



MYOCARDITIS WHAT IS IT, AND HOW TO DIAGNOSE AND TREAT IT...

What is Myocarditis?

Myocarditis is the inflammation of the heart muscle causing myocardial injury. It is often misdiagnosed. In the developed world, the most common cause of myocarditis is viral infections. Enteroviruses, most frequently Coxsackievirus B, are historically implicated as a common cause of this disease in children.

Clinical Presentation:

Many infants and children with myocarditis present with rapid and labored breathing, wheezing, and grunting, often mimicking more common childhood diseases such as asthma, bronchiolitis, and gastroenteritis. Older children and young adults may complain of fatigue, fever, vomiting, and muscle aches a few days before developing more severe symptoms such as shortness of breath and exercise intolerance. Often flu, gastroenteritis and asthma are the diagnosis given. More advanced symptoms include rapid heart rate, erratic and weakened pulse, pallor, diaphoresis, and dizziness.

Including Myocarditis as a possibility of non-specific symptoms can be lifesaving.

Many times, a patient is examined two or more times before being correctly diagnosed with Myocarditis. The earlier a diagnosis is made, the better the outcome and improves the chances for full recovery.

Those that are diagnosed incorrectly and resume their activities (sports, play) too soon, can have complications. The area of the heart muscle that was affected by the myocarditis and inflamed, develops a scar like formation. That area remains irritable and prone to cardiac arrhythmias while it is healing. Cardiac rest, rest from physical activities and sports is recommended for 3-6 months, sometimes longer, to allow the scarred area of the heart to heal and not be overstimulated from activity possibly causing cardiac arrhythmias and sudden death. There is no cure. Treatment is symptomatic.

- **Among children, Myocarditis is a common indication for Heart Transplantation.**
- **Myocarditis is the 3rd leading cause of Sudden Death in children and young adults.**

Treatment and Outcome

If acute myocarditis is suspected, referral to a cardiologist is highly recommended. Clinical deterioration may occur rapidly, especially in small children. In some situations, death is sudden and unexpected, and a diagnosis of myocarditis is not made until a post-mortem examination is performed. However, most cases of myocarditis, if diagnosed and symptoms treated, do recover without residual long-term effects. The key is swift diagnosis and cardiac rest to allow the heart to heal over a period of 3-6 months.

If a person is not improving or is worsening from what was diagnosed as a “viral illness”, do not hesitate to tell your doctor, and ask “Could this be Myocarditis?”

Making the Diagnosis of Myocarditis

It is important to keep acute myocarditis in the differential diagnosis of a patient who presents with new signs or symptoms of acute heart failure, (which can initially look like a viral syndrome with vomiting, diarrhea, fever, cough, shortness of breath, fatigue...)

Findings on physical exam may include:

- Hepatomegaly and Jugular venous distention
- Delayed capillary refill
- Abnormal heart sounds (murmur of mitral regurgitation, gallop heart rhythm)
- Crackles or rales on auscultation of lung fields
- Wheezing, grunting, tachypnea

Diagnostic testing can help to discriminate heart failure symptoms from other common illnesses that myocarditis mimics.

Diagnostic testing should include:

- B-type natriuretic peptide concentration (**BNP**), which will be elevated in myocarditis (but cannot distinguish myocarditis from other causes of heart failure)
- **Troponin I concentration**
(Marker of myocardial injury that **may** or may not **be elevated in children with myocarditis**)
- **Myoglobin** is released during cardiac injury and increases with the severity of myocarditis
- **Chest X-ray** (cardiomegaly, pulmonary vascular congestion, pleural effusion)
- **Electrocardiogram (EKG)** changes: PR depression, decreased voltages, irregular rhythm, heart block, ST segment changes
- **Echocardiogram** (depressed left ventricular systolic function, mitral regurgitation, dilated left ventricle)
- **Cardiac MRI can reveal myocardial edema and ischemia that often occur in myocarditis**, though specificity is lacking. An area of “Scar” is often noted where the myocarditis affected the heart.

COVID Myocarditis often presents with chest pain, rapid heart rate, palpitations, and shortness of breath. If related to a COVID Vaccine, these symptoms often present themselves within 2 to 14 days after the 2nd dose of the primary vaccine administration. **Per the CDC, COVID vaccines are recommended for anyone over the age of 6 months.** It has been found that cases of myocarditis post vaccine are usually not as severe as cases attributed to other causes, such as viruses, and most recover without any known long-term complications.

CDC Up to date COVID-19 Vaccination Guidance: <https://www.cdc.gov>

Information obtained from the Myocarditis Foundation and Dr. Jack Price, Professor of Pediatrics, Baylor College of Medicine, Pediatric Cardiologist and Member of the Heart Failure and Transplant Team at Texas Children’s Hospital, and member of the Myocarditis Foundation Board of Directors. The Myocarditis Foundation is the only National/International Foundation that provides up to date information on Myocarditis as well as funding research specific to Myocarditis.