THE ROLE OF MAGNETIC RESONANCE IMAGING IN IDENTIFYING PATIENTS WITH CARDIAC SARCOIDOSIS AND PRESERVED LEFT VENTRICULAR FUNCTION IN PREDICTING FUTURE VENTRICULAR ARRHYTHMIAS

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Authors: Thomas Crawford, Sinan Sarsam, Gisela Mueller, Sanjaya Gupta, Timir Baman, Karl Ilg, Diego Belardi, Mohamad Sinno, William Sauer, Khaled Abdul-Nour, Henry Kim, Mouaz Al-Mallah, Joseph Schuller, Fred Morady, Frank Bogun, University of Michigan Health System, Ann Arbor, MI, USA, Henry Ford Hospital, Detroit, MI, USA

Background: Patients with cardiac sarcoidosis (CS) and left ventricular (LV) ejection fraction ≤35% are at risk of ventricular tachycardia (VT). The purpose of this study was to assess whether delayed enhancement (DE) on magnetic resonance imaging (MRI) is associated with future VT in patients with CS and a LV EF >35%.

Methods: In this retrospective study 44 patients with CS and an EF >35% underwent DE-MRI. Seven of them had at least one prior documented VT or cardiac arrest. Images were analyzed and DE was quantified with the full-width at half-maximum method. The patients were followed for a mean of 37 months.

Results: 19 of 44 patients (43%) had DE. DE involved a mean of 6.1±9.4% of the LV mass (range of 1% to 36%). DE was present in a mean of 3.6±5.0 segments of the left ventricle, and in 1.0±2.7 segments of the right ventricle. Ten patients had either VT (cycle length: 342±91 msec) or ventricular fibrillation during follow-up after the MRI was obtained. There was a positive correlation between VT occurrence and the number of involved LV segments (r=0.854, p<0.0001), and RV segments (r=0.708, p=0.001) and 95/29 segments had a 90% sensitivity and 100% specificity; DE involving >3.5% of LV mass had a 90% sensitivity and 97% specificity for identifying patients with VT (AUC, 0.999, P< 0.001; AUC 0.898, p=0.001, respectively). Multifocal DE had a sensitivity of 100%, a specificity of 91%, a positive predictive value of 77%, and a negative predictive value of 100% for future VT and/or ventricular fibrillation.

Conclusions: DE is associated with a risk of VT in patients with CS and an ejection fraction >35%.