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Isolated Polymorphic Ventricular Tachycardia: An unusual presentation of acute myocarditis

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☐ **Resident/Psychology Intern (≤ 1 month of dedicated research time)**
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IRB Number: N/A

Describe role of Submitting/Presenting Trainee in this project (limit 150 words):
I participated in the care of the reported patient. I reviewed the relevant literature. I reviewed the patient's chart and wrote the case report.

Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words

Background: Presentation of pediatric myocarditis varies from minor chest pain to severe heart failure. Patients with myocarditis are at increased risk for arrhythmia, but this is infrequently the sole presenting finding.

Objectives/Goal: My goal was to describe a novel presentation of acute myocarditis and to discuss diagnosis and management decisions.

Methods/Design (Case Presentation): A 10 month old known to have a small right ventricular diverticulum presented acutely with emesis, lethargy, and tachypnea. Telemetry revealed sinus rhythm with frequent ventricular ectopy of right and left bundle branch block morphologies. Echocardiogram revealed normal left ventricular size and function and mild right ventricular dysfunction. Despite escalation in cardiorespiratory support, the rhythm devolved into sustained polymorphic VT (pVT).

Results (Decision Making and Clinical Course): Treatment with lidocaine did not terminate the frequent ventricular ectopy. Intravenous amiodarone administration resulted in junctional bradycardia, with inadequate cardiac output requiring VA ECMO support. Dual chamber epicardial pacing wires placed during chest cannulation quickly lost capture with eventual progression to

asystole. A balloon atrial septostomy was performed and angiography showed normal coronary arteries. Endomyocardial biopsy was consistent with acute myocarditis, with patchy interstitial and subendocardial fibrosis, myocyte necrosis and no evidence of vasculitis or granulomatous inflammation. IVIG and steroids were given. Pacing via an externalized transvenous ventricular pacing lead was successful and ECMO support was weaned after ten days. While sinus node function eventually recovered, complete heart block persisted, so a dual chamber epicardial pacemaker was placed 17 days after presentation. The patient was discharged home on hospital day 35. Comprehensive genetic arrhythmia and cardiomyopathy panels returned negative, and infectious work up was non-diagnostic. At one year the patient remains pacemaker-dependent, with complete heart block and no ventricular escape rhythm.

Conclusions: The differential diagnosis for pVT includes genetic channelopathies, metabolic derangements, coronary artery disease, ischemia, heart failure, and acute myocarditis amongst others. Myocarditis should remain a consideration even if cardiac function is near-normal at presentation. Endomyocardial biopsy may be useful in making the diagnosis.