KNOWLEDGE NURTURES HOPE

FALL 2021 / VOLUME 21 / NUMBER 2

MYOCARDITIS FOUNDATION

Dedicated to Providing Information and Support Related to the Causes, Symptoms, Diagnosis and Treatment of Myocarditis and Sudden Death

UPDATE

What We've Learned From the SARS-CoV-2 Infection (COVID-19 Virus) and How It Relates to Inflammatory Heart Disease (Myocarditis & Pericarditis)

SARS-CoV-2, (severe acute respiratory syndrome coronavirus 2) is part of a large family of coronaviruses that causes respiratory illness in humans. It is the cause of COVID-19, and has infected millions of people around the world, causing significant morbidity (ill health) and mortality (death, especially on a large scale).

Coronaviruses usually cause mild to moderate upper-respiratory tract illnesses, like the common cold. However, SARS-CoV-2 can cause serious illness and even death.

Coronaviruses can live in both humans and animals. When a coronavirus transmits from an animal species to humans, that is when a new type of coronavirus is formed, or a "novel" coronavirus. The COVID-19 novel coronavirus was transmitted to humans from an animal population, and since this is the first time human immune systems have seen this particular strain, we have not developed any immunity yet.

Per Dr. David Wein, chief of Emergency Medicine at Tampa General Hospital,

"What we do know is that the COVID-19 strain is a lot more infectious, or contagious, than other novel coronaviruses". What we do know is key to protecting ourselves from the virus.

Besides utilizing good infection control practices such as:

- Washing your hands with soap and water for at least 20 seconds before rinsing them under running water
- Avoid touching your eyes, nose, and mouth
- Cover your mouth when you cough or sneeze and wash your hands immediately after (see above)
- Avoid close contact with people who are sick and stay home when you are sick

The American Heart Association (AHA) stated on 6/21/2021 that a possible link between some COVID-19 vaccines and heart inflammation bears close monitoring, but do not believe that it is a reason to avoid vaccination. The majority of the cases of myocarditis and pericarditis are mild and most patients who received care responded well to treatment and rest and quickly felt better, per the CDC.

The Federal Drug Administration (FDA) has revised the labels for two COVID-19 vaccines (Pfizer and Moderna) following cases of inflammatory heart disease (Myocarditis and Pericarditis) among patients, but experts stress the vaccine benefits outweigh the risks, with the coronavirus itself having greater potential to cause heart inflammation.

The Centers for Disease Control (CDC) continues to recommend COVID-19 vaccination for everyone 12 years of age and older, given the risk of COVID-19 illness and related, possible severe complications, such as long-term health problems, hospitalization, and even death.

Per Mayo Clinic, "While reports of post-vaccine myocarditis in some areas are higher than baseline, the imminant and greater risk for heart damage and death continues to be from becoming infected with COVID-19." As many as 60% of people who have severe cases of COVID-19 experience heart damage. In addition, Mayo noted that nearly 1% of fit athletes who had a mild COVID-19 infection show myocarditis on an MRI. "The risk of myocarditis after receiving mRNA vaccine is far less than the risk of myocarditis following actual COVID-19 infection," said Dr. Leslie Cooper, cardiologist at the Mayo Clinic. "People of all ages should choose to get a COVID-19 vaccine because the risks are extremely low compared to the benefit," Cooper says. "Additionally, the growing body of research shows that vaccine-associated myocarditis resolves quickly in almost all cases."

Individuals who experience symptoms of myocarditis and

(Continued on pg2)

UPDATE

What We've Learned (contunued)

pericarditis, such as: chest pain, tightness or discomfort; palpitations (rapid, fluttering or pounding heartbeat); syncope (fainting); exercise intolerance (inability or decreased ability to perform normal physical exercise, such as climbing stairs or gasping for breath after taking a few steps); and general shortness of breath, should seek medical evaluation immediately if they occur. Most of these symptoms occur within the first two weeks after the second dose of the vaccine.

RECENT STUDY

Myocarditis and Pericarditis after Vaccination for COVID-19

The following information has been taken from an article published in the Journal of the American Medical Association, September 28, 2021, Volume 326, Number 12.

Rare cases of cardiac inflammation following SARS-CoV-2 vaccination have been reported.

There was a study done within forty hospitals in Washington, Oregon, Montana, and Los Angeles County, California. All patients had documented COVID-19 vaccinations administered and recorded in state registries through May 25, 2021. They had subsequent emergency department or inpatient encounters with diagnoses of myocarditis, myopericarditis, or pericarditis.

Among 2,000,287 individuals receiving at least 1 COVID-19 Vaccination 20 individuals had vaccine-related myocarditis (1.0 per 100,000) and 37 had pericarditis (1.8 per 100,000).

In those that developed myocarditis, it occurred a median of 3.5 days after vaccination. Fifteen were male and the median age was 36 years. Four persons developed symptoms after the first vaccination and 16 developed symptoms after the second vaccination. Nineteen of them were admitted to the hospital. All were discharged after a median of 2 days. There were no readmissions or deaths. Two patients received a second vaccination after onset of myocarditis and neither had worsening of symptoms. At 23.5 days after start of symptoms, 13 had symptom resolution and 7 were improving.

Of those 37 with pericarditis, median onset was 20 days after the most recent vaccination. Twenty- seven were male and the median age was 59 years. 15 cases developed after the first immunization and 22 after the second immunization. Thirteen were admitted to the hospital. Median stay was one day. Seven patients with pericarditis received a second vaccination. There were no deaths. At 28 days after start of symptoms, 7 had resolved symptoms and 23 were improving.

Myocarditis and Pericarditis were observed after COVID-19 vaccination.

Myocarditis developed rapidly in younger patients, mostly after the second vaccination.

Pericarditis affected older patients later, either after the first or second dose.

Please visit our website, **www.myocarditisfoundation.org** to learn more about both of these diseases.

EVENTS

14th Annual Golf Outing Was A Huge Success, Thanks To You!

On Monday August 9th, the Myocarditis Foundation held its "14th Annual Golf Outing" at Arcola Country Club in Paramus, New Jersey. We had a record number of golfers and we raised in excess of $175,000. The date for the 2022 event has not been set yet. We will be holding it again at Arcola, a world class golf course with its spectacular views of New York City.

The day started with a shopping event for each player at Graysons' and a Cigar Rolling demonstration. Dr. Leslie Cooper, Co-Founder of the Myocarditis Foundation had breakfast with the players before the shotgun start. Lunch was provided at various stations throughout the course. Unfortunately, no one was able to sink a "hole in one" to win the 2021 GMC Sierra that was provided courtesy of Quality Auto, but there was much laughter and comradery going on throughout the day. Joel Aranson, "Committee Emeritus, and Ambassador of good will for the event", drove around the course with Candace Moose, Co-Founder, meeting and greeting all the players. There were many return supporters as well as a number of new ones to the event.

The evening ended with a cocktail hour, sumptuous dinner, and awards ceremony. There was a Live Auction and Silent Auction, with such prizes as foursomes to various elite golf clubs, sporting events, and resort trips.

Genevieve Rumore, Executive Director, spoke about how the Foundation helps others, some of the latest Research that is being carried out, and how to self-advocate for potential diagnosis of the disease.

The Myocarditis Foundation would like to thank all the participants and donors for all the support that you have shown to such an important cause. A special thanks to our corporate sponsors as their support is invaluable to the Foundation's mission. We look forward to seeing you all again at our 2022 event. Stay tuned for the date!

COVID-19 Myocarditis in Children

Myocarditis is uncommon in children but occurs more commonly among those with COVID-19. In a recent study published in the Morbidity and Mortality Weekly Report from the Centers for Disease Control (CDC), only 86 children <16 years of age were diagnosed with myocarditis among nearly 65,000 (0.133%) children with COVID-19. During the same time period (March 2020-January 2021), 132 out of nearly 4 million children without COVID-19 developed myocarditis. Although the overall risk was low, the data translate to a risk of myocarditis that is more than 30 times higher among COVID-19 patients. The study reviewed health encounters of more than 900 US hospitals and excluded any patients who had received a COVID-19 vaccine. The methods used for making a diagnosis of myocarditis were not described.

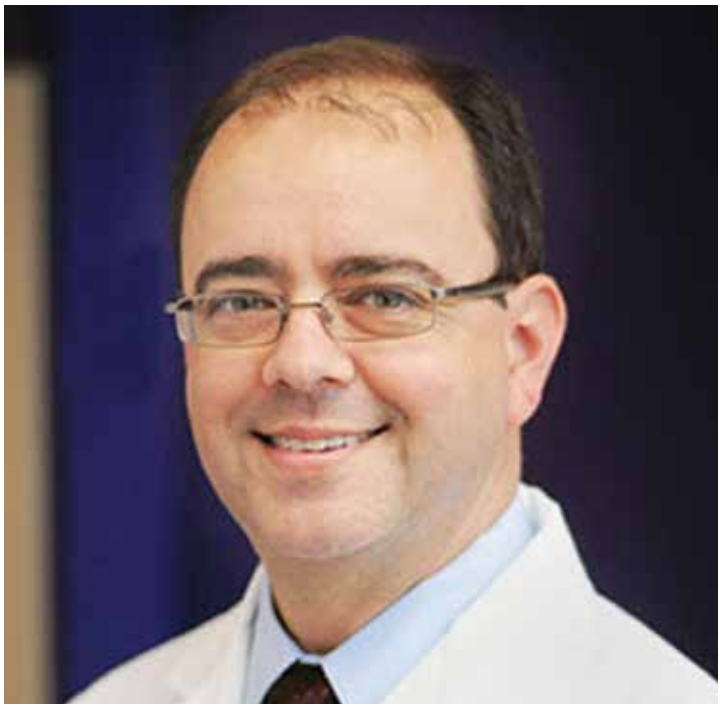
The study also found that COVID-19 patients <16 years of age had a risk of myocarditis similar to that of patients >75 years of age but much greater than all other age groups. In addition, the risk difference for myocarditis was increased in males compared to females. The numbers of cases of COVID-19 myocarditis spiked in April 2020 and again during the COVID-19 surge of December 2020.

The study investigators speculate that the diagnosis of myocarditis among patients <16 years of age may represent cases of the multisystem inflammatory syndrome in children (MIS-C). MIS-C is a clinical syndrome that usually occurs 2-4 weeks after infection with the SARS-CoV-2 coronavirus. It usually manifests with fever, rash, swollen lymph glands and conjunctivitis. In some patients cardiovascular complications are seen including shock, coronary artery dilation and depressed ventricular function. Fortunately, most children who develop MIS-C will recover without chronic cardiac disease.

When SARS-CoV-2 virus infects the muscle cells of the heart, it begins to replicate and damage the cell. The body's immune system is activated and sends lymphocytes and other white blood cells to infected tissues, causing inflammation and producing antibodies against the virus. In some patients, the immune system's response may cause more local tissue injury than the virus itself. Myocardial edema (tissue swelling) with decreased heart function and arrhythmias can result.

The impact of COVID-19 on the heart and the much higher risk of myocarditis among patients with COVID-19 compared to patients without COVID-19 underscores the importance of prevention of spread of the virus. Vaccines against SARS-CoV-2 have been demonstrated to be safe and effective at preventing serious infection. Among children age 12 to 15 years of age the vaccine efficacy is 100%. Currently, the American Academy of Pediatrics and the CDC recommend that all adolescents ages 12 and older receive the COVID-19 vaccine.

Recently, rare cases of vaccine-associated myocarditis have been reported in adolescent males usually following the second dose. These boys typically present with complaints of chest pain with or without elevated troponin levels in the blood. As of June 2021, the Vaccine Adverse Event Reporting System (VAERS) reported 1,226 cases of myocarditis after COVID-19 vaccination. The median age was 26 years and the median time to onset of symptoms was 3 days after the vaccination. Cases were reported after both the Pfizer-BioNTech and Moderna vaccines. Among a subset of 323 patients determined to have myocarditis after the vaccines, the vast majority were male (90%) with mild clinical cases and none had died. Upon reviewing the evidence of myocarditis after the vaccine, the Advisory Committee on Immunization Practices of the CDC determined that the benefits of the mRNA COVID-19 vaccines clearly outweigh any risks.



Jack F. Price, MD, FAAP, FACC.
Professor of Pediatrics
Baylor College of Medicine
Texas Children's Hospital
Houston, TX

The question of when is it safe for children to return to playing sports and physical activity has received a great deal of attention during the pandemic. The American Academy of Pediatrics has created guidance for pediatricians when recommending return to play for children who developed COVID-19. In general, children who never developed symptoms (chest pain, palpitations, shortness of breath, fainting) while infected may return to play following a period of quarantine. It is recommended that the primary care physician assess the child at least once. For children who were symptomatic, return to activity depends on the severity and resolution of symptoms and may range from 10 days to 6 months. Parents should seek the advice of their primary care team before allowing their child to return to physical activity.

References:

Boehmer TK, Kompaniyets L, Lavery AM, et al. Association between COVID-19 myocarditis using hospital-based administrative data—United States, March 2020-January 2021. MMWR 2021;70:1128-32.

Siripanthong B, Nazarian S, Muser D, et al. Recognizing COVID-19–related myocarditis: The possible pathophysiology and proposed guideline for diagnosis and management. Heart Rhythm 2020;17:1463–1471.

Gargano JW, Wallace M, Hadler SC, et al. Use of mRNA COVID-19 vaccine after reports of myocarditis among vaccine recipients: Update from the Advisory Committee on Immunization Practices—United States, June 2021. MMWR 2021;70:977-982.

MYOCARDITIS UPDATE

Meeting the Challenges of Myocarditis

Meeting the Challenges of Myocarditis: New Opportunities for Prevention, Detection and Intervention Workshop (held virtually in May 2021)

The National Heart, Lung, and Blood Institute (NHLBI) convened a workshop of 27 international experts in the field on, "Meeting the Challenges of Myocarditis: New Opportunities for Prevention, Detection, and Intervention." The workshop was conducted virtually on May 3, 4, and 6, 2021 to address the following objectives:

- Foster exchange of novel ideas pertaining to myocarditis
- Identify critical clinical and research gaps, barriers, and opportunities
- Explore approaches and technologies utilized for other cardiac diseases that could be leveraged to inform and advance understanding of myocarditis
- Discuss strategies to encourage and develop training of the next generation of researchers in the field

Many of these researchers involved in this endeavor are or have been a part of the Myocarditis Foundation. Dr. Leslie Cooper, MD, our co-founder, Mayo Clinic, and Dr. Daniela Cihakova MD, PhD, Johns Hopkins University (our first Fellowship Grant Recipient) were the Co-Chairs of this workshop. Others, who are on our Medical Advisory Board and involved are: Dr. DeLisa Fairweather, PhD, Mayo Clinic; Dr. Bruce McManus, MD, PhD, University of British Columbia; and Dr. Wilson Tang, MD, Cleveland Clinic.

Background and Reasoning for the Workshop

Myocarditis is defined as inflammation of the heart muscle. Myocarditis can be triggered by a wide range of pathogens, including viruses, bacteria (e.g., chlamydia, and rickettsia), fungi, and protozoa, as well as non-infectious causes, such as hypersensitivity to drugs, hyper-eosinophilia of different origins, and autoimmune responses. In addition, new causes of myocarditis, such as side effects of cancer therapies, are emerging. Mild myocarditis can involve symptoms such as chest pain or shortness of breath, or even no symptoms. However, significant morbidity and mortality are associated with severe myocarditis, particularly in children and young

adults. These variability of presentations, outcomes, and lack of accurate noninvasive prognostic testing makes prevention, detection, and intervention challenging. There is a critical need to understand the mechanisms of myocarditis and lower the overall burden of disease.

Basic Science Frontiers

- Determine sex and age differences in immune responses and their relationship to outcomes of myocarditis.
- Standardize animal models and develop new animal models to examine the broad spectrum of etiologies in myocarditis. Examples are:
  - New viral-induced animal myocarditis models, such as SARS-CoV-2 or influenza-induced myocarditis mouse models.
  - Large animal models with heart sizes similar to human heart size for catheter-based studies.
  - New zebrafish models to study genetics. (Zebrafish have the unique ability to repair heart muscle, thus it is one of the most important models for developmental and regenerative biology of the heart.)
  - Animal models of pediatric myocarditis.

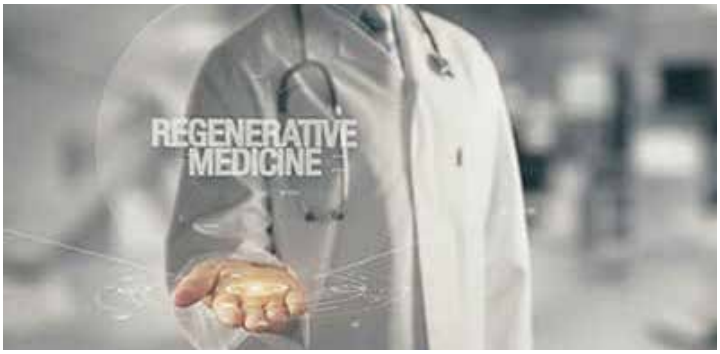
An informational document "white paper", to educate readers outlining the gaps and opportunities that were identified at the workshop, is in preparation. We will share more information as it becomes available.

RESEARCH

Advances In Using Regenerative Medicine As A Therapy For Myocarditis

Although it works tirelessly day in and day out, the heart is one of the only muscles in the body that regenerates little to no muscle tissue after it's been damaged. Instead of replacing the damaged tissue with more muscle after it's been damaged by inflammation, the heart receives scar tissue. The presence of the scar prevents any further muscle regeneration and makes it more difficult for the heart to pump, ultimately weakening the heart and making it increasingly vulnerable to progress to a condition called dilated cardiomyopathy or an enlarged heart.

While there are supportive therapies that can alleviate the symptoms associated with myocarditis, there aren't any methods or medicines that can completely cure it. But thanks to advances in regenerative medicine, scientists and doctors may be on the verge of finding a modality that truly helps. Here, the Myocarditis Foundation, which works diligently to provide the knowledge and funding necessary to further research around myocarditis treatment, explains how regenerative medicine may, one day, serve as a cure for myocarditis.



Myocarditis is a heart condition that occurs as the result of a myocardial injury caused by inflammation, with the most common cause for myocardial injury including viral infections.

Many different kinds of viral infections can cause myocarditis. Two important viral causes of myocarditis in the United States include coxsackievirus also known as hand, foot and mouth

How Viruses Cause Myocardial Injury

While there is much to be learned about myocarditis, we know that viral infections are among the most common causes of the condition. Because of this, it is often the case that myocarditis brought on by a viral infection has everything to do with the myocardial injury sustained as a result of the virus. The damage to the heart is caused by the body's natural defenses against the virus and can lead to severe heart failure and even death.

Myocardial injury can be difficult to detect, and it is important to know the potential causes, as well as supportive therapies and activities to avoid while your body is healing. To help raise awareness about this health risk, Myocarditis Foundation takes a closer look at myocardial injury and how viruses can cause it.

Understanding Your Heart's Response to a Viral Infection

The body is designed to defend itself, and when there is a foreign pathogen attacking it, your body responds with force. When a virus tries to infiltrate the heart, our immune cells including MAST cells, which usually protect us from allergies, kick off an immune response that summons other immune cells known as macrophages and T cells. These two types of immune cells make up most of the inflammation in the heart that is responsible for myocarditis. This overactive immune response to the virus in the heart is what leads to myocardial damage.

Symptoms of Myocardial Injury and Myocarditis

Despite being a cardiovascular problem, myocardial injuries don't present with symptoms typical of other heart conditions. Be on the lookout for the following symptoms in the weeks after recovering from a viral infection, which may indicate myocardial injury:

- Chest pain
- Fatigue
- Fluid retention and swelling of the lower body
- Rapid or abnormal heart rhythms (arrhythmias)
- Shortness of breath or rapid breathing, either at rest or while active

- Signs of viral infection
  - Diarrhea
  - Fever
  - Headache
  - Muscle aches
  - Weak urine flow (in extreme cases)

More importantly, trust the signals your body is sending you. If you're experiencing any number of these symptoms, schedule an appointment with your doctor for a thorough evaluation.

If You Have a Myocardial Injury, Avoid Doing This

Since viral infection is occurring in the heart, the one thing you should avoid doing if you suspect you have a myocardial injury is strenuous physical activity. Research is currently being conducted to better understand why strenuous exercise after a viral myocarditis can exacerbate heart damage and lead to heart failure. Currently it is recommended that you wait 3 to 6 months after developing viral myocarditis before engaging in strenuous exercise. Research will hopefully provide a better understanding soon of why this is so important.

virus that causes stomach/intestinal flu symptoms and SARS-CoV-2 that causes COVID-19.

When these viral infections reach the heart, immune cells including the MAST cell, which usually defends against allergens, triggers the body's immune response. The body deploys what are known as macrophages and T cells, and these immune cells destroy the virus or bacteria. However, if this immune response is too severe it can lead to heart failure and death or damage the heart leading to the development of scar tissue that leads to dilated cardiomyopathy or an enlarged heart. Dilated cardiomyopathy, if severe, may lead to the need for a heart transplant.

Regenerative Medicine as a Promising Treatment

Scientists and organizations that are devoted to finding a cure for cardiopulmonary-related deaths are making noteworthy breakthroughs in the field of regenerative medicine. Regenerative medicine harnesses the body's ability to make cells and release vesicles from cells that have healing or anti-inflammatory properties. Preliminary research that has not yet been published is yielded promising findings that these cells and vesicles are able to reduce inflammation associated with myocarditis. After decades of work on these therapies, scientists are refining techniques to make using these therapies more cost effective and reliable- but a lot of research still needs to be done. The goal of regenerative medicine for myocarditis is to reduce myocarditis to prevent sudden death and to reduce the formation of scar tissue so that the patient does not progress to dilated cardiomyopathy later on.

While there is still much work to be done and areas of regenerative medicine that need to be fully explored, these types of therapies are quickly shaping up to be the best candidate when seeking to reduce inflammation and repair scar tissue after a myocardial injury, which in turn reduces or eliminates the risk of heart failure from myocarditis and progression to dilated cardiomyopathy.

A New Biomarker to Diagnose Acute Myocarditis

In an interview by Todd Neale, the Associate News Editor for TCTMD and a Senior Medical Journalist with Dr. DeLisa Fairweather, PhD, Mayo Clinic, member of our Medical Advisory Board and researcher in this study, he wrote the following article.

A novel microRNA measured in plasma, first discovered in mice and then isolated in humans for the first time, eventually might provide a simpler way to diagnose acute myocarditis, a preliminary study suggests.

Expressed by type 17 helper T (Th17) lymphocytes, levels of the microRNA accurately distinguished patients with acute myocarditis from those with acute Myocardial Infarction (MI) "heart attack", with an area under the receiver-operating-characteristic curve (AUC) of 0.927, according to researchers led by Rafael Blanco Domínguez, MSc, and Raquel Sánchez Díaz, PhD (both National Center for Cardiovascular Research, Madrid, Spain).

The biomarker's ability to identify patients with acute myocarditis was confirmed through comparisons with other groups of patients, as well, including those with MI with nonobstructive coronary arteries (MINOCA) and a variety of autoimmune diseases, the investigators report in a study published in the May 27, 2021, issue of the New England Journal of Medicine.

An easy-to-measure diagnostic biomarker would be welcome for acute myocarditis, which can mimic MI, making it challenging to come to a definitive diagnosis. The gold standard is endomyocardial biopsy, but its invasive nature is a drawback. Acute myocarditis can also be identified using cardiovascular magnetic resonance (CMR) imaging, but that isn't available at all centers. "Therefore, reliable and accessible diagnostic tools for the early diagnosis of acute myocarditis are an unmet clinical need," the authors say.

Study author DeLisa Fairweather, PhD (Mayo Clinic, Jacksonville, FL), told TCTMD that "by having a biomarker like this that could be rapidly examined, this would be a distinguishing way to understand that this is myocarditis versus a myocardial infarct versus potentially some other kind of heart disease."

Fairweather said this microRNA—dubbed hsa-miR-Chr8:96—is unique in that it is specific to myocarditis, which contrasts with other CV biomarkers like troponin, which can reflect damage related to a variety of conditions. "That would make it a very powerful tool," she said.

The Potential of MicroRNAs

MicroRNAs, the researchers note, "have emerged as innovative biomarkers for cardiovascular disease." They initially identified the biomarker in this study by examining microRNAs expressed by circulating T cells in mouse models of autoimmune or viral myocarditis. Expression of this microRNA enhances the proautoimmune activity of T lymphocytes and contributes to the severity of inflammation in the myocardium, senior author Pilar Martín, PhD (National Center for Cardiovascular Research), explained to TCTMD.

The team "confirmed that Th17 cells, which are characterized by the production of interleukin-17, are a characteristic feature of myocardial injury in the acute phase of myocarditis," they write in their paper. "The microRNA mmu-miR-721 was synthesized by Th17 cells and was present in the plasma of mice with acute autoimmune or viral myocarditis but not in those with acute myocardial infarction."

Next, the investigators identified the human homologue for this microRNA, hsa-miR-Chr8:96, confirming that it was present in four independent cohorts of patients with myocarditis. They found that plasma levels among 42 patients with myocarditis were higher than those seen in 90 patients with MI and 80 healthy participants.

"We analyzed additional validation cohorts with different comparators, which confirmed that the novel miRNA was specifically expressed in plasma from patients with myocarditis, as compared with those with myocardial infarction or MINOCA," the authors write. "These data were also validated in a cohort of patients with biopsy-proven myocarditis, along with patients who had other Th17-related diseases (rheumatoid arthritis, spondyloarthritis, psoriasis, and multiple sclerosis)."

The microRNA's high diagnostic value for distinguishing acute myocarditis from acute MI remained in models adjusted for age, sex, ejection fraction, and serum troponin levels. That's important because myocarditis is a male-dominant disease that tends to occur in younger individuals, Fairweather said. She added that the findings regarding the performance of the microRNA indicate that "there might be sex and age differences in it, but it still looks like it's going to be useful in spite of those differences."

Next Steps

Several issues remain to be investigated before this novel biomarker reaches clinical applicability. The researchers note in their paper that "great variability" in the expression of hsa-miR-Chr8:96 remains unexplained. "It is not clear whether this variation reflects the severity of the disease or is attributable to some other factor," they say.

Martín said national-level registries have been launched to compare use of the biomarker with current diagnostic methods for myocarditis, and it is hoped that the microRNA can be validated for clinical use over the next 2 years.

Additional research is needed, too, to see whether this novel biomarker can discriminate between patients with myocarditis and those who have progressed to dilated cardiomyopathy, Fairweather said. She added that a clinically useable assay to measure the microRNA—with an established diagnostic cutoff—is needed.

If the microRNA is ultimately validated and brought to the clinic, it could represent a paradigm change in how cardiovascular diagnoses are made, Martín said. "I think that this is a new [opportunity] in the cardiovascular area that we need to push at," she elaborated. "We have published now this microRNA for this disease, but we are investigating others that can help to distinguish between the different cardiomyopathies, and it would be very nice to have diagnosis by a blood test instead of needing very expensive techniques like magnetic resonance or very aggressive tests like biopsy. I think it's the future of diagnosis."

"It would be very nice to have diagnosis by a blood test instead of needing very expensive techniques like magnetic resonance or very aggressive tests like biopsy. I think it's the future of diagnosis."
- Pilar Martín, PhD, Senior Author

MYOCARDITIS
FOUNDATION

Dear Friend of the Myocarditis Foundation,

Sadly, myocarditis has been in the news too much lately.

Myocarditis is a disease that causes inflammation of the heart muscle; symptoms include such things as chest pain and shortness of breath or sometimes no symptoms at all. It can affect anyone of any age, but the high-risk age group are healthy, young children and young adult athletic types. It affects boys twice as often as girls. Often, it can kill or leave you with the long-term complication of heart failure. The question regarding its relationship to the COVID virus and even the COVID vaccines remains unanswered. There is not a lot known about it, but researchers are working on it.

Myocarditis is the 3rd leading cause of Sudden Death in Children & Young Adults and accounts for 45% of Heart Transplants in the U.S.

Information, awareness, and commitment

The Myocarditis Foundation is a patient resource and advocate. Since myocarditis is hard to diagnose, we are often the sole source of consolidated information for frustrated patients and their families looking for answers. Whether the need is finding the right medical provider or just someone that understands, the Foundation has contacts that can help in any circumstance.

Most medical providers don't think of heart issues when diagnosing young, otherwise healthy patients after viral illness. The current "Could it be Myocarditis" campaign strives to create this awareness in both patients and medical providers; examples of success are found throughout our website.

Our commitment includes family meetings (virtual since COVID) that have helped hundreds over the last few years and many more around the world since the meetings are now posted on our YouTube Channel, post event. We strive to be a leading resource to help those affected get diagnosed and treated as quickly and effectively as possible.

Our affiliated doctors and researchers are constantly advancing diagnostic and treatment protocols and post-graduate grants provided by the Foundation have helped develop this community of knowledgeable and caring providers. The Myocarditis Foundation has an international medical board of leading doctors that oversee our research grants in support of diagnosis and treatment with current priorities.

And finally, we offer continued support to those that have lost loved ones.

The Foundation office served patients and their families throughout the COVID crisis.

We've lost too many to this dreaded disease…please help us stop this…
Please be there for us,
for those that suffer,
and for the families of those that have succumbed.

To continue our commitment to battling myocarditis, & bringing a 24/7 service response, we need your help.

Visits to our website, calls and emails to our office have doubled. Our resources are stretched thin.

The Myocarditis Foundation is recognized as a Platinum level charity by Guide Star.

I hope you will consider making-a-donation today to support our ongoing efforts.

THANK YOU!

MYOCARDITIS FOUNDATION

Board of Directors 2021

Executive Director

Operations & Public Relations Manager

Medical Advisory Board

Secretary to our Medical Advisory Board

Mailing Address: 3518 Echo Mountain Dr., Kingwood, TX 77345
Telephone: (281) 713-2962 Fax (281) 608-7252

Find us online: www.myocarditisfoundation.org

twitter.com/myocarditisfndn

www.facebook.com/myocarditis.foundation/

Instagram.com/MyocarditisFoundation

Inspire.com/groups/myocarditis-foundation

Inspire.com/groups/pericarditis