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Does COVID19 activates previous chronic pain? A case series

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ABSTRACT

Introduction: With the outbreak of coronavirus, the number of patients who referred to the pain clinic for follow-up was much higher than before, which coincided with the onset of the coronavirus pandemic. However, due to incomplete knowledge regarding the virus and its effects, patients did not follow up to the pain.
Methods: We present case of 8 patients who were treated previously for chronic pain (complete remission).
Results: During the pandemic, these patients were presented to our center presenting identical pain, that did not respond to the conservative therapy. Owing to the symptoms, these patients were screened and tested positive for COVID19. Two of the patients died whereas, symptoms were improved in other patients.
Conclusion: Patients with the history of chronic pain may present relapse as a result of the infection or infection can trigger previous chronic pain among patients with risk factors.

1. Introduction

Coronavirus disease 2019 (COVID19), caused by new coronavirus (SARS-nCoV or 2019-nCoV) is declared as pandemic and to the date, more than 48 million cases have been confirmed with 1.2 million fatalities, worldwide [1]. Early, the infection was known to have pneumonia like pattern [2], nonetheless, recent findings have also suggested that gastrointestinal manifestation is also common among COVID19 patients [3].

The risk factors associated with the disease include male gender, smoking, advanced age, increased body mass index and comorbidities (cardiovascular, pulmonary, hypertension and diabetes) [4,5]. Cytokine storm during the infection is associated with increased neurological adverse events, alveolar edema and multisystem organ failure. Expression of angiotensin converting enzyme (ACE) receptors in different organ tissues also indicates the evidence of its multisystem effects [6]. IL-6 (interleukin 6) blockers have been suggested for the treatment of severe COVID19 among patients with elevated IL-6 in China, suggesting the role of increased cytokine release in the prognosis of the disease [7]. Coronavirus patients are presented with a number of musculoskeletal symptoms that can be directly or indirectly (psychosomatic) related to the disease [8].

Herein we present the cases of patients who were treated for chronic pain prior to the pandemic. These patients retuned to our center with identical pain and were tested positive for COVID19.

2. Case presentation

A 78-year-old man who was a case of FBSS (failed back surgery syndrome), that was resolved with nerve block and exercise. At initial time of his referral, he was not presented with fever or previous infections. Due to severe pain of the patient, he was prescribed conservative treatment, which did not resolve. The patient did not any anal sphincter force abnormality. He was referred to other center, where he underwent nerve block. During the follow-up, his son indicated that he had fever and the condition did not improve. He was referred to infectious disease ward, where he was tested positive for COVID19. The patient was admitted to the ICU where his condition worsened, and he died after two weeks.

A 76-year-old woman had been receiving treatment for discopathy for 3 years with lower back pain and L4-L5 and L5-S1 protrusions. No active denervation was seen in EMG (electromyogram) and NCS (nerve conduction study). The patient was treated with medication, exercise and block and had been in a stable condition for the past 3 years. In May 2020, she was presented to our center with the same pain and was treated with nerve block. Next day, she returned with the similar pain along with fever and cough. Her SpO2 was 89% and was therefore screened for COVID19. She was tested positive and was admitted to ICU

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due to worsening of her condition. She was under mechanical ventilation for 3 days however, she passed away.

A 70-year-old woman was treated for neck and shoulder pain with a diagnosis of cervical radiculopathy with selected nerve block and exercise two years back. she was presented with a similar pain at the time her referral (October 2020). She reported a complete remission of the pain following her previous treatment. She was presented with fever (38.1°), cough and shortness of breath. She was tested positive for COVID19 and was hospitalized at our center. She was still under the treatment at the time of preparation of this manuscript.

A 38-year-old man with coccydynia was presented to our pain clinic with a history of 20-year-old tailbone trauma that was treated with conservative treatment and nerve block. He was also presented with fever, 38.5 °C. Due to the pandemic condition, he was screened for COVID19 and was tested positive. He was referred to COVID19 unit for further treatment. The follow-up data of the patient was obtained from the hospital record that showed that after 8 days of in-patient treatment, he was discharged and followed-up on phone call for the recurrence of the symptoms.

A 74-year-old retired university professor, who had been receiving post-CVA (cerebrovascular accident) drug therapy for 11 years with neuropathic pain and was under control with a minimum dose of the drug, complained over the phone about a progressive exacerbation of pain during the previous week. The conservative medication did not improve the pain. The patient's nurse reported that he had hypotension and arrhythmia. An ECG was ordered in the emergency room where numerous PVCs (premature ventricular contractions) were seen. He went to a cardiology center for treatment. The second ECG was normal, and his troponin was also normal. The patient was discharged from the heart hospital. Due to the patient's feeling of extreme fatigue and hypotension, a CT scan was performed with suspicion of COVID19, which had severe lung involvement. He was immediately hospitalized. The initial CRP was 168 and the lymphocyte was 6%. The patient was discharged after 20 days following COVID19 treatment. He was followed-up on phone call for the symptoms.

A 40-year-old female physician was presented with severe neck and shoulder pain. The patient had a history of the similar pain about 10 years ago, which was treated with acupuncture. She reported no such pain after the treatment. Owing to the pandemic conditions and her profession, she was screened for COVID19 through PCR and tested positive. The patient was quarantined and underwent supportive medical treatment. After about two weeks, the patient's symptoms were completely resolved and was not followed up.

The patient was a 52-year-old anesthesiologist who underwent surgery about 9 months ago due to extrusion of the left L4-L5 disc where the pain was completely resolved. He was presented to our center again with colds, muscle ache, and fever, and was diagnosed with COVID19. He was quarantined and treated for two weeks. The pain was reduced but the patient is now candidate for more aggressive treatment.

A 48-year-old woman with facial and eye pain, who underwent various drug treatments and immunosuppressive therapy 25 years ago, with no desired result, was introduced to the pain clinic about three years ago for further treatment. Sphenopalatine ganglion block was performed and RF (radio frequency) was used, during which pain was controlled with low dose of the drugs. She recently, returned to our clinic with the return of her initial symptoms. Her blood tests showed lymphopenia and increased levels of c-reactive protein (CRP). The patient was asked for corona PCR, which was positive. He was referred to COVID19 ward for the treatment. His follow up was performed on 7, 10 and 14 days following the diagnosis, where he reported complete resolution of the symptoms.

This case series has been reported in line with the PROCESS Guideline [9].

3. Discussion

The cases presented in here highlight the relapse of chronic pain following COVID19 infection. A number of mechanisms can be suggested for such cases. Post-viral syndrome can result in organ damage that can lead to exacerbation of chronic pain [10]. Furthermore, chronic pain can increase the subspecialty to viral infection to due compromised immunity as a result of stress, sleep deficit, and the use of opioid [11]. COVID19 is often presented with myalgia, arthralgia, musculoskeletal dysfunction, decreased bone mineral density, and joint disorder [12,13]. Furthermore, the infection is characterized by systemic inflammation, marked by increased levels of CRP (c-reactive protein), IFN-γ (interferon gamma), IL-1β (interleukin 1 beta), IL-6, IL-8, IL-17, and TNF-α (tumor necrosis factor alpha). The loss of muscle power and corresponding weakness in response to the infection is mostly due to proinflammatory response. Increased production of IL-1β and IL-6 is associated with muscle fibrosis. NF-κB (nuclear factor-kappa B) hyperactivation through pattern recognition receptor activation as a result of COVID19 also mediates the release of proinflammatory and inflammatory cytokine [14,15]. IL-1β upregulates the expression of cyclooxygenase-2, that is regulated by NF-κB and increases pain hypersensitivity [16]. Upregulation of NF-κB is also associated with fibromyalgia [17], and neuropathic pain [18]. Additionally, expression of ACE (angiotensin converting enzyme) in skeletal muscle, synovium, and cortical bone increases the subspecialty of these tissues to SARS-nCoV infection [13]. ACE inhibitors can also attenuate the release of NF-κB, thereby reducing inflammation [19]. ACE and ACE2 are known to play important role in acute respiratory distress syndrome via angiotensin 1 receptors (AT1R) and Mas receptors. ACE2 also plays protective role against ARDS injury by inactivation of NF-κB [20].

It has also been indicated that COVID19 patients are likely to be presented with chronic pain particularly older patients, those who undergo neuromuscular block, stroke, patients with comorbidities, fatigue and psychological and microbiological factors [10,21]. Psychosomatic pain can also be triggered during COVID as a result of fear of death, suffering and relapse can also stimulate chronic pain. Reduced physical activity and restricted movement during lockdown can also trigger such pain [22].

4 of 8 patients discussed in this study were geriatric patients. Psychological assessment and biochemical evaluation for inflammatory markers can give us a better understanding regarding the pathogenesis of chronic pain during COVID19.

4. Conclusion

We cannot conclude if preexisting comorbidities increased the risk of acquiring COVID19 in these patients, as indicated in previous studies [23,24] or infection triggered previous chronic pain, as a result of factors discussed above. Further studies and detailed data are therefore, required to establish an absolute conclusion.

Human and animal rights

No animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

Consent for publication

Informed consent was obtained from each participant.

Availability of data and materials

All relevant data and materials are provided with in manuscript.

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Contributors' statement page

Dr. Ziba Aghsaeifard: conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript. Designed the data collection instruments, collected data, carried out the initial analyses, and reviewed and revised the manuscript.

Dr.Reza Alizadeh: Coordinated and supervised data collection, and critically reviewed the manuscript for important intellectual content.

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Declaration of competing interest

The authors deny any conflict of interest in any terms or by any means during the study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.amsu.2020.12.045.

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