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ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

The Cardiac Impact of COVID-19: Lessons Learned from the Pandemic

Announcer Introduction:
Welcome to ReachMD. You're listening to *Advanced Treatments & Innovations from Mayo Clinic*, brought to you by the Mayo Clinic. And now here is your host, Dr. Charles Turck.

DR. TURCK:
Welcome to *Advanced Treatments and Innovations* from Mayo Clinic. I'm Dr. Charles Turck, and joining me to discuss what we need to know about the cardiac impact of COVID-19 and the available vaccines is Dr. Leslie Cooper, a myocarditis expert and chair of the Department of Cardiovascular Diseases at Mayo Clinic in Florida. Dr. Cooper, thanks for being here today.

DR. COOPER:
Thank you. It's great to be with you, Dr. Turck.

DR. TURCK:
Now, Dr. Cooper, we've heard a lot about clotting and inflammation occurring in patients with COVID-19. So to start us off, can you tell us more about how COVID-19 affects the heart?

DR. COOPER:
Certainly. COVID, initially in the older sicker population that we saw last year, affected mainly clotting. It caused microvascular clots in the heart and the lungs, as well as some large vessel clots causing heart attacks and pulmonary emboli. We then realized as the year went on, that it could also cause inflammation in the form of myocarditis and other less well characterized forms of cardiac injury.

DR. TURCK:
Now with that in mind, what management strategies do you use when treating patients with COVID-19-related myocarditis?

DR. COOPER:
Again, myocarditis itself on biopsy is not very common, but it is quite common in the older patients who've had MRIs after hospitalization. We see about 50 percent with abnormalities, half of which are related to clotting, and about half of which are related to what looks like inflammation. What we recommend is that you abstain from, even in young athletes, from competitive sports and high levels of activity for about three months. That's a general recommendation for all forms of myocarditis, and that you consult with your clinician before going back to full levels of activity.

DR. TURCK:
Now, let's take a look at some of the long-term symptoms of COVID-19. Do we know what causes long COVID syndrome? And if these symptoms are due to cardiac injury?

DR. COOPER:
Again, a great question because a lot of people, even young people who have remained at home and not required hospitalization, have longer term symptoms, sometimes of brain fog, shortness of breath, or even chest pain. What we've learned is that some of this is related to cardiac stiffening, particularly in younger individuals. We can measure that by echocardiogram, and at other times and as well as in the young group, we see that increased levels of inflammation markers like antibodies to the spike protein, which is part of the virus, are associated with the number of long COVID symptoms and the severity of long COVID syndrome. So although we have not yet found a specific treatment for the cardiac causes, or the inflammatory causes, we are learning today what contributes to this very common and often debilitating, long COVID syndrome.

DR. TURCK:
For those just tuning in, you're listening to *Advanced Treatments and Innovations from Mayo Clinic* on ReachMD. I'm Dr. Charles Turck, and I'm speaking with Dr. Leslie Cooper about myocarditis and COVID-19.

DR. TURCK:
Well, now that we've talked about myocarditis as a complication of COVID-19, let's take a look at this in the context of the mRNA vaccines. Dr. Cooper, what do we know about the risk of cardiac injury following a COVID-19 vaccine?

DR. COOPER:
The mRNA vaccines have a very low but measurable rate of myocarditis following vaccination, particularly this is seen in young males between 12 and 30 years of age, after the second vaccine, not so much after the first, for reasons that are currently being explored. We do not see a similar increase in risk in women who received the mRNA vaccinations. I put this in context, that the risk in a 16 to 19 year-old male is about 1 in 6,000 vaccines, and in a 25-year-old is about 1 in 10 to 1 in 13,000. That compares to a background rate in the population of about 1 to 10 per 100,000 risk of myocarditis in the similar timeframe.

DR. TURCK:
And for patients who've had breakthrough COVID-19 with cardiac symptoms, how can we counsel them on the available booster shots?

DR. COOPER:
You know, that's a great question. Actually getting breakthrough COVID-19 with evidence of cardiac injury is not a contraindication to getting a booster shot. The contraindication would be actual myocarditis following a vaccine, a second or third shot in that case, is generally contraindicated, although even that depends on the severity of the complication and the virulence of the virus in the population at that time. But for the breakthrough COVID-19 patients who have cardiac symptoms, such as chest pain or shortness of breath, currently, we are not advocating avoidance of future vaccines.

DR. TURCK:
Now before we close, Dr. Cooper, let's bring all this together. If we look ahead, what are some ways we can monitor the risk of cardiac injury from the COVID-19 vaccines and the disease itself?

DR. COOPER:
Well, it's important to realize that in all the analyses that I'm aware of, the risk of the actual disease from SARS-CoV-2 is much greater than any risk from the vaccine. The vaccine is almost invariably safer in the long run for almost all populations. The monitoring is really awareness to know that if a patient develops chest pain or shortness of breath, particularly in the two- to five-day window following a vaccine, to seek medical attention and to consider this, including an EKG and, uh, blood troponin levels, to look for possible cardiac injury as a cause of those symptoms.

DR. TURCK:
Well, with those forward-looking thoughts in mind, I want to thank my guest, Dr. Leslie Cooper, for joining me to discuss the cardiac impacts of COVID-19. Dr. Cooper, it was great having you on the program.

DR. COOPER:
It was great being here. Thank you so much.

Closing Announcer:
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