

What doctors want patients to know about myocarditis

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Once considered a rare and mysterious heart condition, myocarditis stepped into the spotlight during the COVID-19 public health emergency, raising concern, confusion and countless questions. From viral infections to autoimmune triggers, this inflammation of the heart muscle can strike unexpectedly, affecting the young and healthy as easily as those with chronic conditions.

As headlines continue to link myocarditis to everything from COVID-19 to certain vaccines, patients are left navigating a swirl of information—some accurate, some dangerously misleading. But what exactly is myocarditis, who is at risk, and what should patients know? Awareness, not alarm, should be your guide.

The AMA's What Doctors Want Patients to Know™ series gives physicians a platform to share what they want patients to understand about today's health care headlines.

In this installment, Lauren Weber, MD, a cardiologist at Confluence Health Hospital in Wenatchee, Washington, took the time to share what patients should know about myocarditis.

[Confluence Health](#) is a member of the [AMA Health System Program](#), which provides enterprise solutions to equip leadership, physicians and care teams with resources to help drive the future of medicine.

It often goes undetected

Myocarditis is “an inflammatory disease of the myocardium that can be caused by a wide array of conditions,” said Dr. Weber. The myocardium is the middle and thickest layer of the heart wall, composed of cardiac muscle. It is one of three types of muscle in the body, along with skeletal and smooth muscle.

“It is difficult to know the true incidence of myocarditis because [mild cases of myocarditis](#) may go undetected, and incidence will vary based on underlying cause,” she said. “In 2023, the [Global Burden of Disease Database published a report](#) estimating that there are about 1.8 million cases of myocarditis per year.”

Watch out for symptoms of myocarditis

“The most common symptoms of myocarditis are not specific to the disease itself,” said Dr. Weber, “but are symptoms patients should take seriously as a potential indication that there is a cardiac condition.”

“Symptoms of chest pain, heart failure, exertional intolerance or syncope [fainting] should prompt medical investigation,” she said. Other symptoms can include difficult or rapid breathing, irregular heartbeats and fever.

There are different causes

“Myocarditis has a broad range of causes,” said Dr. Weber, “and can broadly be lumped into infectious, drug- or toxin-mediated, or associated with another systemic disease such as sarcoidosis.” The latter is a condition in which the body’s immune system overreacts, causing lumps or nodules to form in your lungs, lymph nodes, skin, eyes and other parts of your body.

“For infectious myocarditis, viral infections are the most common cause in the developed world,” she said. “Although there are many viral infections that are associated with myocarditis, the more common culprits include adenovirus, enterovirus, parvovirus, human herpes virus 6, influenza, HIV and SARS-CoV-2.”

Other heart conditions may be at play

“Both pericarditis—inflammation of the pericardium-heart lining—or cardiomyopathy, a term generally used to describe changes in heart structure or ventricular dysfunction such as reduction in right or left ventricular-ejection fractions may be associated with myocarditis with varying incidence,” said Dr. Weber.

“These conditions can occur on their own as well without myocarditis,” she added, noting that “perimyocarditis will frequently have the symptoms classically associated with pericarditis such as positional chest discomfort or shortness of breath.”

“Patients with myocarditis are at risk to develop ventricular dysfunction—cardiomyopathy—in the future, even if it is not part of their initial presentation and should be monitored closely by a cardiologist,” Dr. Weber said.

Know if you are at risk

“The recent consensus statement by the American College of Cardiology in 2024 proposed a new staging system for myocarditis which includes a Stage A category for individuals at risk for myocarditis,” said Dr. Weber. “This includes those who have a genetic predisposition to cardiomyopathy, a prior personal history of myocarditis, those using certain medications such as checkpoint inhibitors, or illicit drugs like cocaine or methamphetamine.”

“Certain systemic immune-mediated diseases were also identified as increasing risk of myocarditis including sarcoidosis, systemic lupus and [rheumatoid arthritis](#),” she said. Also, “men may be more susceptible than women.”

Vaccines can cause myocarditis

“The vaccines identified to be more likely to induce vaccine-related myocarditis are smallpox and the COVID-19 mRNA vaccine,” said Dr. Weber, noting that “young men and adolescent boys had higher incidence of COVID-19 vaccine-related myocarditis.”

However, “myocarditis after vaccination is considered rare and the prognosis is generally very good,” she said. The Centers for Disease Control and Prevention “continues to collect data regarding vaccine safety.”

[Myocarditis is a rare side effect of the vaccine](#) and has only occurred in a small number of people after vaccination. For the young people who do develop myocarditis after vaccination, most cases are mild, and recovery will happen on its own or with minimal treatment.

Additionally, myocarditis and pericarditis are much more common if you get COVID-19. The risks to the heart from COVID-19 infection can be more severe.

Your health history is important

“Remember, there are many potential causes of myocarditis,” said Dr. Weber. “A thorough patient history is important to evaluate for potential toxin exposure or atypical infections.

“For patients indigenous to developing countries, the differential for infectious causes should be broadened,” she added. Meanwhile, “medications should be reviewed to identify potential offending agents.”

Treatment depends on stage and cause

“Treatment for myocarditis is determined by stage and underlying cause. If there is a potential offending agent, it should be stopped or held,” such as use of methamphetamine or checkpoint-inhibitors, Dr. Weber said. “For patients with chest pain possibly due to inflammation of the pericardium—myopericarditis—who have normal left ventricular function, NSAIDs [nonsteroidal anti-inflammatory drugs, such as ibuprofen] and colchicine can be used.

“For patients with heart failure, treatment may include diuretics and other guideline-directed medical therapy,” she added. “Immunosuppression with steroid therapy is considered for more severe conditions such as giant cell, sarcoid, eosinophilic or checkpoint-inhibitor myocarditis.”

Treatment for myocarditis “is a complex clinical decision and should be discussed and directed by a multidisciplinary team,” Dr. Weber said.

Myocarditis recovery time varies

“For patients who have myocarditis proven by endomyocardial biopsy, about 50% of them will recover in two to four weeks,” said Dr. Weber. “Patients with myocarditis require close follow-up and often surveillance lab work or imaging to monitor for both the worsening and recovery of ventricular function.”

When it comes to recovering from myocarditis, “patients should also avoid exercise for three to six months,” she said. This is to allow the heart muscle to heal and prevent further damage after myocarditis is diagnosed.

Complications can be severe

“Complications of myocarditis can be quite severe,” said Dr. Weber, “and include left and right ventricular dysfunction, congestive heart failure, arrhythmia, cardiogenic shock and death.”

“Early recognition of the diagnosis, recognition of clinical deterioration and when to seek appropriate care at a facility that has advanced heart failure treatment capabilities is paramount,” she said. “How often patients will advance from the less to the more severe stages of myocarditis is unknown. For the most critically ill patients, mortality can be as high as 27–35%.”

Myocarditis can happen again

While a person can develop myocarditis after recovering from the condition, “we don’t know exactly how often it happens,” Dr. Weber said. The “recurrence rate will depend on the initial underlying causes, presence of abnormal findings on imaging and any potential underlying genetic condition.”

“For those patients with Stage C myocarditis—symptomatic patients with either an abnormal endomyocardial biopsy, abnormal cardiac MRI [magnetic resonance imaging] or abnormal cardiac biomarkers—recurrence may be anywhere from 3% to 10% per year,” she said. “Patients who had left ventricular dysfunction and were started on guideline-directed medical therapy should continue therapy—even after the heart function has returned to normal—as the risk of recurrent heart failure if medications are stopped is quite high.”

It is hard to prevent myocarditis

“For now, there is nothing we know of to modify baseline risk or prevent myocarditis,” said Dr. Weber. But taking steps to prevent infections may help.

This includes staying away from people who are sick, washing your hands regularly, avoiding risky behaviors and getting recommended vaccines, she said.

It is also important to note that vaccines are highly effective at preventing symptomatic and severe COVID-19 illness. This helps to reduce the overall chance of contracting the virus and subsequently developing myocarditis as a complication of infection.

Careful observation is key

“There are many questions regarding the diagnosis and management of myocarditis that remain unanswered,” said Dr. Weber. “Most patients will have mild disease and make a full recovery, but careful observation is still recommended.”

Additionally, “patients should be seen and followed by a cardiologist, particularly before they return to exercise,” she said. Meanwhile, “there is new recognition of the genetic predisposition for individuals who develop myocarditis and genetic counseling should be considered for all cases.”