What is the COVID-19 Myocarditis Link?

COVID-19 affects the lungs, but scientists have discovered that it also has an uncanny way of insinuating itself into other organs, including the heart.

The coronavirus can cause myocarditis, an inflammation of the heart muscle. Patients with the condition may suffer from shortness of breath, chest pain, and abnormal heartbeats. Some also report swelling in the extremities. More worrisome: myocarditis can cause permanent damage to the heart muscle. A weakened heart cannot deliver essential blood and oxygen to the rest of the body, potentially causing fluid overload in other organs, weakness, fatigue, lack of energy, and diminished exercise capacity.

Heart muscle is vulnerable to the COVID-19 virus

The corona spike protein, the signature protein that enables the virus to invade our cells, “has an affinity for a variety of tissues, including the heart muscle,” says Raul Mitrani, M.D., a cardiac electrophysiologist at the University of Miami Health System. Potential cardiac injury may result from a variety of mechanisms. There may be direct viral invasion of the cells in the heart causing damage. The cytokine storm, the body’s haywire immune response, may cause intense inflammation that can damage the heart as ‘collateral damage.’ Furthermore, the stress from the infection, blood clots that can form from a
COVID-19 infection, or other mechanisms may result in cardiac injury.

“It might also be a result of the hospitalization itself, the stress that can result in cardiac injury,” he adds.

The link between COVID-19 and myocarditis has received lots of attention ever since a University of Florida basketball player collapsed on the court in December. He spent 12 days in the hospital, according to press reports, diagnosed with myocarditis after previously testing positive (and recovering) from COVID-19.

The UF basketball player wasn’t the only elite athlete who made the news with the COVID-myocarditis link. A Major League pitcher was sidelined for the 2020 season due to the condition, as was a Buffalo Bills tight end, a Premier Lacrosse League player, and a female collegiate basketball star.

After all, it did not bode well for the rest of the population if a well-conditioned young person could suffer such severe consequences from the virus. What’s more, those stories came on the heels of a German research study that reported 60 out of 100 patients who had recovered from the coronavirus showed signs of cardiac injury.

Knowledge regarding COVID-19 is an evolving situation

Recent research points to the possibility that myocarditis may be rare. Dr. Mitrani says studies conducted by UHealth cardiologists have found that COVID-related cardiac injury, including myocarditis, is present in fewer than 5% of athletes.

“It’s gratifying to know that it’s only less than 5%, but even that number is significant,” he adds. “That’s also complicated by the fact that we don’t know who [of the COVID patients) will be the ones to develop it.”
The low percentage of athletes diagnosed with cardiac injury and/or myocarditis seems in line with other more current reports. A recent review of 77 autopsied hearts from people in nine countries who died from COVID revealed that myocarditis might be a rarer occurrence than previously thought. Published online in the journal Cardiovascular Pathology, the study found that the rate of myocarditis was between 1.4% and 7.2% — much lower than the earlier, and scarier, 60% rate.

Another report by a team of cardiologists and pathologists, published in the Journal of the American College of Cardiology, revealed myocarditis in only 4.5% of COVID cases undergoing autopsy or endomyocardial biopsy. When the research team from the CVPath Institute in Gaithersburg, Maryland, analyzed 201 highly selected cases — most of which were autopsy cases — they found only nine instances of myocarditis.

Is the damage permanent?

“How much of this is due to inflammation or other processes, we don’t know,” says Dr. Mitrani, adding that the medical community also has yet to determine if damage to the heart muscle is temporary or permanent.

The risk of myocarditis increases with the severity of the disease, but it also has been diagnosed in patients who reported only mild COVID-19. That’s why keeping tabs on symptoms and responding quickly to them is so important.

“If you have any symptoms that are cardiac-related, have it checked out immediately,” Dr. Mitrani says. Everyone should heed these recommendations, not just athletes or weekend warriors.

Screening for myocarditis can include blood tests, EKG, physical examination, stress test, and an echocardiogram or ultrasound of the heart. In certain cases, a
cardiologist may order a cardiac MRI. Treatment can include beta-blockers and ace inhibitors, medicines that work in different ways to lower blood pressure and ease the strain on the heart muscle.

Read more about UHealth's COVID-19 Heart Program.

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