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Spotlight on Special Topics

FEASIBILITY AND SAFETY OF A CARDIAC MAGNETIC RESONANCE IMAGING PROTOCOL INCLUDING PHARMACOLOGIC STRESS IN CHILDREN AFTER SARS-COV-2 INFECTION

Poster Contributions
Sunday, May 16, 2021, 9:45 a.m.-10:30 a.m.

Session Title: Spotlight on Special Topics: COVID 4
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Background: SARS-CoV-2 infection in children causes varied clinical manifestations, including multisystem inflammatory syndrome in children (MIS-C). The relationship between cardiac biomarkers, myocardial injury and dysfunction, and coronary involvement remains unclear. We describe our institutional experience with a cardiac MRI (CMR) protocol evaluating children after SARS-CoV-2 infection, including regadenoson stress CMR (RS-CMR) in patients with MIS-C and coronary involvement.

Methods: Patients <21 years of age with no significant congenital heart disease referred for CMR after SARS-CoV-2 infection were included from 8/2020 - 11/2020. Patients underwent CMR, and those with coronary dilation and/or MIS-C had RS-CMR. CMR included assessment of ventricular function, myocardial tissue characterization with T1 mapping, T2 mapping, late gadolinium enhancement (LGE), and perfusion (+/- stress perfusion).

Results: CMR was performed in 27 children (median age 15.0, IQR 12.4-16.3 years, mean 75 days after diagnosis). RS-CMR was performed in 16/27 children (59%). All studies were of diagnostic quality with no adverse events. Thirteen patients (48%) were previously hospitalized, 12 (44%) were symptomatic but not hospitalized, and 2 (7%) were asymptomatic. Ten patients (37%) were diagnosed with MIS-C, 12 (44%) had ventricular dysfunction on echocardiogram, and 8 (30%) had coronary dilation on echocardiogram. Average T2 values >60 ms suggestive of myocardial edema were present in 3/24 patients (12.5%). Global T1 mapping ECV values >29% suggesting fibrosis were present in 2/20 patients (10%). There were no rest perfusion defects or wall motion abnormalities. An inducible perfusion defect was seen in 1/16 RS-CMRs (6.2%) in a patient with history of MIS-C with no coronary dilation. No patients had LGE. No patients had left ventricular dysfunction by CMR, including those with previous dysfunction by echocardiogram.

Conclusion: CMR (+/- RS-CMR) is a feasible and safe non-invasive tool to detect myocardial abnormalities in children after SARS-CoV-2 infection. It provides diagnostic information complimentary to echocardiogram that may help with risk stratification and management.