J Chin Med Assoc

MINI-REVIEW

Care for patients with musculoskeletal pain during the COVID-19 pandemic: Physical therapy and rehabilitation suggestions for pain management

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Abstract: Coronavirus disease 2019 has severely affected public health. Under social distancing and lockdown policies, patients with musculoskeletal pain have fewer opportunities than usual to receive routine medical care for pain management in hospitals. Therefore, we provided some suggestions for such patients to manage musculoskeletal pain and techniques that may be performed at home during this period.

Keywords: Acute pain; Chronic pain; COVID-19; Musculoskeletal pain; Physical therapy and rehabilitation

1. INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has tremendously affected public health. Its fast transmission rate makes social distancing and locking down cities essential. Hospital facilities, however, are less accessible than usual.

Musculoskeletal pain is among the commonest complaints in routine medical practice. Most pain sources are related to muscles or fascia becoming damaged, which then triggers pain. In the physical and rehabilitation medical field, various modalities with therapeutic exercise can be used to manage pain by a physical therapist and psychiatrist.

Pain types can be classified into acute pain and chronic pain from their time duration. Chronic pain typically arises from the incomplete management of tissue or joint injuries that cause chronic instability. Scar tissue with adhesion is also a key source of chronic pain. Neuropathic pain may develop subsequently if these problems are not corrected.[1] Pain management was particularly important during the COVID-19 pandemic because of the reduced accessibility to hospitals and medical resources.

This review discusses the relationship between COVID-19 and musculoskeletal pain and pain management to reduce acute and chronic pain from home through physical and rehabilitation medicine.

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Conflicts of interest: The authors declare that they have no conflicts of interest related to the subject matter or materials discussed in this article.

Journal of Chinese Medical Association. (2020) 83: 822-824.

Received May 23, 2020; accepted May 23, 2020.

doi: 10.1097/JCMA.0000000000000376.

2. ASSOCIATION BETWEEN COVID-19 AND MUSCULOSKELETAL PAIN

Although COVID-19 mainly affects the lungs and internal organs, musculoskeletal injury from this disease was reported with the presentation of marked elevation in creatine kinase and lactate dehydrogenase levels.[2] Its pathophysiology is mainly believed to arise from the over-inflammatory response that causes c.[2,3] Moreover, the increased incidence of thrombotic events may link poor vascularization from the peripheral vessel to the muscle.[4,5] The angiotensin-converting enzyme 2 (ACE2) was assumed to be a potential target in COVID-19 invasion receptors that are expressed in the musculoskeletal system, but ACE2 receptors cannot be detected through autopsy sampling.[6,7]

3. SUGGESTIONS FOR ACUTE MUSCULOSKELETAL PAIN MANAGEMENT DURING THE COVID-19 PANDEMIC REGARDING DRUGS AND PHYSICAL AND REHABILITATION MEDICINE

3.1. Rest, ice, compression, and elevation

During the initial injury stage, damage to tissue and peripheral vessels causes acute inflammatory reactions associated with tissue swelling and severe pain. Managing this mainly involves reducing the inflammation and swelling of the tissue following the rest, ice, compression, and elevation (RICE) rule for 72 hours.[8] Although cold therapy was considered to be replaced by heat therapy in this stage because it can improve vascularization for recovery, cold therapy is more suitable for pain reduction and immediately reduces acute inflammation.[8]

<zdoi: 10.1097/JCMA.0000000000000376>

3.2. Protected technique

The injury site can be protected either through orthosis or kinesiology taping. Reports have increasingly indicated that kinesiology taping can provide stability to injured joints and reduce pain and swelling through its lymph and fascia function.[9,10] Although such evidence for kinesiology taping in musculoskeletal injuries is unclear[11] and may have a limited effect on pain,[12] this is a straightforward technique to perform on oneself.

3.3. Exercise

Exercise in this phase may vary by severity. In the initial days after an injury, passive range of motion (PROM) exercises are first applied to the injury site. This gentle movement can maintain the range of motion of the joint to prevent stiffness and increase peripheral vascularization to aid regeneration. Stretching exercises can then gradually be applied to help the injury soft tissue maintain the elasticity of a tendon or ligament. If the pain can be reduced under PROM exercises, assisted active range of motion and active range of motion exercises can be performed to strengthen the muscle issue affected by peri-injury.[13]

3.4. Soft tissue examination and intervention

If the pain persists after this management approach for 3–5 days with functional restrictions, imaging modalities such as X-rays should be used to confirm whether a fracture occurred over a lesion site. A study indicated that a 10% twisted injury had occult fractures.[14] If no bone lesion is present, an ultrasound (US) should be performed to detect significant soft tissue tears or injuries. USs are among the most feasible and easy tools to determine localized injury areas by assessing the injury degree simultaneously.[15] Moreover, emergent procedures can be performed during examination under US guidance. Much acute pain is associated with ligament tears or muscle tears due to intra-articular or peritendon hematomas.[16] If drainage can be performed on time, pain and function decrease significantly.

3.5. Medication

A suggested medication is anti-inflammatory drugs and muscle relaxants such as nonsteroidal anti-inflammatory drugs to ease pain and swelling in the acute phase.[17]

3.6. Modality

An easy and portable modality for easing pain is portable transcutaneous electrical stimulation (TENS) devices. TENS devices use different current and frequency parameters to stimulate sensory and peripheral nerves. When applied to pain, the device stimulates the Aαfiber to reduce pain through gate control theory.[18] Studies have revealed that TENS can successfully reduce acute pain.[19]

3.7. Suggestions for chronic pain management of musculoskeletal injuries

Those with pain syndrome for more than 6 months can achieve adequate pain control through exercise, treatment modalities, and medication.

3.8. Modality

Studies have reported that TENS can successfully reduce chronic pain.[18] Moreover, heat cryotherapy is a simple method of relieving chronic pain by increasing peripheral vascularity and releasing the tensor muscles and fascia.

3.9. Exercise

Exercise can be performed at home, such as stretching exercises on the injury site. Strengthening exercises are implemented to facilitate peripheral weak muscle strengthening to improve stability. Strengthened muscles and improved stability can help reduce pain from instability.[20]

3.10. Drug

Anti-inflammatory medication with different mechanisms: Although the main pain pathophysiology arises from inflammation of which the main drugs used for treatment are COX inhibitors, the central nerve mechanism is crucial once pain becomes chronic. The sensory center over the spine and brain may enforce pain stimulation and cause neuropathic pain.[1] Therefore, adequate anti-inflammatory drug combined with morphine-like drugs such as Ultracet (acetaminophen/tramadol) help ease the pain. If the pain becomes more neuropathic, such as by causing numbness and paresthesia, the addition of tricyclic antidepressants is suggested to reduce pain exacerbated by the brain.[21]

3.11. Pain intervention

If the pain persists after medication or modalities, the patient should receive further clinical examination and pain intervention. Chronic pain is typically derived from unhealed tendons and instable joints. USs can be used to detect such abnormalities to localize the injured tissue. US-guided procedures are efficacious in managing chronic musculoskeletal pain.[22] A regenerative solution of dextrose solution (prolotherapy) or platelet-rich plasma with US-guided procedures can significantly reduce chronic musculoskeletal pain.[23,24]

In conclusion, Pain management during the COVID-19 pandemic warrants attention because of difficulties in accessing hospitals for medical services such as physical therapy and rehabilitation. Multidisciplinary methods of pain management are required. In the acute pain phase, the basic technique of RICE with proper medication can help patients deal with the majority of acute pain. An imaging modality including X-rays or US examination should be performed if pain persists for 2 weeks. US-guided procedures for effusion and inflammation can help relieve acute pain that originates from fluid or hematoma accumulation. For chronic pain from injuries lasting more than 6 months, exercise to facilitate weak muscles with proper medication is suggested. US examination remains key to identifying the origins of pain from soft tissue injuries or inflammation. US-guided procedures with regenerative solutions to the lesion site can help reduce pain and regain function.

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