Cardiac Magnetic Resonance Imaging: Comparison of Spontaneous Implantable Defibrillator Shocks Do Not Affect Implantable Cardiac Defibrillator Interactions With New Simplified Technique for 3-D Mapping and Ablation

Methods and Results: Patients were diagnosed with ARVD and RVOT tachycardia using standard clinical criteria. Thirteen ARVD patients underwent ARVD; 5 had normal scans and 8 had findings suggestive of ARVD (including fatty infiltration, right ventricular wall thinning, hypokinesis, or dyskinesis). Thirty-seven patients with RVOT tachycardia underwent cardiac MRI: of these, 26 were normal and 11 were abnormal. Therefore, the sensitivity of MRI imaging in detecting patients with ARVD is suboptimal, as these pts not uncommonly have normal or only mildly abnormal cardiac MRI scans, especially early in the disease process.

New Simplified Technique for 3-D Mapping and Ablation of Right Ventricular Outflow Tract Tachycardia

Mooen A. Saleem, Scott Burket, Rod Pashman, Samer Diba, Erica Engelstein, Alan Kadish, Jeffrey Goldberg, Northwestern University, Chicago, IL

Background: Mapping and successful catheter ablation (ABL) of arrhythmias originating from the right ventricular outflow tract (RVOT) requires 3-D localization in the vertical and horizontal plane. The most efficient mapping technique remains to be determined.

Methods: Catheter ABL for RVOT ventricular tachycardia (VT) was performed in 20 cases (18 patients, age 40±15 years, 6 males). In group 1 (n=6), VT was confirmed by mapping and successful catheter ablation. In group 2 (n=8), 3-D mapping using a non-contact mapping system (Endocardial Solutions, n=7) or the Biosense electroanatomic system (n=1) was performed. In group 3 (n=6), 3-D mapping was performed with a circular multielecet rode catheter (Lasso-n=5; Halo-n=1). The Lasso catheter was advanced into the RVOT and its cranio-caudal position was optimized to the earliest endocardial activation times identified on the Lasso during the ablation. At this level, endocardial activation times were simultaneously evaluated in the circular catheter in the anterior, septal, posterior, or lateral plane. Based on this map, the ABL catheter was directed toward the Lasso electrodes with the earliest endocardial activation times. Further mapping in this area was done with the ABL catheter. All ablation was performed using a 4 mm tip catheter and radiofrequency energy.

Results: The mean ±SD fluoroscopy time (minutes) was 71±3, 57±18, and 39±13 for groups 1, 2, and 3, respectively. By ANOVA, p=0.03 group 1 vs. 2 and 3. Fisher's. In group 2, there were 2 lampadons, one prior to attempted ABL. In group 3, the Lasso became entrapped in the tricuspid valve requiring surgery in 1 patient in whom catheter ABL was not performed. Subsequent cases were done, positioning the Lasso via a long sheath positioned across the valve. The acute success rate was 8/8 (100%), 5/7 (71%), and 3/5 (60%) for groups 1, 2, and 3, respectively. The mean ±SD # of ABL lesions was 16.7 ±7.9, 8.5 ±3.6, and 1.3 ±0.9 for groups 1, 2, and 3, respectively. The mean ±SD # of ABL lesions was 16.7 ±7.9, 8.5 ±3.6, and 1.3 ±0.9 for groups 1, 2, and 3, respectively. The mean ±SD # of ABL lesions was 16.7 ±7.9, 8.5 ±3.6, and 1.3 ±0.9 for groups 1, 2, and 3, respectively. The mean ±SD # of ABL lesions was 16.7 ±7.9, 8.5 ±3.6, and 1.3 ±0.9 for groups 1, 2, and 3, respectively.

Conclusions: The use of a Lasso catheter for mapping the RVOT provides a simplified technique to perform 3-D mapping for ablation of VT arrhythmias.

Surface Electrocardiographic Clues to Localization of Ventricular Tachycardia to the Aortic Cusps


Background: Repetitive monomorphic ventricular tachycardia (VT) occurring in the absence of structural heart disease typically originates in the outflow tract regions of the right and left ventricles. The ECG pattern for VT originating from the right ventricle is less commonly the left ventricles. The ECG pattern for VT originating from the right ventricle is less commonly the left ventricles. The ECG pattern for VT originating from the right ventricle is less commonly the left ventricles. The ECG pattern for VT originating from the right ventricle is less commonly the left ventricles. The ECG pattern for VT originating from the right ventricle is less commonly the left ventricles.

Methods: A total of 8 patients undergoing ablation for VT had detailed (>150 points) 3D electrocardiographic mapping (MEAM) and pacing performed from the aortic cusps and from the endocardial aortomital continuity (AMC) at threshold. The sites were identified and tagged using MEAM, and confirmed by fluoroscopy and/or intracardiac echocardiography. The surface electrocardiograms (ECGs) were analyzed with pacing from each of the (LMO), (LAC), (RMO), and (RAMC). The GrS morphology was recorded on the Prucka TM system at a sweep speed of 100 m/s and evaluated offline.

Results: The mean GrS duration for LC pacing was 146 ms (range 125-161 ms), RC was 140 ms (range 108-168 ms), and AMC was 141 ms (range 120-176 ms). Lead V1 was found to be the most useful in distinguishing the different sites. LC pacing uniformly produced a typical "m" or "w" shaped multiphasic pattern in V1, AMC pacing demonstrated a qR pattern in V1, and RC pacing demonstrated a qRb type of pattern in V1. The