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Long COVID with Obstructive Sleep Apnea: A case report

Charles S. Masarsky and Marion Todres-Masarsky

Narrative: A 64-year-old corporate consultant presented with long COVID manifestations. His major complaints were cold intolerance, fatigue, and insomnia. He rated his fatigue at 2/10 on a scale where 10/10 represents the most severe manifestation of the symptom. He had been able to sleep only 3-4 hours per night for several months. He had been accustomed to playing tennis 2-4 times per week but had not played at all for several months prior to presentation.

He was diagnosed with obstructive sleep apnea approximately three months after his acute COVID-19 infection. Continuous positive airway pressure (CPAP) therapy was ongoing for this condition.

He also suffered a recurrence of atrial fibrillation around the time of this infection. He was taking Diltiazem™ (a calcium channel blocker) and Pradax™ (an anticoagulant) for atrial fibrillation as well as Zyrtec™ for seasonal allergies at the time of presentation.

On chiropractic examination, multiple vertebral and upper extremity subluxations were found on palpation. Active cervical range of motion was restricted in rotation and lateral flexion bilaterally. The right *quadriceps femoris* muscle was found to be inhibited on manual muscle testing. A sagittal suture fault was revealed according to Applied Kinesiology protocols. Lower rib excursion was restricted on the right. Arterial blood pressure measured 150/98 mm/Hg.

Chiropractic adjustments for the correction of vertebral and upper extremity subluxations and cranial faults were administered five times over a four-week period. He was asked to perform daily oropharyngeal exercises to augment his CPAP therapy.

On the third visit, blood pressure was 134/80 mm/Hg. The patient stated he was sleeping as much as 5.5 hours per night, and his fatigue level was '*not bad*'. On the fifth visit, the patient reported his fatigue level to be 1/10 most days. His sensitivity to cold temperature was no longer worse than before COVID-19 infection. He reported sleeping at least 4 hours, often 5-6 hours per night. Overall, he stated he was feeling '*better*'. Several weeks after this visit, he had resumed playing tennis.

This is our sixth report of long COVID under chiropractic care. The results to date support the hypothesis that chiropractic adjustments can reduce the severity of COVID-19 long haul symptoms.

Indexing Terms: Chiropractic; Subluxation; Long COVID; Obstructive Sleep Apnea.

Introduction

We have previously reported five cases of long COVID under a course of chiropractic care. (Masarsky & Todres-Masarsky, 2022; Masarsky & Todres-Masarsky, 2022b; Masarsky & Todres-Masarsky, 2023; Masarsky & Todres-Masarsky, 2024; Massarsky & Todres-Masarsky, 2025) The patient described in this paper responded to the same call for subjects (Appendix 1) and executed the same informed consent document (Appendix 2) as the

> *'... In some cases, Chiropractic adjustments can reduce the severity of COVID-19 long-haul symptoms ...'*

previous subjects. He was made aware of the call for subjects by a relative, who noticed our flyer when visiting for her own chiropractic care. Questioning regarding the patient's long COVID complaints were partially guided by a list of topics inspired by the COMPASS 31 questionnaire and a subjective scale of olfactory function, along with our general knowledge of long COVID. (Appendix 3; Sletten et al, 2021; Gupta et al, 2013)

Past history

The patient is a 64-year-old corporate consultant. He was treated for acute COVID-19 infection with antibody infusions in June 2023. He was treated for atrial fibrillation with cardiac ablation in 2020 but experienced a recurrence around the time of his 2023 COVID-19 infection. He is currently taking Diltiazem™ (a calcium channel blocker) and Pradax™ for atrial fibrillation as well as Zyrtec™ for seasonal allergies.

In September 2023, he was diagnosed with mild obstructive sleep apnea (OSA), for which he was placed on continuous positive airway pressure (CPAP) therapy. He felt that he was more sensitive to cold temperatures than he was prior to COVID-19 infection.

He stated that he was sleeping no more than three or four hours per night since his infection. He admitted to some fatigue, possibly related to this sleep deprivation. He rated this fatigue as 2/10 on a subjective scale where 10/10 is the most severe presentation of the symptom. As a possible consequence of this fatigue, his exercise level has recently decreased. Specifically, he had been accustomed to playing tennis two to four times per week but had not played at all since October 2024.

Findings at presentation

The initial visit for chiropractic care took place on February 8, 2025. Informed consent was obtained.

The patient stated his height is six feet, zero inches (182.88cm) and his weight is 250 pounds (113.4kg). Blood pressure was 150/98 mm Hg. Active cervical range of motion was restricted in right rotation, left rotation, right lateral flexion and left lateral flexion. Lower rib excursion (LOREX) was asymmetrical, with the right side less mobile than the left on deep inspiration.

Motion palpation and static palpation augmented by 'heads up palpation' and 'inspiration palpation' techniques have been previously discussed (Masarsky, 2024). Based on these assessment techniques, hypomobility was revealed at the C5-6, T8-9, T10-11, and L2-3 motion segments. The right *quadriceps femoris* muscle was found to be inhibited on manual muscle testing. A sagittal suture cranial fault was found according to Applied Kinesiology protocols.

A schedule of two visits per week for two weeks was advised. This schedule was modified as the case evolved.

Interventions and outcomes

All vertebral and extremity adjustments were high-velocity, low-amplitude diversified adjustments unless otherwise specified. Cranial adjustments were performed with respiratory assist technique, following Applied Kinesiology protocols. Neurolymphatic and neurovascular stimulation also followed Applied Kinesiology protocols.

2-8-2025: Adjustment was administered at the C5-6 motion segment. The sagittal suture was decompressed with respiratory assist technique. Restricted motion of the left temporomandibular joint (TMJ) was addressed with digital release of the external *pterygoid* muscle followed by Cottam TMJ release. (Cottam, 1936) The yintang acupressure point was stimulated. (Young-Chang et al, 2011) Suboccipital muscles were relaxed by the clinician

gently curling his fingers under the inferior border of the supine patient's occiput (suboccipital release).

2-14-2025: Adjustments were administered to the T2-3, T11-12, and L3-4 motion segments in addition to the left glenohumeral joint. Neurolymphatic stimulation was performed to correct inhibition of the left *psoas major* muscle. Suboccipital release and yintang stimulation were performed.

Oropharyngeal exercises to augment the patient's CPAP therapy were recommended (Appendix 4). These exercises were previously described. (Masarsky, 2023)

2-17-2025: At this visit, the patient stated his fatigue was '*not bad*', and he was sleeping as much as 5.5 hours per night. He was reportedly complying with oropharyngeal exercise recommendations. Blood pressure was 134/80 mm/Hg.

Adjustments were administered to the T2-3, T11-12, and T3-6 motion segments. The T3-6 area was corrected with an anteriority manoeuvre. After neurolymphatic stimulation for the left *supraspinatus* muscle, the left glenohumeral joint was adjusted. Suboccipital release and yintang stimulation were performed.

2-26-2025: Adjustments were administered to the L5-S1, L2-3, T10-11, and T4-5 motion segments as well as the left glenohumeral joint. Neurolymphatic stimulation was performed for the left *quadriceps femoris* and left *supraspinatus* muscles. Suboccipital release and yintang stimulation were performed.

3-5-2025: At this visit, the patient reported his fatigue levels to be 1/10 most days. His sensitivity to cold temperature was no longer worse than before COVID-19 infection. He reported sleeping at least 4 hours, often 5-6 hours per night. Overall, he stated he was feeling '*better*'. Adjustments were administered at the T10-11, L4-5, and T2-3 levels. Suboccipital release and yintang stimulation were performed.

At this point, the formal research period was completed. By mutual agreement, the patient has continued Chiropractic care. His most recent visit as of this writing took place on 4-23-2025. He noted that he was now playing tennis regularly.

Discussion

Fatigue is frequently reported as an aspect of long COVID. Some instances of fatigue may be related to disruption of pituitary function, including adrenal insufficiency according to a study published in 2024. (Di Filippo et al, 2024) Secondary hypothyroidism can also be a consequence of this pituitary involvement.

While this patient's long COVID fatigue was more subtle than the debilitating loss of energy suffered by some of our previous subjects, it was possible to track its change through his tennis participation as well as his subjective report. The combination of this fatigue and cold intolerance, and the simultaneous improvement in both symptoms suggests thyroid deficiency as one of his long COVID manifestations. This is further supported by the presence of a C5 subluxation, which is in a position to irritate the middle cervical sympathetic ganglia, which supply sympathetic innervation to the thyroid. However, since blood chemistry was not part of our protocol, we cannot verify thyroid involvement with any confidence. Going forward, investigators may find it rewarding to include endocrine panels in their assessment of long COVID patients.

The patient's diagnosis of obstructive sleep apnea (OSA) at the time of his COVID-19 infection may be a coincidence. However, at least one report found OSA to be concomitant with long COVID. (Zhu et al, 2021) It is not clear whether or not long COVID is in fact a risk factor for OSA. If there is a correlation, it could be in the reverse direction. That is, previously subclinical OSA may become apparent during or after COVID-19 infection. Our recommendation that the patient practice

oropharyngeal exercises is supported by a 2013 study demonstrating clinical benefit from these exercises even in patients already under CPAP therapy. (Diaferia et al, 2013)

This patient suffered a recurrence of atrial fibrillation at around the time of his COVID-19 infection. This recurrence may in fact be a consequence of the infection. A 2024 report following more than 19,000 patients concluded that COVID-19 infection is a risk factor for atrial fibrillation. (Zuin et al, 2024)

The patient's arterial blood pressure, elevated at presentation despite taking a calcium channel blocker, was substantially normalised by the third visit. It is possible that the initial measurement merely indicated anxiety when beginning care at a new practice ('white coat hypertension'). The patient would probably have felt more comfortable by the third visit. It is also possible that the patient's subluxations contributed to blood pressure elevation, and correction of these subluxations brought about reduction towards normal.

Conclusion

Our working hypothesis is spelled out in our call for subjects: In some cases, Chiropractic adjustments can reduce the severity of COVID-19 long-haul symptoms. Our experience with the six patients reported to date supports this hypothesis.

Well-researched pencil and paper instruments to follow changes in fatigue could make a worthwhile addition to data collection. In addition to questionnaires, physiological measurements relevant to fatigue can be incorporated. These could include reaction time and short-term memory, for example.

Going forward, investigators and clinicians may find it rewarding to include endocrine panels in their evaluation of long COVID patients. These panels may capture nuances of the hormonal involvement in patients where such symptoms as fatigue and cold sensitivity are involved.

Oropharyngeal exercises such as those described in this paper are reasonable adjuncts to chiropractic adjustment for patients where soft tissue tone in the mouth and/or tongue and/or throat are at issue. This is of obvious importance when OSA is suspected or has in fact been diagnosed.

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About the Chiropractors

Charles S. Masarsky DC

Chuck Masarsky was born in the Bronx and grew up on Long Island. His BS is from Cornell University and his DC is from New York Chiropractic College. He also took graduate work at SUNY Stony Brook. He served in the US Army Reserves as a medic and as Chair of the Research Committee of the Virginia Chiropractic Association.

Dr Masarsky has published extensively in professional journals and lectures here and abroad. He co-edited the textbook SOMATOVISCERAL ASPECTS OF CHIROPRACTIC: An Evidence-Based Approach with Dr Todres-Masarsky. They also created and published the research newsletter, Neurological Fitness, encouraging dialogue within the profession.

When he's not in the office, he's an adjunct professor at Northern Virginia Community College. He enjoys movies, classical music and playing with his cats. If you're lucky, you may catch him doing standup at open mikes in the area.

Marion Todres-Masarsky DC

Dr Todres, originally from New Jersey, took her BA and MA (English) from the University of Massachusetts/Boston and her DC is from New York Chiropractic College. She did additional graduate work at SUNY/Binghamton and Rutgers GSE.

She has been a lab instructor on the college level and tutored in English and anatomy. She's worked in libraries in N.J., Colorado and Massachusetts and still thinks of an old-fashioned card catalogue as a candy store for the curious.

She has served as Chair of the New Practitioners Committee of the Virginia Chiropractic Association and was the first woman elected to the board of that organisation, serving as the Northern District Representative, covering Northern Virginia. She has published papers in professional journals as well as co-editing SOMATOVISCERAL ASPECTS OF CHIROPRACTIC: An Evidence-based Approach. With Dr Masarsky, she created and published the research newsletter, Neurological Fitness, to encourage dialogue within the profession.

Outside the office, she loves to cook, garden, hunt for fossils along the beach and laugh. An evening of blues, bluegrass or world music will definitely make her heart sing, as will dinner and conversation with friends. Watching a movie with her cats and Dr Masarsky is good too.

https://www.youtube.com/@viennachiropractic4145

Next: Appendices 1 through 4 ...

Appendix 1: Call for Research Volunteers

Call for Research Volunteers: Long Haulers (COVID)

What Is Our Hypothesis (Research Question)?

It is not uncommon for COVID-19 survivors to have residual problems for weeks or months after the fever and acute symptoms are gone. These people are sometimes referred to as "long haulers". Common long-haul symptoms include headache, fatigue, attention deficit, and difficult breathing.

We know from both published research and our own clinical experience that chiropractic adjustments often help people with these symptoms whether or not they are infection related. The possibility that chiropractic adjustments can help people with these same symptoms post-COVID seems reasonable.

In a previous newsletter, we provided a brief discussion of a COVID-19 survivor who had lost her sense of smell and seemed to regain it immediately after her adjustment.

Our hypothesis: *In some cases, chiropractic adjustments can reduce the severity of COVID-19 long-haul symptoms.*

How Do You Qualify for the Project?

We are calling for volunteers who are COVID-19 survivors with lingering symptoms who have had no chiropractic care for at least one month. We will need written documentation of your COVID-19 diagnosis. If you may still be contagious, we will delay your participation.

What Can You Expect During Your Participation?

If you are an established patient, we will perform a brief case history and exam focused on your long-haul symptoms as well as our usual chiropractic checkup. If appropriate, an adjustment will be performed. This visit will last approximately 30 minutes.

If you are a new patient, we will perform the same case history and examination that any other new patient would experience, along with specific questions related to long-haul symptoms. If appropriate, a chiropractic adjustment will be performed. This visit will last approximately one hour.

There will be two follow-up visits for additional chiropractic adjustments, lasting approximately 15 minutes each. At the fourth and final research visit, a progress exam will be conducted.

What Will We Do with the Data?

We hope to publish these cases in a peer-reviewed, indexed clinical journal. Published papers will not include your name or any information that can be used to identify you. Your privacy and your safety will always be our paramount consideration.

Will There Be Payment?

This research is not grant-funded, so we cannot offer cash payment. All chiropractic services received as part of your participation in this research will be free of charge.

Contacting Us

If you are interested in volunteering, or if you have a friend or family member who would like to, contact us by phone: 703-938-6441. Feel free to spread the word by forwarding this e-mail, or by copying and sharing this flyer.

Thank you!

Appendix 2: Consent for Research Participation

VIENNA CHIROPRACTIC ASSOCIATES, P.C.

243 Church Street NW, #300-B, Vienna, VA 22180
703-938-6441
Directors: Charles S. Masarsky, D.C. & Marion Todres-Masarsky, D.C.

Thank you for helping us investigate the chiropractic management of long-haul COVID-19 symptoms.

We will measure the severity of your symptoms before and after a brief series of chiropractic adjustments.

We are committed to your safety and well-being during your participation in this research, as we would be with anyone under our care. Nevertheless, you have the right to withdraw your participation at any time for any reason.

We hope this research leads to publication in a clinical journal. In compliance with standard rules for such publications, we will not reveal your name, initials, unique characteristics, or any other information that poses a foreseeable threat to your privacy.

"I have read the above, asked any questions I have about the project described, and I understand the information presented. I consent to participate."

Printed Name of Participant:_____

Signature of Participant:_____

Today's Date:_____

Appendix 3: History Questions Relevant to Long COVID

Some History Questions Relevant to Long COVID (discuss frequency, severity, + whatever other details patient can add)

Autonomic Function

Since COVID, when standing after sitting or lying down do you feel:

- Dizzy?
- Shaky/weak?
- Do you break into a sweat?
- Does your vision blur?
- Does your heart race (palpitations)?

Do you get dry mouth more than you used to? Excess salivation more than you used to?

Do you get dry eye more than you used to? More tearing up than you used to?

Are you experiencing more diarrhea than you used to? More constipation than you used to?

Do you have more difficulty emptying your bladder than you used to?

Are you more sensitive to bright light than you used to be?

Do you have more difficulty seeing/driving at night than you used to?

Olfactory Function

Since COVID, what score would you give your sense of smell if "0" means you are unable to smell anything, and "5" is completely normal sense of smell?

If your score is less than "5", do you find yourself using more salt and other seasonings?

Cognitive Function

Do you have more trouble concentrating than you used to?

Do you have more trouble with your memory than you used to?

Do you feel more mentally "foggy" than you used to?

Breathing

Do you have more trouble than before taking a deep breath?

Do you have to stop to take a breath when speaking more often than you used to?

Endocrine (Glandular)

Do you get tired more easily than you used to?

Do you have less sex drive than you used to?

Are you more sensitive to heat or cold than you used to be?

Do you have more of a craving for salt than you used to?

(**Sletten et al, 2012; Gupta et al, 2013**)

Appendix 4: Exercises for Obstructive Sleep Apnea

EXERCISES FOR OBSTRUCTIVE SLEEP APNEA

Say "Ah"

When an examining doctor looks into your mouth and asks you to say, "Ah," they look for elevation of the soft palate. The same vocalization can be used as an exercise to tone the soft palate.

Say, "Ah" for 10-60 seconds, according to comfort. Alternate staccato vocalization ("Ah-ah-ah-ah…" etc.) with longer efforts of "holding the note" ("Ahhhhhhhh…"). Shoot for a total of at least 3 minutes per day.

Variations: You can say, "Ah" with your mouth wide open and your tongue all the way out and down. This recruits additional throat and tongue muscles. For those familiar with yoga, this somewhat resembles the "lion" pose. Also, instead of just saying, "Ah," you can sing something, with "Ah" as the lyric.

Resisted Tongue Thrust (Forward)

Press your lips together, and press your tongue forward against the resistance. Do this for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day.

Variation: You can open your mouth and press your tongue against your fingers or a spoon.

Tongue to the Roof

Press your tongue to the roof of your mouth. Assist the pressure with suction, so your tongue is actually being sucked upward against your palate. Hold for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day.

Tongue to the Floor

With the tip of your tongue touching your lower teeth, press the rest of your tongue down against the floor of your mouth. Hold for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day.

Tongue to the Cheek

Press your tongue against your right cheek, with the tongue and cheek resisting each other. Hold for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day. Repeat with left cheek.

Variation: To emphasize the cheek muscles, your can place your fingertip in your mouth and use it for resistance rather than your tongue.

Back-Lick

Pressing your tongue against the roof of your mouth just behind your front teeth, move your tongue as far back as possible, licking the roof of your mouth from front to back. Then lick from back to front. Repeat for 10-60 seconds according to comfort, shooting for a total of at least 3 minutes per day.