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Pediatric and Congenital Heart Disease

PATIENTS WITH POST-COVID-19 VACCINATION MYOCARDITIS HAVE GREATER STRAIN THAN THOSE WITH NON-VACCINE MYOCARDITIS

Poster Contributions

For exact presentation time, refer to the online ACC.22 Program Planner at <https://www.abstractsonline.com/pp8/#!/10461>

Session Title: Pediatric and Congenital Heart Disease Flatboard Poster Session: Clinical and Population Science

Abstract Category: 34. Pediatric and Congenital Heart Disease: Clinical and Population Science

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Background: We sought to describe cardiac magnetic resonance (CMR) findings among pediatric patients with myocarditis following vaccination against COVID-19.

Methods: Retrospective chart review of patients clinically diagnosed with post-vaccine myocarditis (PVM). Data collected included parametric mapping, signal intensity on T2-weighted dark blood turbo inversion recovery magnitude (TIRM) imaging, ventricular function, and areas of late gadolinium enhancement (LGE). Strain analysis was performed using feature tracking. Strain values, T1 values and ventricular function were compared to age- and gender-matched controls with non-vaccine myocarditis using a Wilcoxon Rank Sum test.

Results: 12 patients were identified. 11 were male and 11 presented after the second vaccination dose, typically within 4 days. All patients presented with chest pain and elevated troponin, and nearly all patients had electrocardiographic changes suggestive of myocarditis, yet typically with normal ventricular function on echocardiography. 10 of 12 patients met CMR criteria for myocarditis. All patients had LGE typically seen in the lateral and inferior walls on the left ventricle; only five had prolonged T1 values. 10 patients met criteria for edema based on skeletal muscle to myocardium signal intensity ratio on TIRM imaging; 5 patients had prolonged T2 values. Compared to controls, patients with PVM had greater short-axis global circumferential (-21.3% versus -19.5%, $p=0.03$) and global radial strain (40.9% versus 34.4%, $p=0.02$), greater right ventricle function (65.7% versus 60%, $p=0.02$), and cardiac output (4.2 versus 3.6 L/min/m², $p=0.0066$). There was no difference in left ventricular function, long axis global longitudinal or radial strains. There was no difference in extracellular volume (27.9% versus 29.1%, $p=0.58$) nor T1 values.

Conclusion: PVM appears to be a self-limited illness, largely in males after the second dose, with near universal LGE typically located in the inferior and/or lateral wall. Patients with PVM have more favorable short-axis global circumferential and radial strains but similar native and contrast enhanced T1 values compared to those with non-vaccine myocarditis.