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## What to Know About Post-COVID-19 Neurological Syndrome

Dr. Lisk:

Since the onset of the COVID-19 pandemic, researchers and clinicians alike have strived to address the mysteries surrounding this virus, including its long-term side effects on patients. And while much focus has been placed on long-haulers, what we do need to know about the emerging syndrome pointing to COVID-19's neurological and cognitive impacts?

You're listening to *NeuroFrontiers* on ReachMD. I'm Dr. Jerome Lisk and joining me today to discuss post-COVID-19 neurological syndrome is Dr. Tissa Wijeratne, who is the Director of the Department of Neurology and Stroke Services at the University of Melbourne. Dr. Wijeratne, welcome to the program.

Dr. Wijeratne:

Thank you so much, Dr. Lisk. Thank you for having me today.

Dr. Lisk:

To start us off Dr. Wijeratne, what exactly is post-COVID-19 neurological syndrome and how is it different from long COVID?

Dr. Wijeratne:

For the first time in medicine as best as I can say, there was a group of people who were social media users, specifically younger people with asymptomatic, acute COVID-19, started to coin the term called "long-haul COVID" or "long-haulers." You may recall that we saw reports coming in from Europe, in particular, and some from China basically saying that younger people with acute COVID-19 in a spectrum of the symptoms that they had mostly no symptoms or mild symptoms but they were experiencing persistent fatigue, persistent brain fog, persistent tiredness, headaches, dizziness, months into the illness. And this is a condition which was actually defined by patients. They coined the term 'long-haul COVID' at that time.

And the post-COVID-19 neurological syndrome that we coined was basically the same. During the early stages of our studies, we realized the remarkable similarity between how human brain react to a vascular insult to the brain and COVID-19. We published this in *Frontiers* and what we observed is when your brain get injured with a vascular insult, you actually get a local inflammatory reaction and the whole load of inflammatory messengers or chemicals would be released around the injury site. But at the same time, when these chemicals get released, because our blood circulate throughout the body, it actually not only end up as a local inflammatory reaction, it become a global, inflammatory reaction also. This is the reason that we started to see whole load of other things such as post-prog-fatigue, post-prog-depression, post-prog-anxiety, and we published a large number of manuscripts last year describing some of these things to the world. And when we studied the post-COVID-19 patients with persistent symptoms, we exactly observed the same thing. So then we told the world that the post-COVID-19 neurological involvement is to be expected. It should not be regarded as some sort of an exception.

Now you might wonder "why brain?" Why the post-COVID-19 neurological syndrome, why couldn't it be post-COVID-19 musculoskeletal syndrome or respiratory syndrome or cardiac syndrome? I think that it is important to realize that your brain and my brain is the central processing unit of who we are. If I become jealous, if I get angry, if I get upset or if I get excited, most of those things are actually originated in your brain. And similarly, brain not only has this sort of pathway when we are under stress, say for an example, when we

are in a fight or if you wanted to run away from a fight, although largely these pathways are driven by hormonal systems, these things also get controlled by brain, which you and me both know very well as, hypothalamic pituitary adrenal system. So, all these things seem to play a key role after an insult to the brain including COVID-19.

Dr. Lisk:

And if we focus on the overall risk, would you say that asymptomatic patients are at the same risk as post-COVID-19 neurological syndrome patients who were hospitalized due to severe symptoms?

Dr. Wijeratne:

It's too early to answer that question, Dr. Lisk. Personally I feel that long-haul COVID or post-COVID-19 neurological syndrome patients appear to be coming from asymptomatic or mildly symptomatic patients rather than the acutely hospitalized patients.

According to the World Health Organization reports and Johns Hopkins University report, we have well over 220 million COVID-19 infected people worldwide. We both know that the real number should be at least twice as this because we don't get to test everybody in every country due to access and people do not present to COVID-19 testing centers, etc. But even if we go by the underestimated figure, 220+ million, you can see that the number of people living with effects of COVID is well over 195 million. If you take the estimated numbers, we have witnessed about 30% to be experiencing post-COVID-19 neurological syndrome. Other groups described anything from 70 to 90%, so overall, it is fair to estimate that right now, we should have at least 100 million people living with at least one or two symptoms of post-COVID-19 neurological syndrome worldwide.

Dr. Lisk:

For those of you just tuning in, you're listening to *NeuroFrontiers* on ReachMD. I'm Dr. Jerome Lisk and I'm speaking with Dr. Tissa Wijeratne about his research on post-COVID-19 neurological syndrome.

So Dr. Wijeratne, now that you're given us an understanding of your research, let's apply it to practice. What signs should we be looking for in our patients who have tested positive for COVID-19 and how long might it take for those signs to appear?

Dr. Wijeratne:

It's an interesting question. I have seen some patients coming to us with symptoms twelve months down the track. So they get COVID-19, no problems whatsoever for about twelve months. Twelve months later, they come to us saying that they have been experiencing brain fog and they have been having trouble doing multi-tasking and they have been feeling excessively tired and washed out and drained and occasionally they have been experiencing dizziness. Again, the true clinical picture and true clinical phenotype of post-COVID-19 neurological syndrome, or long-haul COVID is evolving. But to answer your question, what should be the things that we should be looking for and how long we should be looking for them is this. I think we just have to keep an open mind any time after the COVID-19 infection, and these symptoms are a wide variety; they would go from headache, tiredness, fatigue, brain fog, dizziness, tingling, numbness, speech difficulty, the difficulty performing the usual tasks that they used to do. I think the overarching major theme is fatigue, brain fog, and inability to work. Any ongoing symptoms where you don't feel that you couldn't do things that you could do before, any time since the COVID-19 infection, it is an opportunity for you to ask this question.

Dr. Lisk:

And so what steps can we take to ensure a better quality of life for those patients suffering from post-COVID-19 neurological syndrome?

Dr. Wijeratne:

That's a great question. What I normally tell my patients is just because you have post-COVID-19 neurological syndrome, you don't have to let post-COVID-19 neurological syndrome have you. Say, for an example, I suffer from migraine but I never let migraine have me. I have made migraine a tiny part of my life and I get on with my life as best as I can during my time on this planet. So I say the same thing to post-COVID-19 neurological syndrome patients. I also tell them that while it is an evolving story, this is primarily driven by how your brain is reacting to the insult that you had, therefore practicing the old, superb brain-healthy tips is going to be significantly useful for your brain to fight this. So I say to them eat healthy, that means lots of fruits and nuts and vegetables, cut back alcohol, no smoking, no

recreational drugs, no chemicals that are harmful for your brain and your body. And as much as possible, listen to your body and keep yourself physically active as much as possible. Then I also tell them that learning a new thing, learning a new task, reading non-fiction books, keeping your mental sanity sane is quite helpful for brain health also. We all know that the music, art, all those things are quite helpful to promote better brain health. And I also ask them to practice mindfulness, and I basically simply tell them to be the nicest human being that you can be; be nice to each other, be kind to each other, be compassionate to others, they basically help you to grow better neural networks in the brain. So those are the sort of things that I do and then those patients who demonstrate evidence of associated anxiety, depression, other psychiatry comorbidities with the help of psychology and psychiatry colleagues, I treat them either multi-disciplinary way.

Dr. Lisk:

Well there's clearly still a lot to be discovered when it comes to this virus and it's far-reaching impacts. And I want to thank my guest, Dr. Tissa Wijeratne, for joining me to discuss his research that's shedding light on the post-COVID neurological syndrome. Dr. Wijeratne, it was great having you on the program.

Dr. Wijeratne:

Thank you so much, Dr. Lisk. Stay safe and stay well.

Dr. Lisk:

I am Dr. Jerome Lisk, to access this and other episodes in our series, visit [ReachMD.com/NeuroFrontiers](https://ReachMD.com/NeuroFrontiers), where you can Be Part of the Knowledge. Thanks for listening.