REGADENOSON STRESS PERFUSION CARDIAC MAGNETIC RESONANCE IMAGING IN CHILDREN WITH KAWASAKI DISEASE AND CORONARY ARTERY DISEASE

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Background: Coronary artery (CA) stenosis and occlusion in convalescent Kawasaki disease (KD) is progressive and may result in myocardial infarction. The use of regadenoson, a strong selective CA vasodilator with low side effect profile, for stress cardiac magnetic resonance imaging (CMR) has not been studied in children with KD. The safety, feasibility, and diagnostic utility of regadenoson stress CMR was assessed in children with KD and CA abnormalities.

Materials/Methods: A retrospective review of regadenoson stress CMR in children with convalescent KD was performed. Hemodynamics changes after regadenoson administration and adverse effects were recorded. First-pass perfusion was evaluated at rest and during pharmacologic stress. The results were compared with anatomic CA imaging.

Results: Forty-one stress CMR (18 sedated examinations, 44%) were performed successfully in 32 patients. Median age was 11.2 years (range 2.2-18.6) and weight 41 kg (range 13-93.4). Heart rate increased 66 ± 25 % ($p < 0.005$) after regadenoson. Minor adverse events occurred in 6 sedated and 1 unsedated patients. Hypoperfusion during stress occurred in 16/41 (39%), including 5 inducible, 9 inducible and fixed, and 2 fixed lesions. LGE was present in 10/16 with hypoperfusion and in 1 without hypoperfusion. Stress CMR had 100% positive agreement and > 90% negative and overall agreement with moderate to severe CA stenoses. Four patients with hypoperfusion underwent revascularization for severe CA stenoses.

Conclusions: Regadenoson stress CMR is hemodynamically safe and feasible in children with KD and CA disease. It has excellent agreement with CA angiography and aided decision making to proceed with revascularization.