

CASE REPORT

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Trigger point injections and dry needling can be effective in treating long COVID syndrome-related myalgia: a case report

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Abstract

Introduction: Myofascial pain is a complex health condition that affects the majority of the general population. Myalgia has been recognized as a symptom of long COVID syndrome. The treatment for long COVID syndrome-related myalgia lacks research. Dry needling is a technique that involves the insertion of a needle into the tissue of, or overlaying, a pain point. Wet needling is the addition of an injection of an analgesic substance such as lidocaine while performing needling. Both dry and wet needling have been practiced as treatment modalities for myofascial pain. Limited literature exists to define long COVID syndrome-related myalgia and its relation to myofascial pain, or to examine the utility of needling techniques for this pain. We report a case of dry and wet needling as effective treatments for long COVID-related myofascial pain.

Case presentation: A 59-year-old, previously healthy Hispanic male with no comorbid conditions was diagnosed with COVID-19 pneumonia. The patient suffered moderate disease without hypoxia and was never hospitalized. Three months later, the patient continued to suffer from symptoms such as exertional dyspnea, “brain fog,” and myalgia. An extensive multisystem workup revealed normal cardiac, pulmonary, and end organ functions. The patient was then diagnosed with long COVID syndrome. The nature and chronicity of the patient’s myalgia meet the criteria for myofascial pain. Both wet and dry needling were used to treat the patient’s myofascial pain, with good short- and long-term therapeutic effects.

Conclusions: COVID-19 infection has been shown to exacerbate preexisting myofascial pain syndrome. Our case report indicates that long COVID syndrome-related myalgia is likely a form of new-onset myofascial pain. Additionally, both wet and dry needling can be utilized as an effective treatment modality for this pain syndrome, with short- and long-term benefits.

Keywords: Case report, Long COVID syndrome, Myofascial pain, Trigger point injections, Dry needling

Introduction

Myofascial pain (MP) is a complex health condition that affects many patients, and is thought to occur from muscle overuse, trauma, and psychological stress [1]. The loci of the pain are termed “trigger points,” which are tender

spots in a taut muscle band. When pressure is applied to these trigger points, it produces a pain response [2]. Although trigger points can be reliably detected on ultrasound as hypoechoic foci within the muscle [3, 4], the exact mechanism by which trigger points form remains debated [1, 5]. While not interchangeable, fibromyalgia (FM) and MP syndrome have overlapping diagnostic criteria [6].

Post-acute COVID or long COVID syndrome (LCS) has become increasingly recognized as a prevalent

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disease and long-term sequela of COVID-19 survivors [7–9]. Common symptoms include fatigue, dyspnea, palpitations on minimal exertion, cognitive impairment or “brain fog,” sleep disturbances, digestive issues, mood disorders, headache, and myalgia [10, 11]. Myalgia has been commonly associated with LCS, either in the sense of new pain or exacerbation of preexisting pain [12–15]. Interestingly, myalgia following SARS-CoV-2 infection seems to be independent of the severity of the initial infection [8]. In general, a multidisciplinary approach is recommended for the management of LCS [9, 10, 16]. However, effective management of this lingering myalgia remains to be explored.

Dry needling (DN) is an umbrella term to describe an array of different techniques that generally involve the insertion of a needle into the tissue of, or overlaying, a trigger point [17]. It is a relatively new, but increasingly widely used technique to treat myofascial pain [18–20]. In some studies, DN is shown to reduce stiffness and tone, improve contractile properties of certain muscles, and decrease pressure pain perception [21, 22]. The pain reduction effect of DN is apparent both immediately after treatment and at an interval of 4 weeks in multiple body regions [23–25]. Wet needling (WN), or trigger point injection, is the additional injection of an analgesic substance, such as lidocaine, while performing needling. Long- and short-term efficacy varies between the two techniques [26]. However, acute pain relief tends to be greater with WN [27–29].

Limited literature exists to define LCS-related myalgia and its relation to MP, though treatment options are urgently needed. Although DN and WN are both effective treatment modalities for MP, their utility for LCS-related myalgia have not been examined.

Case presentation

We report a case of WN and DN as effective treatments for LCS-related MP.

In late June 2020 (T_0), a 59-year-old previously robust and healthy Hispanic male with no prior chronic illness, presented with symptoms consistent with COVID-19 illness, and was diagnosed with by an RT-PCR test for SARS-CoV-2. His vital signs were within normal limits, with an SpO_2 of 95%. Chest X-ray showed multifocal pneumonia. He then returned home for supportive management of his acute illness.

At T_0+3 weeks, the patient continued to have difficulty breathing, chest pain, weakness, headaches, and diffuse myalgia. The patient's vital signs were normal, with an SpO_2 of 96%. Repeat chest X-ray showed unchanged multifocal pneumonia. D-dimer was 4960 ng/mL, white blood cell (WBC) count was within normal limits, with normal absolute lymphocyte count. The patient did not

meet inpatient admission criteria and was therefore encouraged to rest and recover at home. At T_0+6 weeks, during a phone visit, the patient described his persistent profound myalgia and associated weakness. He gave an example that he was not even able to open a water bottle without pain.

At T_0+3 months, the patient presented to the clinic for disability paperwork owing to his inability to complete daily living activities caused by his persistent exertional dyspnea, “brain fog,” and myalgia. Today, we know that LCS has a significant impact on a patient's employment [16]. Repeat chest X-ray showed normal findings. Pulmonary function test was normal. Electrocardiogram (EKG), troponin, B-type natriuretic peptide, hemoglobin A1C, and thyroid stimulating hormones were within normal limits. Echocardiogram showed normal left ventricular function and no significant valvular disease. Nuclear stress test was negative for arrhythmia or coronary artery ischemia. Additionally, depression screening was negative.

The patient's symptoms persisted. At T_0+6 months, the diagnosis of LCS was made, according to the few studies available at the time [11]. The chronicity of the patient's diffuse myalgia qualified his pain as chronic pain, and the locations were typical for MP syndrome and FM: neck, shoulder, upper back, bilateral posterior upper arms, and posterior lower legs. His widespread pain index was greater than 7. An 11-point numeric Likert pain score was used to document pain severity, with 0 being “no pain at all” and 10 being “the worst pain I have had.” The patient's pain score was 6. At this point, the patient met the American College of Rheumatology preliminary diagnostic criteria for FM [30]. He scored 88 out of 100 on the Fibromyalgia Impact Questionnaire (FIQ), representing severe impact of his pain syndrome on his physical functioning, mood, and overall well-being.

At the visit at T_0+6 months, WN with 1% lidocaine without epinephrine was performed on six points, using a 25 gauge, 1.5 inch needle: four in the neck and shoulder regions, and one on each side of posterior triceps. In all of our WN practice, each trigger point receives 1 ml lidocaine. Immediately after the injections, the patient stated an improvement in pain, with a pain score of 0–1. The benefit of this WN session lasted for 2 weeks, with improved daily living activity function and pain intensity. At this time, the patient was prescribed 30 mg duloxetine daily. On 2 week follow-up, the patient rated his pain score to be six again. The patient then received five more WN injections: three in the neck and shoulder regions, and one in each posterior tricep. Immediately after injection, the patient commented he only had “2% of pain left,” indicating a pain score of 0–1. At 2 weeks follow-up after the second WN session, the patient only reported pain in

the bilateral posterior triceps region, with a pain score of two. A third WN session was performed with two injections: one in each posterior tricep. Immediately after the injections, the patient had no more pain. One month later, at T_0+7 months, the patient received four more WN injections: one in the left posterior distal thigh, one in the right upper posterior deltoid, and two in the neck and shoulder regions. His pain score reduced to 0 immediately after the injection, from 2 on presentation. The patient reported feeling ready to return to work.

At T_0+12 months, the patient returned to clinic with worsening LCS: numbness and tingling of hands and feet for 4 weeks, leg cramping, forgetfulness, and diffuse myalgia. Since his last visit, the patient had experienced significantly increased psychosocial stress, including COVID-19-related deaths in the family. He felt that the stress exacerbated his symptoms.

At this point, DN was trialed with a 21 gauge, 1 inch needle. A total of 10 points were needled: four in the neck and upper back region, one in each posterior tricep, and two in each posterior calf muscle. Immediately, after the first DN session, the patient had a reduction in pain score, from 8 to 2. Two weeks later, the patient reported pain score of 2, and a second session of DN was done. The same 10 points were needled as in the previous visit. The patient subsequently reported no more pain after DN.

At the time of this case report, during the last documented follow-up appointment (T_0+18 months, September 2021), the patient remained pain free, with a pain scale of 0. No adverse reaction to WN or DN treatments were reported.

Discussion and conclusions

In the case we describe above, the patient had no pre-existing conditions that could explain the new onset of myalgia. The most feasible explanation of his lingering myalgia was LCS. The nature of the pain and the loci of trigger points of the patient's pain indicate that the mechanism was probably MP. Additionally, psychological stress exacerbated the patient's pain, which has been seen in MP syndrome [31].

Although no direct connection has been made to support new-onset MP syndrome caused by LCS, a recent case series demonstrated a correlation between worsening MP syndrome trigger point pain after COVID-19 infection. The authors indicated that COVID-19 infection could elicit physical and psychological stress, which could lead to more trigger points in patients with MP syndrome [32]. Our case report adds to the possibility of the development of new-onset MP as part of LCS.

If this patient did not have LCS as an explanation for his pain, his pain syndrome would have met the

diagnostic criteria for FM. It is also safe to assume that, in clinical practice, many LCS will be misdiagnosed as FM. There are most likely overlapping pathogenesis between the two pain syndromes. Therefore, the FIQ might provide a good method to measure the impact of LCS-related MP.

This report has a few limitations. First, the rheumatologic causes of this patient's lingering symptoms was not investigated so, although unlikely, such causes cannot be completely ruled out for his pain. Second, the patient was started on duloxetine for pain management prior to starting DN or WN. Although duloxetine does not explain the immediate improvement of the patient's pain scores after needling treatments, it is a confounding factor for the patient's longer-term pain improvement. Last, placebo effect of needling treatments cannot be ruled out from a single case report. Larger studies, ideally in the form of randomized control trials, are needed to validate the effectiveness of DN and WN for LCS-related myalgia.

With over 220 million people having recovered from COVID-19 worldwide, including 37 million in the USA alone, LCS will likely become a new form of common chronic illness [9]. Most symptoms will be managed in primary care settings [7]. Effective treatment modality for this disease needs urgent investigation. However, there is very little information on the treatment of LCS-related myalgia in existing guidelines [10, 15, 16]. From our experience, we conclude that WN and DN can be effective and safe ways to treat LCS-related myalgia in the primary care setting, with both short- and long-term benefits. This case report is, so far, the only report that provides insight on the therapeutic effects of needling techniques that can be easily employed in the primary care setting.

Abbreviations

MP: Myofascial pain; FM: Fibromyalgia; LCS: Long COVID syndrome; T_0 : Initial time of symptom onset; WN: Wet needling; DN: Dry needling.

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Authors' contributions

MZ is the primary treating physician of the patient who guided the diagnosis and therapy, and drafted the manuscript. KC assisted MZ with treating the patient as a medical student, and assisted in editing and revising the manuscript. JA assisted with the literature search, journal selection, and editing and revising the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials

The deidentified data that support the findings of this report are available on request from the corresponding author, MZ. The data are not publicly available due to HIPPA.

Declarations

Ethics approval and consent to participate

We confirm that this manuscript was conducted with ethical approval of the patient.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing interests

The authors declare that they have no competing interests.

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