MERCOLA
Take Control of Your Health

Nonstop Ringing: Can COVID-19 Lead to Tinnitus?

Analysis by Dr. Joseph Mercola ✔ Fact Checked

STORY AT-A-GLANCE

- Tinnitus is a noise you hear in one or both ears triggered inside the auditory system; it is a symptom of an abnormality or injury and not a specific disease
- Tinnitus is one symptom of long COVID and from the COVID shot. How the symptom is triggered is still being studied; the virus can infect inner ear cells and the spike protein can disrupt blood supply to the sensitive structures responsible for hearing
- One study found 53% of those with mild to moderate COVID had sensorineural hearing loss, which was present in all patients who took remdesivir. Other long COVID symptoms include fatigue, memory problems, depression or anxiety, mood changes and joint pain
- One of the key strategies to preventing infection and treating long-haul symptoms is to protect and support your gut microbiome. Doctors also prescribe holistic support, rest and a gradual increase in activity

Since the start of 2020, people who have gotten COVID-19 have not all recovered immediately. Some have experienced symptoms for several weeks or months after recovering from the infection. These symptoms have been called chronic COVID, long COVID, long-haul syndrome, long-haul COVID, and post-acute sequelae of SARS-CoV-2 infection (PASC).[1]

One of the symptoms is tinnitus, or a consistent ringing in the ears. Doctors have also noticed that the constellation of symptoms from long COVID is strikingly similar to myalgic encephalomyelitis, also known as chronic fatigue syndrome or ME/CFS.[2]

Doctors at Columbia University have asked if these two conditions could be closely related or one and the same.

Mady Hornig, a psychiatrist from Columbia Mailman School of Public Health, has contributed influential research from over a decade of studying ME/CFS and helped to establish the condition is a biological disease. In an interview, she stated the next few years could bring an unprecedented wave of ME/CFS-like illness.[3]

What is Tinnitus?

Tinnitus is not a specific disease, but rather a symptom of an abnormality or injury to the auditory system. The auditory system begins with the external ear and ends with the auditory nerve that leads to the brain. Between these are multiple small structures that carry air vibrations which are interpreted as specific sounds by the brain.[4]

People with tinnitus describe it as ringing in the ears. However, others also may hear roaring, clicking, hissing or buzzing. Several health conditions can trigger tinnitus, or the condition may be as simple as an obstruction blocking the ear canal, such as ear wax.[5]

Health conditions that are known to trigger tinnitus include ear and sinus infections, cardiovascular disease, brain tumors, hormonal changes in women and thyroid abnormalities. It is sometimes the first sign of hearing loss, or it can be the side effect of a medication.

Cleveland Clinic notes tinnitus is not completely understood.[6] Audiologist Sarah Sydlowski compares the condition to phantom limb pain, which is pain that feels like it's coming from a part of the body that is no longer there, such as a leg or an arm. She says:

> *"Commonly, tinnitus is the result of your inner ear (cochlea) being damaged in some way. When this happens, the cochlea doesn't stop working. It still tries to function so you're able to hear certain sounds. And when your inner ear isn't working correctly, it starts producing sounds to replace what you're supposed to hear naturally. It's a phantom sound."*

This area of the auditory system is highly vascularized with tiny arteries that provide the cochlea and other sensory cells with nutrition and oxygen.[7] An interruption in the blood supply can damage these structures, which is how cardiovascular disease and diabetes can have a significant impact on hearing.

At this point, researchers are still investigating how COVID-19 may affect the auditory system. Some have hypothesized that nerve inflammation may be the cause of tinnitus after a COVID-19 shot. However, it is also known that the spike protein from the virus[8] can cause endothelial damage. This could then impact blood supply to the auditory system.

Symptom of Long-Haul Syndrome and Shot

A January 2021 systematic review of the literature evaluated the effect COVID-19 has on the auditory system. The study[9] looked at 28 case reports or series and 28 cross-sectional studies that included reports of hearing loss, tinnitus and vertigo.

The researchers pooled estimates of the prevalence of these conditions based on the patient's recall of their symptoms. They discovered that in this patient cohort that had COVID-19, 7.6% reported hearing loss, 14.8% reported tinnitus and 7.2% reported rotary vertigo.

In October 2021, scientists from Stanford medicine published a study[10] in Communications Medicine that linked an infection with SARS-CoV-2 to hearing and balance disorders. Dr. Konstantina Stankovic, otolaryngologist and inner ear researcher, led the study after finding many of her patients in her Massachusetts Clinic were complaining of tinnitus, dizziness and hearing loss.

The researchers used a cellular model of human and mouse inner ear cells. They found a mechanistic explanation for the dysfunction to the cells that allowed the virus entry, specifically infecting human inner ear cells. They believe their findings may be the underlying pathway the virus uses to affect hearing and balance. Stankovic commented in a press release:[11]

> *"Our study showed evidence that the SARS-CoV-2 virus that causes COVID-19 can directly infect the inner ear. During the peak of the pandemic, when patients were having more life-threatening complications, they weren't paying much attention to whether their hearing was reduced or whether they had vertigo. It was easy to dismiss these symptoms as just being a coincidence, and routine testing for SARS-CoV-2 was not yet available."*

Another study[12] published in the Indian Journal of Otolaryngology and Head & Neck Surgery in December 2021, assessed hearing in 100 individuals who had a mild to moderate infection of COVID-19. In that group, 22 had received remdesivir for treatment of COVID-19.

The researchers found 31 of the 100 participants had ear symptoms, the most common of which was tinnitus, followed closely by new onset hearing loss. Pure tone audiometry was measured, and sensorineural hearing loss was present in 53 patients. The hearing loss was present in all who received remdesivir.

The testing was done as an initial workup and the researchers plan to follow these patients at regular intervals of three and six months for repeat evaluations. It is important to note that the percentage of patients with tinnitus is similar to what has been found in other studies. These patients were also evaluated for high-frequency hearing loss, a symptom that has not been consistently addressed in other studies.[13]

In a search for tinnitus in the vaccine adverse event reporting system (VAERS) using data published through January 28, 2022, the system returned 18,349 reports following the COVID-19 shot.[14] To date there were 1,088,558 reports filed, which means the reported incidence of tinnitus after the shot was 1.8%, or lower than what is reported after an infection with SARS-CoV-2.

Treatment Strategies for Tinnitus

It is important you do not overlook any new ringing or buzzing in your ears that lasts for more than a day. Starting treatment early can help reduce the effects and an Ear Nose

and Throat (ENT) doctor can rule out other issues that may have occurred coincidentally at the same time. An audiologist will also do a hearing check to rule out hearing loss.

Tinnitus following COVID can resolve in months, but there are strategies an ENT may prescribe to help improve the symptoms. If tinnitus is a symptom of hearing loss, hearing aids can help. An audiologist may suggest a white noise machine to help produce a background noise, thus making the symptoms of tinnitus less noticeable.[15]

Cognitive-behavioral therapy helps teach coping strategies and relaxation techniques that can reduce the distress tinnitus triggers. You may also find relief from tinnitus retraining therapy. This is sometimes called auditory habituation therapy and consists of two modalities.[16]

The first is a low-level sound generator that is delivered through a hearing aid type of device. This can help desensitize patients who are sensitive to sound and may help retrain the brain to de-emphasize the noise from tinnitus. Secondly, patients undergo directive counseling to help cope with the stress and which is used to help retrain the brain in conjunction with the sound generator.

Music therapy is another form of treatment for tinnitus that can help lower the negative reactions a patient has and stimulate the auditory cortex simultaneously. The University of California San Francisco[17] also uses neuromonics acoustic desensitization protocol. This incorporates a processor connected to earphones that deliver music individualized to the person's hearing loss, as well as counseling.

The American Tinnitus Association[18] stresses that these are treatments and not cures since they cannot repair the underlying cause nor eliminate the signal to the brain. It is important to recognize that each case of tinnitus must be approached individually since no two cases are the same.

More Long-Haul Symptoms

Tinnitus is one of many common long COVID symptoms that can persist for four or more weeks after you are diagnosed with COVID-19. In an interview[19] with cardiologist

Dr. Peter McCullough, October 2021, he discussed long COVID and the symptoms he's seen in his practice. According to McCullough, 50% of this group will have manifestations of long COVID syndrome:[20]

> *"So, the sicker someone is, and the longer the duration of COVID, the more likely they are to have long COVID syndrome. That's the reason why we like early treatment. We shorten the duration of symptoms and there's less of a chance for long COVID syndrome."*

According to McCullough, a paper presented by pathologist Dr. Bruce Patterson at the International COVID Summit in Rome, September 12 to 14, 2021, showed that in "individuals who've had significant COVID illness, 15 months later the s1 segment of the spike protein is recoverable from human monocytes." He added:[21]

> *"That means the body literally has been sprayed with the virus and it spends 15 months, in a sense, trying to clean out the spike protein from our tissues. No wonder people have long COVID syndrome."*

These symptoms are a result of damage to the following body systems:[22]

1. Pulmonary/lungs
2. Immune/allergy
3. Mitochondria/energy system
4. Heart
5. Central/Peripheral nervous system

As of July 2021, people with symptoms of long COVID may now qualify under the Americans with Disability Act,[23] Titles II and III that affect state and local government and public accommodations.

If the symptoms substantially limit one or more major life activities, it can also be a disability under Section 504 and section 1557, which protect against discrimination and

provide additional resources. Signs and symptoms that persist for four or more weeks after diagnosis of COVID-19 include:[24,25]

Fatigue	Cough	Joint pain
Chest pain	Dizziness when you stand	Mood changes Depression or anxiety
Loss of smell or taste	Fast or pounding heartbeat	Change in smell or taste
Pins-and-needles feeling	Sleep problems	Dizziness on standing
Muscle pain or headache	Shortness of breath or difficulty breathing	Memory, concentration or sleep problems
Worsened symptoms after physical or mental activities	Changes in menstrual period cycles	

Strategies to Improve Symptoms of Long COVID

One of the key strategies to preventing infection and treating long-haul symptoms is to protect and support your gut microbiome. According to an article in The BMJ published August 11, 2020, many long COVID patients recover spontaneously "with holistic support, rest, symptomatic treatment and gradual increase in activity." To support recovery, the article suggests:[26]

> *"… patients should be managed pragmatically and symptomatically with an emphasis on holistic support while avoiding over-investigation. Fever, for example, may be treated symptomatically with paracetamol or non-steroidal anti-inflammatory drugs.*

Monitoring functional status in post-acute COVID-19 patients is not yet an exact science. A post-COVID-19 functional status scale has been developed pragmatically but not formally validated …

Referral to a specialist rehabilitation service does not seem to be needed for most patients, who can expect a gradual, if sometimes protracted, improvement in energy levels and breathlessness, aided by careful pacing, prioritization, and modest goal setting.

In our experience, most but not all patients who were not admitted to hospital recover well with four to six weeks of light aerobic exercise (such as walking or Pilates), gradually increasing in intensity as tolerated. Those returning to employment may need support to negotiate a phased return."

One Swedish study[27] demonstrated that taking probiotics for 14 days could help alleviate some of the symptoms of long COVID, namely muscle soreness and brain fog. I also recommend optimizing your gut microbiome by avoiding processed vegetable oils, processed foods and conventionally raised meats in animal products.

Consider increasing your soluble and insoluble fiber intake which are necessary nutrients for beneficial bacteria and eat plenty of traditionally fermented foods, such as fermented grass-fed organic milk products, fermented vegetables and natto.

Sources and References

- [1] Johns Hopkins Medicine, COVID Long Haulers
- [2, 3] Columbia Mailman School of Public Health, August 6th, 2021
- [4] University of Texas Health, Auditory System Structure and Function
- [5] National Institute On Deafness and Other Communication Disorders, Tinnitus
- [6, 7] Cleveland Clinic, May 24, 2021
- [8] Circulation Research, 2021; 128
- [9] International Journal of Audiology, 2021; 60(12)
- [10] Communications Medicine, 2021; 1(44)
- [11] Stanford Medicine SCOPE December 1, 2021
- [12, 13] Indian Journal Of Otolaryngology And Head & Neck Surgery, 2021; 73(4)
- [14] Open VAERS, COVID reports, Searched Data January 28, 2022 symptom=Tinnitus

- [15] National Institute on Deafness and Other Communication Disorders, Tinnitus, Section 7
- [16, 17] University of California San Francisco Health, Tinnitus Treatments
- [18] American Tinnitus Association, Treatment Options
- [19] YouTube October 25, 2021
- [20] YouTube October 25, 2021, 5:43
- [21] YouTube October 25, 2021, 6:15
- [22] YouTube October 25, 2021, 6:04
- [23] Health and Human Services, July 26, 2021
- [24] Mayo Clinic, COVID-19 Long Term Effects
- [25] Centers for Disease Control and Prevention, September 16, 2021
- [26] The BMJ, 2020;370
- [27] Medicines, 2021; 8(9)