CARDIAC MAGNETIC RESONANCE IN HYPERTROPHIC CARDIOMYOPATHY: APPLICATION TO PEDIATRIC PATIENTS

ACC Moderated Poster Contributions
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Authors: Tim Slesnick, W. James Parks, Peter Fischbach, Patrick Frias, Robert Campbell, Erin Demo, Denver Sallee, Margaret Strieper, Emory University, Atlanta, GA, USA

Background: Cardiac Magnetic Resonance Imaging (CMR) has been shown in adults with hypertrophic cardiomyopathy (HCM) to predict morbidity, including ventricular tachycardia (VT), as well as mortality. To date, no studies have evaluated the role of CMR in pediatric patients with HCM.

Methods: A retrospective review of the cardiology database was performed. Patients underwent CMR using a 1.5 Tesla magnet. Double inversion recovery, steady state free precession, resting first pass perfusion, and post-contrast images to assess for late gadolinium enhancement (LGE) were performed. Studies were analyzed for left ventricular mass, volume, ejection fraction, and the presence of LGE. Medical records were reviewed for clinical symptoms, genetic testing, VT, implantable cardioverter defibrillator (ICD) placement, or sudden cardiac death.

Results: Thirty-four patients, median age 14 years (range 4.4 - 17.8), with a diagnosis of HCM underwent CMR from August 2003 to May 2011. Six of 34 patients had evidence of LGE. The incidence of VT (including non-sustained VT) was higher in the patients who had LGE than those who did not (3 of 6 patients vs 4 of 28 patients). Among the 6 patients with LGE, 5 have subsequently undergone ICD placement, as have 6 additional patients without LGE. Median follow up from ICD implantation was 23 months (range 3 to 71 months). The patients with LGE had a higher incidence of appropriate ICD discharges compared with those without LGE (2 of 5 patients vs 1 of 6 patients). Eighteen patients had personal or family genetic testing performed, and 12 of 18 had disease causing mutations identified. Among those with LGE on CMR, 2 patients underwent genetic testing, both of which were positive for disease causing mutations. There has been no mortality, and the only episodes of sudden cardiac death occurred in patients successfully resuscitated with appropriate ICD discharges.

Conclusions: CMR is a helpful adjunctive test for pediatric patients with HCM. In this small cohort, patients with LGE had a higher incidence of VT and appropriate AICD discharges than those without LGE on CMR. Future studies are needed to validate the similarities in these results to adult series.