2020

FIT Clinical Decision-Making: Isolated polymorphic ventricular tachycardia in a pediatric patient: an unusual presentation of acute mycocarditis

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Isolated Polymorphic Ventricular Tachycardia in a Pediatric Patient: An Unusual Presentation of Acute Myocarditis

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Background

The clinical presentation of pediatric myocarditis has a wide spectrum from chest pain with a minor troponin elevation to severe heart failure. While patients with myocarditis are known to be at risk for arrhythmia, it is uncommon as an isolated presentation.

Case

A 10 month old with a history of a small right ventricular diverticulum presented with 1 day of increased work of breathing and lethargy. Upon arrival to the CICU, her cardiac rhythm was sinus with frequent polymorphic ventricular ectopy. An echocardiogram showed normal left ventricular size and systolic function, and mildly dilated right ventricle with mildly decreased systolic function. She was intubated and sedated. Over the course of two hours, her rhythm evolved into multiform ventricular tachycardia with ST-segment depression.

Decision Making

- She was treated with **lidocaine**, without effect.
- **Amiodarone** resulted in a slow junctional rhythm and subsequent decreased perfusion and lactic acidosis.
- She was placed on **VA ECMO support**.
- Her rhythm **progressed to severe bradycardia**.
- **Dual chamber epicardial temporary pacing** wires were placed, but were unable to capture.
- **Cardiac catheterization** was performed for balloon atrial septostomy. Angiography showed normal coronary arteries.
- **Endomyocardial biopsy showed severe acute myocarditis** with patchy interstitial and subendocardial fibrosis.
- A **temporary transvenous ventricular pacing** lead was placed via the left femoral vein and was able to capture.
- She was weaned from ECMO after 10 days.
- Her sinus node function returned and ectopy ceased, however she had **persistent complete heart block** with no ventricular escape rhythm.
- 17 days after presentation, a **dual chamber permanent epicardial pacemaker** was placed with good capture.
- Subsequent arrhythmia and cardiomyopathy genetic panels were negative.
- She was discharged home after 35 days of admission.
- At one year follow-up, she **continues to have complete heartblock with no ventricular escape rhythm.**

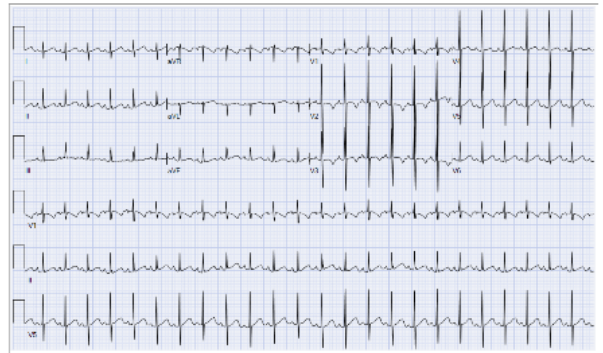
Polymorphic ventricular tachycardia can be the sole finding on presentation of myocarditis.

Endomyocardial biopsy may be helpful for diagnosis.

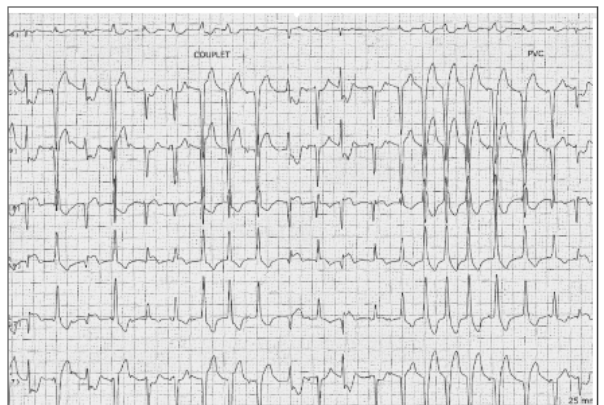
SCAN ME

Scan for additional case information, references and additional figures

Figures



Baseline EKG



Telemetry 2 hours after presentation

Discussion

The differential diagnosis for polymorphic VT in pediatrics includes

- Genetic channelopathy (SCN5A mutation)[1]
- Metabolic derangement
- Myocarditis
- Coronary artery disease
- Ischemia
- Heart failure
- Idiopathic

While myocarditis usually affects cardiac function as well, it is possible to have isolated arrhythmia. Endomyocardial biopsy may be useful in making the diagnosis.

Disclosures: None