

# Mayo Clinic Q&A - COVID and cardiac complications - Dr. Lesl...

Thu, 3/3 10:44AM 11:30

## SUMMARY KEYWORDS

cardiac complications, leslie, mayo clinic, symptoms, patients, heart, cardiac disease, lungs, virus, study, cardiomyopathy, cardiac, guidelines, individuals, hospitalized, people, veterans, long, subgroup analysis, damage

## SPEAKERS

Dr. Halena Gazelka, Narrator, Dr. Leslie Cooper

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- N** Narrator 00:01  
Coming up on Mayo Clinic Q&A, most people who get COVID-19 recover fully within a few weeks, but some continue to experience symptoms after that initial recovery. These people are described as long haulers, or having long COVID, and among the issues are problems with the heart and lungs.
- D** Dr. Leslie Cooper 00:18  
This is a virus that affects the lining of the blood vessels. When they are infected they become dysfunctional, and blood clots inside the blood vessels can form, and that affects the heart as well as the lungs. Not only can you have the common heart attack, or blood clots in the veins, or the lungs, but also less common diseases like myocarditis or pericarditis occur at a higher rate in patients who have had COVID-19, both the younger as well as the older patients.
- D** Dr. Halena Gazelka 00:48  
Welcome, everyone to Mayo Clinic Q&A. I'm your host, Dr. Halena Gazelka. A recent study found that people with COVID-19 are at an increased risk of heart disease even a year after their infection. The study looked at the health records of more than 150,000 U.S. veterans. It found that people with prior COVID infections were 60% more likely to develop cardiac issues. Joining us to discuss COVID related cardiac disease is Dr. Leslie Cooper. Dr. Cooper is the chair of cardiology at Mayo Clinic in Florida. Welcome back. Leslie.
- D** Dr. Leslie Cooper 01:26  
Great to be with you today.

**D** Dr. Halena Gazelka 01:28

Well, this is a fascinating study because we're starting to hear so much more about long COVID and the complications of COVID long-term. What did you think of this study?

**D** Dr. Leslie Cooper 01:38

Well, thank you so much for asking. This was a really timely study. As you point out, we have seen reports for about a year that six months or longer after acute COVID, people have symptoms like chest pain or shortness of breath. And we've been trying to figure out what is causing this. Could it be damage to the lungs? Could it be damage to the heart, or maybe the syndrome of deconditioning that comes after a significant hospitalization. But this study, which was done in 153,000 veterans, all of whom had COVID-19 and were followed for about a year to look for cardiac symptoms, really set the standard for the best quality data that gives us the highest level of detail and in the largest population.

**D** Dr. Halena Gazelka 02:28

Are you seeing this in your clinic as well?

**D** Dr. Leslie Cooper 02:31

Indeed, I am. This is just what I'm seeing in clinic, many patients who are both the healthy younger athletes, as well as the older patients who had pre-existing cardiac disease, will come into the clinic with shortness of breath or chest pain more than three months after COVID-19. And at that point we start a search to figure out what could be causing their symptoms.

**D** Dr. Halena Gazelka 02:55

Leslie, what kind of cardiac disease comes from COVID, or happens after COVID?

**D** Dr. Leslie Cooper 03:01

Well, it turns out, I mean, there's a large spectrum of disease. Not only can you have the common heart attack, or blood clots in the veins or the lungs, but also less common diseases like myocarditis or pericarditis occur at a higher rate in patients who have had COVID-19, both the younger as well as the older patients compared to patients who are contemporary competitors or historical competitors.

**D** Dr. Halena Gazelka 03:31

I had mentioned a bit earlier about long COVID or long hauler syndrome as it's been called. Are

these cardiac complications part of that or are they a different sort of issue?

D

Dr. Leslie Cooper 03:43

Great question. And so, usually they are. So, when you think about long COVID there's brain fog, there's all kinds of neurologic symptoms that occur more than three to six months after the initial illness. In addition, there can be other effects in the kidneys or other organs. But for the heart and lungs together, shortness of breath or chest pain is not uncommon, occurring in 20 to 50% of people six months after a hospitalization for COVID.

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Dr. Halena Gazelka 04:14

I think one of the questions that naturally comes to people's mind is does it matter how severe your case of COVID was whether you develop cardiac complications? In other words, if someone is more ill and they're hospitalized are they more likely to have long-term cardiac disease than someone who had a very mild case?

D

Dr. Leslie Cooper 04:34

Again, a great question, and it turns out the answer is yes. This study by the VA investigators included out of their 153,000 veterans, 131,000 who were not hospitalized. They were not that sick. In addition, there were smaller groups who were hospitalized and about 5,000 who were in the intensive care unit. It turns out that in all of those groups there was still a significant risk, excess risk for most cardiac complications, but the risks were highest in those people who were hospitalized or in the ICU for COVID-19.

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Dr. Halena Gazelka 05:11

And are there any other demographics that seemed to make a difference? Like male versus female, different medical comorbidities, etc.?

D

Dr. Leslie Cooper 05:20

Good question. So, it turns out these authors had such a large population they could do detailed subgroup analysis. And the subgroup analysis looked at women versus men, as well as obese versus non-obese, and all different age groups. And it turns out that there was a significant increase in a broad spectrum of cardiac events in men as well as women, older as well as younger individuals, as well as people of different weights and different health status.

D

Dr. Halena Gazelka 05:49

How interesting. So, it really didn't make a difference?

D Dr. Leslie Cooper 05:53

Yeah. So, each group in the subgroup analysis for most of those endpoints which were heart attack, stroke, myocarditis, for example, were significant in all the subgroup analyses. There were a few where the number of individuals, for example women versus men, may have been too small to show a difference because they were looking at about 10 different cardiac complications. And they were doing it in a subgroup of maybe 12 or 14 subgroups. Which is when you break that down the individual buckets, or numbers of patients within each tiny subgroup, might be too small to show a difference. But generally, the pattern to remember is that almost all of the complications from a cardiac standpoint were significantly elevated following COVID, a year after symptom diagnosis in women, and men, and all the age groups.

D Dr. Halena Gazelka 06:52

Interesting. What is the actual impact on the heart? Or what actually happens to the heart from COVID?

D Dr. Leslie Cooper 06:59

Yeah, well there are two broad things that happen in a severe COVID infection. One is you get inflammation. So, because your body is responding to the virus and the damage from the virus, your immune system secretes all of these pro-inflammatory proteins called cytokines and interleukins, which rev up your immune system to try and clear the virus. As part of that, that immune reaction can cause damage that can actually kill cardiac myocytes unintentionally. And the other thing is clotting. This is a virus that affects the lining of the blood vessels, the endothelial cells, and in that when they are infected they become dysfunctional, and blood clots inside the blood vessels can form next to those endothelial cells, and that affects the heart as well as the lungs. We know this from autopsy studies when people do histology after someone dies or has a biopsy of the lung, we can see that the tiny blood vessels often have clots.

D Dr. Halena Gazelka 08:04

Is this damage irreversible when it happens?

D Dr. Leslie Cooper 08:08

I wouldn't say it's irreversible, but I think it may take a very long time for remodeling. So, in patients, for example, who have a decrease in the heart pump function or cardiomyopathy, which is significantly increased following COVID, it may take months, or even a year or two for that heart to recover.

D Dr. Halena Gazelka 08:29

And Leslie, do you treat these patients any differently than people who would have similar cardiac disease that was not caused by COVID? Or is it similar?

cardiac diseases that were not caused by COVID? Or is it similar?

D Dr. Leslie Cooper 08:39

Well, that is an area of intense research right now. If you have heart failure, for example, the cardiomyopathy I mentioned, we would give you guideline directed treatment, which affects people who either had other causes, more common causes, like heart attacks, for example, we would treat the same way as people who have COVID-19 cardiomyopathy. However, we think that because there are specific mechanisms that in the future we will be treating more specifically for perhaps anti-inflammatory therapies if inflammation is an ongoing cause of the symptoms. Multiple research studies are ongoing in this area.

D Dr. Halena Gazelka 09:21

Interesting. Thank you so much. Any last words to share with our listeners today, Leslie?

D Dr. Leslie Cooper 09:27

I would say it's still very important to protect yourself from COVID as the new variants come out. Follow public health guidelines regarding either social distancing, masking, frequent washing of hands, for example. Keep up-to-date, for those guidelines are changing, and you want to stay current.

D Dr. Halena Gazelka 09:48

I have one last question about this study, Leslie. Were the individuals in the study who developed COVID and then heart disease vaccinated, or not vaccinated, or both? And did it make a difference?

D Dr. Leslie Cooper 10:00

The answer is both, and they controlled for that, and they did not make a difference.

D Dr. Halena Gazelka 10:05

Interesting. It's just the development of COVID itself then?

D Dr. Leslie Cooper 10:08

In general, although there is a very small population of individuals who received vaccination, mainly men between the ages of 12 and 39, who can have cardiac side-effects. The rate of those side-effects is actually much lower than the rate of cardiac complications if you got the virus itself. So, the vaccine is safer than the virus, even in young males.

**D** Dr. Halena Gazelka 10:31

Oh, good to know. Thank you very much for being here today, Leslie. This is really interesting.

**D** Dr. Leslie Cooper 10:37

It's so good to be with you. Thank you so much.

**D** Dr. Halena Gazelka 10:39

Our thanks to Dr. Leslie Cooper, chair of cardiology at Mayo Clinic in Florida, for coming here today to discuss long COVID and its effects on the heart with us. I hope that you learned something. I know that I did. We wish each of you a wonderful day.

**N** Narrator 10:56

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