

MYOCARDITIS

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



What is Myocarditis?

The term Myocarditis was first designated in Germany in 1837. Not much was spoken again about this for the next 100+ years. Over the past 25 years, there has been an increase in research into Myocarditis. Myocarditis is the inflammation of the heart muscle causing myocardial injury. It is often misdiagnosed. In the developed world, the most common causes of pediatric myocarditis are 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.

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 vaccine administration. 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.

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

Most people with Myocarditis recover with treatment, but a substantial percentage may progress to progressive heart failure leading to cardiac transplantation or death. 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.

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. There is no cure. Treatment is symptomatic. If a person is not improving or worsening from what was diagnosed as a "viral illness", do not hesitate to tell your doctor, and ask, "Could this be Myocarditis?"

- Myocarditis is the 3rd leading cause of Sudden Death in children and young adults.
- Myocarditis accounts for 45% of Heart Transplants in the U.S.

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.

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
- Delayed capillary refill
- Abnormal heart sounds (murmur of mitral regurgitation, gallop heart rhythm)
- Jugular venous distention
- 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.

Viral serologies and peripheral blood and tissue cultures are frequently negative and not helpful in making an early diagnosis. The cardiac biopsy is fraught with a high false negative rate unless the biopsy is in the exact area of myocarditis.

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.

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.

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