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MULTICENTER STUDY OF THE SAFETY AND EFFECTS OF MAGNETIC RESONANCE IMAGING IN PATIENTS WITH CORONARY SINUS LEFT VENTRICULAR PACING LEADS

Poster Contributions
Hall C
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Authors: *Seth Sheldon, Thomas Bunch, Gregory Cogert, Nancy Acker, Connie Dalzell, John Higgins, Raul Espinosa, Samuel Asirvatham, Yong-Mei Cha, Joel P. Felmlee, Robert E. Watson, Jr., Jeffrey Anderson, Miriam H. Brooks, Jeffrey Osborn, Paul Friedman, Mayo Clinic, Rochester, MN, USA, Intermountain Medical Center, Murray, UT, USA*

Background: Magnetic resonance imaging (MRI) in patients with left ventricular (LV) leads may cause tissue or lead heating, dislodgement, venous damage, or lead dysfunction. MRI conditional LV leads are not available. We therefore investigated the safety of MRI in patients with LV pacing leads.

Methods: Prospective data were collected in patients with coronary sinus (CS) LV leads undergoing clinically indicated MRI at 3 institutions. Eligible patients were not pacemaker dependent. Scans were performed under pacing nurse, technician, radiologist, and physicist supervision using continuous vital sign, pulse oximetry, and ECG monitoring and a 1.5 T scanner with specific absorption rate < 1.5 Watts/kg. Devices were interrogated pre- and post-MRI, programmed to asynchronous pacing or inhibition mode with tachyarrhythmia therapies off and reprogrammed to their original settings post-MRI.

Results: MRI scans (n=38) were performed in 36 patients with non-MRI conditional LV leads between 2005-2013 (mean age 66.0 ± 10.4 years, 16 women, lead implant duration 27.9 ± 31.5 months). MRIs were performed on the: head/neck/spine (n=33, 86.8%), lower extremities (n=4, 10.5%), and chest (n=1, 2.6%). There were no overall differences in pre- and post-MRI interrogation in LV lead sensing (12.4 ± 6.2 mV and 12.9 ± 6.7 mV, p=0.38), impedance (747 ± 294 Ohms and 742 ± 312 Ohms, p=0.73), or threshold (1.51 ± 1.09 V and 1.52 ± 1.00 V, p=0.91). There were no individual LV lead changes in sensing, impedance, or threshold requiring intervention. A patient underwent LV lead revision > 3 years after MRI due to a sudden increase in threshold to 5.0 V, which was deemed not related to the MRI. The non-LV lead associated complications were: an anomalous battery life indication that returned to baseline after manual device reset, a power on reset during imaging, a device that went into safety mode one-day post-MRI, switch to magnet mode on devices, and artifact sensed as ventricular fibrillation (with therapies programmed off).

Conclusion: MRI scanning can be performed safely in non-pacemaker dependent patients with CS LV leads who are carefully monitored during imaging without clinically significant adverse effect on LV lead function.