

Dr. Bob Falcone:

Hi, I'm Bob Falcone, CEO of the Columbus Medical Association and Affiliates. Today, we have a panel of experts to discuss the longterm sequelae of COVID-19 infection, also known as the COVID long haul syndrome. Next, we're going to be speaking with Laura Gravelin, who's an electrophysiologist at Mount Carmel and the head of the Women's Heart Program there. Laura, thanks for joining us.

Dr. Laura Gravelin:

Thanks so much for having me, glad to be here.

Dr. Bob Falcone:

Well, as you know, I want to talk a little bit about COVID. Let's start with COVID in the heart. What does it do to the heart? Was the acute illness do to the heart?

Dr. Laura Gravelin:

Yeah, so there are a number of different ways that COVID can affect the heart. Everybody knows about that spike protein on the outside of the virus. Well, that protein attaches to a certain receptor on the cardiomyocyte, the ACE2 receptor. That's also found in the lung, and so that's why we're seeing a lot of heart and lung symptoms from this virus. It can cause a direct toxicity where the cardiomyocytes themselves are damaged from the viral replication. But we also know there can be stress on the heart from hypoxia because of its effect on the lungs. We're seeing a lot of thrombosis as well. That can cause problems for the heart. There's some arrhythmias following infection, and that might be primary arrhythmias or related to cardiomyopathy or inflammation of the heart, myocarditis.

Dr. Bob Falcone:

Are these any different than other severe viral infections?

Dr. Laura Gravelin:

I do think that COVID is probably unique because of its affinity for this particular receptor that's found in the heart and the lungs.

Dr. Bob Falcone:

Interesting. Let's let's move on to what happens to them after they get well. As we both know, the vast majority of people do get well, but they come back to you with persistent symptoms. What are you seeing?

Dr. Laura Gravelin:

Yeah, in the cardiology clinic, these long haul COVID patients or post-acute viral patients report shortness of breath, ongoing tachycardias, weakness, fatigue, even in some instances, a brain fog that that can be debilitating.

Dr. Bob Falcone:

How are you evaluating?

Dr. Laura Gravelin:

In our typical office visits, patients come in for an EKG. They'll get a physical exam along with their history, and then we decide whether or not additional imaging studies are warranted. We certainly try to rule out other comorbid conditions or de novo heart disease that could be causing their symptoms. But we're not quite sure in this post-acute syndrome, is it ongoing viral activity that's causing the symptoms or an ongoing immune process that's causing the symptoms?

Dr. Bob Falcone:

Some of them can actually present to the ED as an MI, can't they, proposed MI?

Dr. Laura Gravelin:

Absolutely. Yeah, that's a great point. We have had patients who come into the emergency department, who for all the world, have an EKG that suggests they've either had an acute plaque rupture, or thrombosis leading to 100% occlusion of their coronary arteries. They have big ST-segment elevations on their EKGs, but when they go to the cardiac cath lab, their arteries are normal. So we are seeing signs of direct cell injury from this virus on the heart.

Dr. Bob Falcone:

Then of course, you admit them and treat them as if they are a potential cardiac event.

Dr. Laura Gravelin:

Absolutely. There's certainly some amount of injury going on. Patients are admitted to the hospital where their symptoms can be managed. We monitor their hemodynamics. They maintain telemetry to look for arrhythmia, and then typically some sort of imaging to assess the ejection fraction of the heart, the pumping power of the heart.

Dr. Bob Falcone:

Once you've either ruled in or ruled out significant disease that you would manage as you would manage any cardiac disease, what happens to these people? Do they get well?

Dr. Laura Gravelin:

No. This is interesting. We're talking about an acute COVID infection presenting with relatively severe symptoms. Initially reported for these COVID long haulers was that maybe 10% of patients would have it. Then it was 30%. Now there's a Mediterranean cohort reported that it can be up to 50% have symptoms. So we follow them not only for their long haul COVID, but for the sequelae of their acute cardiac injury. That can be arrhythmia or ongoing cardiomyopathy.

Dr. Bob Falcone:

So they might, in the future, come to some type of treatment or procedure for continued arrhythmia, for example.

Dr. Laura Gravelin:

Yes, that's quite right.

Dr. Bob Falcone:

Where does careful exercise and physical therapy come in?

Dr. Laura Gravelin:

Oh yeah, great question. Well, we certainly know that for patients who have had heart attacks, heart failures, that cardiac rehab reduces mortality. So we would certainly encourage patients to participate in that. Then in general, for any secondary or primary prevention of cardiovascular disease, we do recommend the American Heart Association guidelines that suggest we all get 150 minutes a week of moderate exercise, and we have a balanced diet. In particular, I recommend the Mediterranean diet, which is a basis of lots of fruits and vegetables, and then we do get our protein, our lean sources of protein like chicken and fish.

Dr. Bob Falcone:

Are you seeing a specific instance of gender or race or age in the people you're seeing, or is it spread?

Dr. Laura Gravelin:

Wonderful question. It's reported that at least among long haul COVID patients, three out of four patients are women. The why of that is not well understood. But I think the race question is profoundly important because we do know there's some disparity with this virus. We have to pay, certainly, attention to it so that we can make sure patients, all patients get the care they need, but that's not been widely reported on yet.

Dr. Bob Falcone:

Interesting. As you know better than I do, women present with a different symptomatology for cardiac events.

Dr. Laura Gravelin:

Yeah, [crosstalk 00:06:44].

Dr. Bob Falcone:

Are you seeing that with the post COVID patients often?

Dr. Laura Gravelin:

Yeah, that's an excellent point. The most common feature of heart disease is chest pain. True of women, but they also present with so many other symptoms like nausea, vomiting, pain in the arm, in the jaw. The COVID symptoms, I think so far have been fairly similar across genders. It's just that more women, three fourths of long haulers are women, are experiencing them.

Dr. Bob Falcone:

How many of these people, in your experience, go on be chronic versus a few weeks of unhappiness and then they get well? Do you have a feeling for that?

Dr. Laura Gravelin:

I have to say that the patients I've cared for have been rather fortunate. They're not permanently disabled in the sense that they can't return to work, but work is a struggle for many of them right now.

This transcript was exported on Apr 08, 2021 - view latest version [here](#).

Dr. Bob Falcone:

We haven't had it around long enough to know how long that's going to last.

Dr. Laura Gravelin:

Yeah, I think that's an excellent point.

Dr. Bob Falcone:

Okay. Anything we missed?

Dr. Laura Gravelin:

I would like to take the opportunity to talk about maybe long haul COVID outside its intended definition. We certainly know that the virus itself has been a bit of a long haul for folks, so in particular, the people that take care of patients, so not only physicians and nurses, but our phlebotomist and technologists, our transport team and our environmental services and nutritional team. At this year anniversary, people are certainly losing some resilience. So I'm just encouraging people who might feel a little tired and overwhelmed at this anniversary to make sure that they are seeking out help if they need it for their mental wellbeing.

Dr. Bob Falcone:

Sure, and in fact, some of those symptoms might be COVID long haul rather than the stress of a very stressful work environment.

Dr. Laura Gravelin:

Quite true, depression and anxiety are indeed prevalent among long haulers.

Dr. Bob Falcone:

Great. Dr. Gravelin, I want to thank you for your time and look forward to meeting you in person one day.

Dr. Laura Gravelin:

It will be my pleasure, Dr. Falcone. Thank you so much.