TO BURN OR NOT TO BURN... that is the question

Donah Zachariah
ELECTROPHYSIOLOGY FELLOW
Queen Elizabeth Hospital Birmingham
Inferior infarct, age undetermined
Abnormal ECG

25 mm/sec 0.16 - 150 GE Healthcare/Marquette - MAC55 10.00 mm/mV HD Clinical
• Childhood myocarditis
• Idiopathic DCM, PFO
• Severe functional mitral regurgitation $2^0$ inferior wall aneurysm
• Dual chamber ICD- Birmingham Children’s Hospital (downgraded to single chamber ICD due atrial lead failure).
• Previous VT ablation at Birmingham Children’s Hospital- 2013 for VT storm

• HeartMate II left ventricular assist device- Feb 2015 with mitral valve repair
<table>
<thead>
<tr>
<th>Gender:</th>
<th>Sinus bradycardia</th>
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<tbody>
<tr>
<td>DOB:</td>
<td>Left axis deviation</td>
</tr>
<tr>
<td>Age:</td>
<td>Nonspecific intraventricular block</td>
</tr>
<tr>
<td>Height:</td>
<td>Lateral infarct, age undetermined</td>
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<tr>
<td>Weight:</td>
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**Technician:**

- **HR:** 107
- **BP:**
  - **PR:** 114 ms
  - **QRSd:** 142 ms
  - **QT:** 506 ms
  - **QTc:** 476 ms
  - **PAxis:** 258
  - **QRSAxis:** -25
  - **TAxis:** 39

**Drugs:**

- **Comment:**
  - **Wide QRS rhythm**
  - **Possible**

**ECG:**

- **25 mm/sec 0.16 - 150**
- **GE Healthcare/Marquette - MAC55 10.00 mm/mV HD Clinical**
A, Heart Mate II device (Thoratec Corporation, CA).
LVADs and arrhythmias

- Fluid and electrolyte shifts
- Autonomic nervous system imbalance (e.g., withholding β-blockers)
- Ventricular unloading and changes in parietal stretch → alteration of electrical properties of the tissue.
- Suction to an adjacent ventricular wall from the cannula (reduction in turbine speed may be useful in terminating VT).

Postoperative ventricular tachyarrhythmias have been documented in up to 35% of patients within 30 days of LVAD placement (Ziv et al., 2005) (Refaat et al., 2008)
What next?

• Increase betablockade?
• Increase amiodarone?
• Intravenous lignocaine?
• Reprogram device?
• Urgent heart transplant list?
• Do nothing?
• VT ablation?
Practical issues

- Invasive arterial blood pressure monitoring.
- Retrograde aortic access - no or little flow going across the aortic valve
- Risk of dislodging any thrombus that can be formed in the aortic root even in patients who are fully anticoagulated - TOE.
- For transseptal access - steerable sheath
- Epicardial access
Characteristics of Ventricular Tachycardia Ablation in Patients With Continuous Flow Left Ventricular Assist Devices

Frederic Sacher, MD, PhD; Tobias Reichlin, MD; Erica S. Zado, PA-C; Michael E. Field, MD; Juan F. Viles-Gonzalez, MD; Petr Peichl, MD, PhD; Kenneth A. Ellenbogen, MD; Philippe Maury, MD; Srinivas R. Dukkipati, MD; Francois Picard, MD; Josef Kautzner, MD, PhD; Laurent Barandon, MD, PhD; Jayanthi N. Koneru, MD; Philippe Ritter, MD; Saagar Mahida, MBChB; Joachim Calderon, MD; Nicolas Derval, MD; Arnaud Denis, MD; Hubert Cochet, MD, PhD; Richard K. Shepard, MD; Jerome Corre, MD; James O. Coffey, MD; Fermin Garcia, MD; Meleze Hocini, MD; Usha Tedrow, MD; Michel Haissaguerre, MD; Andre d’Avila, MD; William G. Stevenson, MD; Francis E. Marchlinski, MD; Pierre Jais, MD
34 patients (39 procedures, 5- previous ablation)

- Transseptal approach used in 25 procedures (74%)
- Retrograde-aortic approach in 14 (36%)

6 patients, no endocardial scar could be identified. Scar locations:
- basal area in 4 (all patients with non-ischemic cardiomyopathy)
- apex (insertion site of the cannula) in 11
- anterior n=13, septal n=10, inferior n=8, lateral n=7
Bipolar voltage map (Carto 3) of the left ventricle (LV) in a patient implanted with a Heart Mate II device (Green) for progressive heart failure because of ischemic cardiomyopathy (A).
Electrophysiologic characteristics and catheter ablation of ventricular tachyarrhythmias among patients with heart failure on ventricular assist device support.

611 recipients of VAD (mean age 53.3 ± 12.4 years, 80% men)
- 21 patients were referred for 32 EP procedures
- 44 inducible tachycardias (monomorphic VT 92%)

Electro-anatomic mapping:
- Reentrant VT (intrinsic scar-75%, apical inflow cannulation site-14%)
- Focal/micro-reentry VT (7%)
- Bundle branch reentry (3.5%)
• Successful ablation in 86%.
• VT recurred in 33% at a mean of 133 ± 98 days
• 29% patients required repeat procedures
• Subsequent recurrence in 4 of 21 patients (19%)
WIND. REEL. AND PRINT.

“Okay, folks, that’s a wrap...”