tr>
<td>2 (± 4)</td>
<td>11±0.85 11±0.85</td>
<td>11±0.85 11±0.85</td>
<td></td>
</tr>
<tr>
<td>2 (± 4)</td>
<td>6.79±2.02 6.79±2.02</td>
<td>6.79±2.02 6.79±2.02</td>
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</table>
Conclusion: Compared with DSA and TEE guidance, DSA-guided combined procedure could shorten procedural time, while achieve similar periprocedural and long-term feasibility and safety.

PO-638-08

LEFT ATRIAL CHARACTERISTICS FOR PREDICTING ATRIAL FIBRILLATION OCCURRENCE DETECTED USING CONTINUOUS RHYTHM MONITORING IN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR PATIENTS - A CARDIOVASCULAR MAGNETIC RESONANCE STUDY

Luuk H.G.A. Hopman; Anne-Lotte C.J. van der Lingen MD; Nikki van Poudereijen; Pranav Bhagirath MD, PhD; Lourens Robbers MD, PhD; V.P. van Halm MD, PhD; Marco J.W. Götte MD, PhD and Cornelis P. Allaart MD, PhD

Background: Volumetric and functional characteristics of atrial remodeling have been proven to be sensitive measures for predicting development of atrial fibrillation (AF) in the general population. The prevalence of atrial remodeling in patients with an implantable cardioverter defibrillator (ICD) is substantial and identification of predictors of AF occurrence in this patient group is of clinical importance to initiate appropriate preventive therapeutic measures to reduce the risk of related complications.

Objective: The purpose of this study is to assess whether cardiac magnetic resonance imaging (CMR) derived atrial characteristics are associated with AF occurrence in ICD patients.

Methods: This single center retrospective study included 233 patients with a dual chamber ICD or cardiac resynchronization therapy defibrillator (CRT D) who underwent CMR imaging prior to device implantation. None of the patients had a documented history of AF. CMR derived features of LA remodeling were evaluated in all patients. Detection of AF and atrial flutter episodes was based on continuous rhythm monitoring using the implanted device. Subgroup analysis was performed based on etiology of cardiomyopathy (ischemic cardiomyopathy (ICM, \(n=128\)) vs. dilated cardiomyopathy (DCM, \(n=83\)).

Results: During follow-up, an AF episode was detected in 88 of the 233 (38%) ICD patients. Increased LA volumes (LAVimax; 52.1 ± 18.1 vs 44.9 ± 16.0 \(P<0.01\)), lower LA emptying fraction (LAEF) (38.0 ± 12.9% vs 42.7 ± 13.7% \(P<0.01\)) and impaired LA strain (15.2 ± 7.8% vs 18.0 ± 9.5% \(P=0.02\)) were observed in patients with AF occurrence as compared to patients without AF occurrence. AF was detected in 38% of ICM patients and 35% in DCM patients. DCM patients with newly detected AF showed increased LA volumes and impaired LA function compared to DCM patients without AF whereas these differences were not observed in ICM patients (Figure). LAEF was an independent predictor for AF occurrence in DCM patients (\(P<0.01\)).

Conclusion: LA remodeling was associated with AF development in DCM-ICD patients but not ICM-ICD patients, suggesting different mechanisms of AF development in ICM and DCM. Assessment of LA remodeling prior to device implantation might identify patients at risk for AF development who might benefit from additional therapy and closer monitoring.

POSTER PO-639:

POSTERS: CLINICAL EP AT POD 11

Friday, April 29, 2022
3:00 PM - 5:00 PM

PO-639-01

ENHANCED P WAVE RECOGNITION THROUGH RA-XIPHOIDAL LEAD BY HUAWEI WATCH ECG RECORDING

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Background: ECG recording through the Huawei watch’s (GT2 pro ECG edition, Huawei Technology Co., Ltd., Shenzhen, PR China) back electrode on the left wrist and the right index finger on the crown simulates the Einthoven’s bipolar ECG lead I (Huawei Watch Lead I ECG, HWIG), which is not a good trace for arrhythmia diagnosis due to its indistinct P wave in some cases. Therefore, additional smartwatch leads such as right arm-left leg lead, right arm-precordial leads are required to get more accurate ECG information. However, the more watch ECG leads make watch wearers the more difficulty to get the right ECG signals.

Objective: We try to find a simple RA-Xiphoideal Huawei watch ECG lead to record clearer P wave signals and increase the accuracy of arrhythmia diagnosis by the smartwatch.

Methods: Lead RA-Xiphoideal Huawei watch ECG (HWXG) is sampled by putting the Huawei watch’s back electrode on the lower sternum close to the xiphoid through the wearer’s right thumb and index finger on the crown. ECGs of standard 12-lead, HWIGs, and HWXGs of 318 patients (male 195, age 48.6±18.9 years) were recorded respectively. ECG signal quality, P wave amplitude were compared between HWIGs