

Mayo Clinic Q & A_ Dr. Leslie Cooper - COVID 19 and the hea...

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SPEAKERS

Dr. Halena Gazelka, Narrator, Dr. Leslie Cooper

N Narrator 00:01
Coming up on Mayo Clinic Q&A,

D Dr. Leslie Cooper 00:03
We have evidence that a small number of cells in the heart can be infected directly by the virus, and a small number of people can get what is known as myocarditis in the context of an actual viral infection. However, the majority of people who have any evidence of cardiac injury, and I would emphasize that's a minority of people infected with COVID, have other forms of cardiac damage.

N Narrator 00:28
Myocarditis is an inflammation of the heart muscle and can occur after a viral infection such as COVID-19. But in most cases, the risk of complications due to the vaccine is very low.

D Dr. Leslie Cooper 00:40
The likelihood of a bad thing happening, a hospitalization or dying from the virus itself is greater with the virus than it is with a vaccine in every case, every analysis, in every study done.

D Dr. Halena Gazelka 00:53
Welcome, everyone to Mayo Clinic Q&A. I'm Dr. Halena Gazelka. While we understand that COVID-19 is a respiratory virus, we now also know that the disease can affect many organs, including the heart. Individuals with heart disease are at an increased risk of more severe complications from COVID-19, but anyone infected with the virus can be at

risk for problems with their heart. Here with us to discuss this topic today is Dr. Leslie Cooper, the Chair of Cardiology at Mayo Clinic in Florida. Thanks for being here today, Leslie.

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Dr. Leslie Cooper 01:25

It's great to be with you. Thanks so much.

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Dr. Halena Gazelka 01:27

Well, I think this is a really interesting topic to people. We hear so much about what's going on with COVID-19 itself and with vaccination, so I'm excited to tackle the topic today.

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Dr. Leslie Cooper 01:39

Yes, it really is timely. Not only have we learned that COVID-19 can cause cardiac injury through multiple mechanisms, but the virus in rare cases, particularly in young males, can cause myocarditis, a specific form of cardiac injury.

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Dr. Halena Gazelka 01:55

So, Leslie just COVID-19 directly damage the heart or is it an indirect mechanism?

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Dr. Leslie Cooper 02:02

That's an area of controversy currently. Certainly, we have evidence that a small number of cells in the heart can be infected directly by the virus, and a small number of people can get what is known as myocarditis in the context of an actual viral infection. However, the majority of people who have any evidence of cardiac injury, and I would emphasize that's a minority of people infected with COVID, have other forms of cardiac damage. For example, they could have a heart attack from a blocked artery, or they could have damage from a systemic illness called a sepsis, but not a direct virus infection.

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Dr. Halena Gazelka 02:42

So, is that what myocarditis is?

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Dr. Leslie Cooper 02:46

Yes. Myocarditis is either a direct injury from the virus in one case, or in the case of the vaccine it could be an allergic reaction, sometimes called a hypersensitivity reaction, to the vaccine.

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Dr. Halena Gazelka 03:01

And is this a lona haul symptom when COVID affects the heart? Or is it a different issue?

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Dr. Leslie Cooper 03:10

Great question. So, long haul COVID, which is extending symptoms such as fatigue, or shortness of breath, or sometimes chest pain beyond four to six weeks, particularly three to six months after the initial infection. That is caused by multiple mechanisms. We know from studies in children as well as in adults, that the heart can be a bit stiffer, and it doesn't relax as well following COVID infection, and people have symptoms. We also know from studies in Europe that the risk of long COVID symptoms increases with higher immune reactions. So, the immune reaction against the virus spike protein tracks very closely with more severe and extensive long COVID symptoms.

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Dr. Halena Gazelka 03:56

Leslie, I understand that many individuals who are infected with COVID-19 experience shortness of breath. And so, how would an individual know if they were at risk of a heart issue from COVID-19? What would that look like?

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Dr. Leslie Cooper 04:09

Such a good question. As you point out, COVID can affect the lungs, and it can affect the heart. And the illness itself when you're sick leads to deconditioning because you're not as active as you were, so going back to activity has intrinsically a ramp up time. So, it's hard for the individual to tell which is the cause of your symptoms. Is it the heart, the lungs, or deconditioning? I would recommend seeing a medical provider. If you've still got symptoms, we can sort that out with generally non-invasive and simple testing.

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Dr. Halena Gazelka 04:42

Now, I understand that you studied myocarditis in an interesting population, athletes. Tell us a little about that.

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Dr. Leslie Cooper 04:48

Yes, in the beginning of the pandemic, we saw that there were abnormal MRI findings in young people. The most people who are sick from the virus are older people who have had previous existing heart conditions like blocked arteries or hypertension. However, in young athletes who have no previous heart disease, we also saw abnormalities on cardiac MRI, which is a test which can tell if there's inflammation in the heart. Now, the rate of that was pretty low, it was between three and 15% in the early studies. What we learned was that there are features that normal athletes have on the MRI that did not mean they had any damage in the heart. But we do identify those, and once that substantial group was subtracted from the MRI studies earlier this year, we learned that it is only between one and 2% of actual athletes who have any MRI evidence of inflammation following the virus. Now, is this meaningful? Will this cause an arrhythmia, sudden death, or heart failure? The vast majority of cases the answer is no. The vast majority of these patients, the young athletes who have MRI findings that are abnormal, have no symptoms at all, 75% have no symptoms, and the ones that do have mild symptoms. We recommend that in young athletes who actually have COVID involvement in the heart, that they abstain from competitive sports for three months, and then they can return after evaluation.

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Dr. Halena Gazelka 06:25

So, three months. Do we know how long this lasts? Is three months the duration or less?

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Dr. Leslie Cooper 06:31

We based that number on studies from other viruses. So, what we had described many, many years ago, was the duration of virus damage in the heart in most people who recover. And the range is between three and six months in most people. A few people have longer term injury. But in the athletes, we extrapolated from the previous data to the COVID data, and we're still waiting for some longer term serial MRI studies to make sure that we pick the right number. Three months appears to be about right.

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Dr. Halena Gazelka 07:07

One of the questions that we hear frequently Leslie, and it's often bandied about even out on the web is what about vaccinations? Are vaccinations placing people, particularly the mRNA vaccination, placing people at risk for heart issues? And what's the risk benefit ratio?

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Dr. Leslie Cooper 07:31

Absolutely. So, the actual calculation depends on how virulent the virus is, the prevalence of the virus in the community, and the susceptibility of the individual to viral damage. So, an 80-year-old person in a community with a high prevalence of a serious virus would always want to be vaccinated, because the risk of the vaccine would be very, very much lower than the risk of the actual virus. And so, thinking about those variables, in all women over the age of 12, and in all males over the age of 30, there's really, the competing risk is invariably in favor of vaccination. The likelihood of a bad thing happening, a hospitalization, or dying from the virus itself is greater with the virus than it is with a vaccine in every case, every analysis, in every study done. Now, the rate of vaccine associated myocarditis in young males between the ages of 16 and 19, is about 6000, 1 in 6000. That's still a very low number compared to the risk of an adverse event from the virus itself, even in a young and healthy population. And so, most people who have vaccine associated myocarditis are males, 80% male, and it's 80% or so after the second vaccine of the two dose mRNA vaccines. And so, with that framework, I would simply say in every population that's looked at, it's still in favor of vaccination, although the degree of benefit is probably lower in the young males than it is in every other group.

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Dr. Halena Gazelka 09:23

Leslie, an interesting question from one of our listeners, they had heard that if the mRNA vaccine was accidentally injected into a vein while the vaccination was being administered, that it could increase the risk of a cardiac complication.

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Dr. Leslie Cooper 09:41

That's a really interesting idea. And we've discussed that in various groups that make recommendations about the mRNA vaccines. It was thought that theoretically young male athletes would have greater venous drainage from the arm and that the chances of injecting into a vein were greater and that therefore the injectate, the vaccine would go to the heart, as opposed to into the muscle of the arm. And so, there's no data for that. And so, we don't have, it's a

theory. And I think the chances of that happening are very low. If there's any uncertainty, you can pull back on the syringe a little bit to make sure you're not in a vessel. But the actual risk of that happening, I think, is quite low. And the theory that you would have a specific cardiac injury because of it remains only a theory.

D Dr. Halena Gazelka 10:39

We continue to learn so much about this virus. And I'm wondering, what do you think the future looks like for people who've had COVID-19 in terms of heart disease? Will there be long-term effects on the heart?

D Dr. Leslie Cooper 10:52

Yeah. So, the question here is, if you had COVID and you recovered, are you at greater risk in the future, either from a vaccination or from another virus, or other just long-term heart damage? And I think that as far as we know today, there is, in people who recover symptomatically, there is no long-term risk that we know, but there are multiple prospective studies that are looking to answer that question with serial MRIs. They have not yet been published. I think the other question if you're in the minority of people who has long COVID, what is the duration of long COVID? And what is the mechanism of long COVID? Now, those are terribly important questions that are still unanswered.

D Dr. Halena Gazelka 11:40

Interesting. Well, so much more to discover. I've been amazed, Leslie, over the past year, at the incredible burgeoning of information that has happened within the scientific community. And there's still more to discover it sounds like.

D Dr. Leslie Cooper 11:55

There certainly is. And there's a lot of work being done at Mayo Clinic and elsewhere to understand this illness, this virus, and the long-term impact of it. It's great to be a part of this medical center and this community because we've been able to contribute so much specifically on this question.

D Dr. Halena Gazelka 12:15

Well, thank you so much for being here to talk to us today, Leslie.

D Dr. Leslie Cooper 12:19

It's my pleasure. Thank you so much. Have a great day.

D Dr. Halena Gazelka 12:21

Our thanks to Dr. Leslie Cooper, Chair of Cardiology at Mayo Clinic in Florida for being with us today to talk about COVID-19 in the heart. I hope that you learned something I know that I did. We wish each of you a wonderful day.



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Narrator 12:36

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