

## **PAIN MANAGEMENT DURING THE COVID-19 PANDEMIC: A LITERATURE REVIEW**

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**Abstract:** Chronic pain is a prevalent condition worldwide and causes suffering, limited daily activities and reduced quality of life. There is growing evidence that COVID-19 infection is associated with myalgias, referred pain, and generalized hyperalgesia. The aim of the present study is to analyze the management of chronic pain during the COVID-19 pandemic. A systematic search was carried out in the Medline database. The following descriptors were used: "Pain Management" AND "coronavirus 2019" OR "SARS-CoV-2" OR "COVID-19" and "Pain" and articles on the topic published within the time frame (2019- 2021) and in the English language. Telemedicine can help provide ongoing services to patients; assessments, treatment and follow-up. Patients with chronic pain may also be at increased risk for COVID-19 due to several factors. Important considerations for health professionals who care for people with chronic pain are: ensuring continuity of care and pain medications; use of telemedicine; maintenance of the biopsychosocial management approach; evaluation and safe conduction of urgent and semi-urgent procedures to avoid morbidity in patients with chronic pain; and the need to modify current therapies to decrease the risk of COVID-19.

**Keywords:** Chronic pain, COVID -19, opioids, recommendations, anti-inflammatory.

## INTRODUCTION

Chronic pain is a prevalent condition worldwide and causes suffering, limitation of daily activities and reduced quality of life (MILLS et al. 2019). According to the 2012 US National Health Interview Survey, 126.1 million adults reported some pain in the past 3 months, with 25.3 million adults (11.2%) suffering from chronic daily pain and 14.4 million (6.3%) reporting 'a lot' of pain almost every day or every day (NAHIN et al. 2015). In Europe, almost one in five individuals report

having moderate or severe chronic pain and in the United Kingdom, the prevalence of disabling chronic pain from moderate to severe is estimated to range between 10.4% and 14.3% (FAYAZ et al. 2016).

Most chronic pain conditions occur in the elderly and are musculoskeletal in nature, such as low back, neck, and joint pain. These contribute to the greater number of years lived with a disability (MILLER et al. 2021). With the pressure on resources due to the COVID-19 pandemic, it is more important than ever to highlight the epidemiology of chronic pain, given its importance in health spending and resource allocation. Between 13.5 and 47% of the population is affected by chronic pain (CIMMINO et al. 2011). Chronic pain is widespread in society and almost all adults have experienced at least one episode of musculoskeletal pain associated with injury or overuse. Patients with chronic pain often suffer from coexisting comorbidities (MILLER et al. 2021). Adequate management of chronic pain is not only a moral and ethical imperative, but also mitigates subsequent physical and psychological complications (BILLINGS et al. 2021).

Since the outbreak of COVID-19 in China in late 2019, followed by its wide and rapid spread to other countries, more than 250 million individuals have been infected, resulting in more than 5 million deaths in November 2021 (WHO et al. 2021). During this pandemic, healthcare professionals were shown to have a much higher risk of infection. Anesthetists who perform spinal interventions and regional anesthetic blocks are subject to a higher risk of infection compared to many other medical specialties (SONG et al. 2020). Furthermore, healthcare systems around the world face the challenge of controlling the infection. This includes decisions such as postponing or canceling all elective surgical procedures and patient

visits, including discontinuing many pain management services. The care of patients with chronic pain was significantly impacted.

Although there are many pain syndromes and classifications, the biopsychosocial model of pain, emphasizing its multifactorial causes within the individual's biological, psychological and social factors, may be the most important to be emphasized in the world affected by COVID-19. Well-known to pain medicine practitioners, the model emphasizes that pain is not just a response to injury, but an interruption of the body's homeostatic systems due to a multitude of factors that lead to increased stress responses. There is growing evidence that COVID-19 infection is associated with myalgias, referred pain, and generalized hyperalgesia. The importance of these associated conditions cannot be underestimated, as although the pandemic continues to affect all facets of our lives, treatment strategies for chronic pain during this period are of vital importance (GUAN et al. 2019). This article is based on previous studies and does not contain any studies with human or animal participants performed by any of the authors.

## **GOAL**

### **GENERAL GOAL**

To analyze the management of chronic pain during the COVID-19 pandemic.

### **SPECIFIC OBJECTIVES**

- Explore changes in the health care delivery system due to social distance and safety precautions.
- Provide adequate treatment of patients with chronic pain during the COVID-19 pandemic.
- Understand the general issues faced by patients with chronic pain, as well as the specific issues of the COVID-19 era, including deconditioning, increased

mental health concerns, financial burdens, and the potential for drug-induced immunosuppression, for the proper treatment of patients.

- Advise healthcare professionals on how to provide appropriate care for patients with chronic pain.

## **MATERIAL AND METHOD**

A systematic search was carried out in the Medline database. The research's guiding question was: "what are the recommendations on the management of chronic pain during the COVID-19 pandemic". The following descriptors were used: "Pain Management" AND "coronavirus 2019" OR "SARS-CoV-2" OR "COVID-19" and "Pain" with the Boolean operator "and". The following inclusion criteria were used for the selection of articles: articles published within the time frame (2019-2021) and in English. Articles that did not fit the research topic and duplicate articles were excluded. All patient research articles are excluded. The following types of articles were excluded: articles other than the original research (eg case report or series, letters to the editor, editorials or comments) and articles in other languages. Based on the current pathophysiological understanding of COVID-19 and potential practical implications based on the 'pathology' or 'nature of chronic pain management', the article developed themes to formulate recommendations for clinical practice.

## **CONSIDERATIONS AND RECOMMENDATIONS**

### **PAIN ASSESSMENT**

A strong history identifying the type, severity, functional impact, and context of pain must be performed in all patients with chronic pain. This will help in selecting the treatment options that are most likely to be effective. This can be accomplished by various tools,

without direct contact with patients, in order to minimize exposure, for example, disposable pain charts, photos and electronically via telephone contacts or via social media. This can be accomplished by telemedicine/eHealth (SONG et al. 2020). Generally, pain assessment tools can be classified into: one-dimensional, such as visual analogue scale (VAS), numerical pain scale (NPRS), verbal scale (VRS), facial expression for pediatric patients or multidimensional scores (SCHUG et al. 2020). Multidimensional scores are used for the assessment of chronic pain, for example, the McGill Pain Questionnaire and the Brief Pain Inventory (SCHUG et al. 2020).

### **PAIN TREATMENT DURING COVID-19**

Today's pain medicine practitioners employ a combination of non-pharmacological, pharmacological, and interventional strategies to manage a patient's pain. Current trends in pain medicine focus on multidisciplinary care. In the current model, pharmacological treatment remains a pillar for pain management. Multimodal analgesia, or the concomitant use of multiple drugs employing different mechanisms of action, has been associated with improved analgesia with fewer side effects (CHOU et al. 2016). With the rise of telehealth and other health care delivery methods during the pandemic, multimodal analgesia may play an increasing role in the post-COVID era and is therefore important to review.

### **NON-OPIOID ANALGESICS AND COVID-19**

Acetaminophen/paracetamol acts both centrally and peripherally to reduce prostaglandin synthesis from arachidonic acid through inhibition of cyclooxygenase isoenzymes. The drug must be considered alone or in combination with non-steroidal

anti-inflammatory drugs (NSAIDs) in the treatment of mild to moderate pain as part of multimodal analgesia (SCHUG et al. 2020). Acetaminophen can also be safely used to relieve symptoms of COVID-19, such as fever, headache, and acute or chronic pain. However, care must be taken due to liver toxicity at high doses of acetaminophen (DONG et al. 2020).

From another perspective, NSAIDs (non-steroidal anti-inflammatory drugs) are relatively contraindicated in patients with respiratory disorders, such as acute respiratory infections. NSAIDs have also been implicated in acute myocardial infarction and risk of stroke in rare cases (PERGOLIZZI et al. 2020). Specific concerns related to COVID-19 and the use of NSAIDs (non-steroidal anti-inflammatory drugs) have raised the hypothesis that NSAIDs may increase entry through angiotensin-converting enzyme (ACE) 2 receptors, thereby increasing susceptibility to the virus. These data are still inconclusive (PERGOLIZZI et al. 2020). The cytokine storm of NSAIDs (non-steroidal anti-inflammatory drugs) and COVID-19 is a poorly understood exaggerated response involving an uncontrolled release of pro-inflammatory cytokines (VANINOV et al. 2020). The adverse results of COVID-19 have been associated with this exaggerated inflammatory response (PERGOLIZZI et al. 2020).

For patients with COVID-19, newly prescribed oral NSAIDs can only be used intermittently for a very short period of time (LITTLE et al. 2020). Physicians must consider the complete patient picture with the addition of any new medication and avoid NSAIDs in patients where NSAIDs (non-steroidal anti-inflammatory drugs) are contraindicated, such as those with peptic ulcer or renal dysfunction (PERGOLIZZI et al. 2020). Discontinuation of NSAIDs prescribed for chronic pain conditions is not recommended at this time

(LITTLE et al. 2020). There is no reason to fear that it may increase the risk of contracting COVID-19 or exacerbate symptoms if you are on previous treatment (FITZGERALD et al. 2020). Acetaminophen (paracetamol) has been proposed as an alternative to the use of NSAIDs (non-steroidal anti-inflammatory drugs), but there are also problems with the toxicity of paracetamol at high doses (HOLUBEK et al. 2020).

## **OPIOIDS AND COVID-19**

In all patients who chronically receive opioids, it is recommended that a patient visit be performed within 2–3 months for patient evaluation after the prescription has been given. Before increasing the dose of chronic opioids, it is important to differentiate disease progression from other disadvantages of opioids, eg tolerance and hyperalgesia. Opioids must only be used for pain relief, while the use of opioids to alleviate painless conditions, eg sleep, anxiety or depression, must be monitored and discouraged (GILL et al. 2020). Opioids are also cough suppressants, and this may mask or delay the initial presenting symptoms of COVID-19 infection, and extra importance must be placed on monitoring respiratory symptoms suggestive of COVID-19 during opioid therapy. Lethargy, nausea, and gastrointestinal symptoms associated with COVID-19 infection may be aggravated by prescribed opioids as well as other neuropathic pain medications such as gabapentin or pregabalin (DEY et al. 2020).

## **CORTICOSTEROIDS AND COVID-19**

Corticosteroids are immunosuppressants that have been associated with an increased risk of infection. Immunosuppression has been reported with systemic and epidural steroids, placing patients at an increased risk of infection (COHEN et al. 2020; CAIN et al. 2017). In addition, a significant number of

patients with chronic pain take opioids, which are well-documented immunosuppressants. Treating such patients with pain procedures using small amounts of non-systemic corticosteroids can minimize the need for opioids (ASENSIO-SAMPER et al. 2021; CAIN et al. 2017).

Randomized controlled trials (RCTs) have demonstrated that epidural steroid injection doses exceeding 40 mg methylprednisolone, 20 mg triamcinolone, and 10 mg dexamethasone provide no recognizable difference in pain relief compared to lower doses. Some studies have indicated no additional benefit for doses greater than 10 mg of triamcinolone or 4 mg of dexamethasone (LEE et al. 2018).

During the COVID-19 pandemic, clinicians may continue to administer epidurals and other injections to selected patients when indicated. Healthcare professionals must keep in mind, however, that there is no clear evidence of a causal effect between spinal procedures without steroids and the increased risk of infection, suggesting an increased risk of infection with the use of corticosteroids (ASENSIO-SAMPER et al. 2021).

## **TREATMENT OF PAIN ASSOCIATED WITH COVID-19 INFECTION**

Healthcare professionals must be aware that pain can be related to COVID-19 infection in a variety of ways: an early sign of infection, a return of infection, and iatrogenic effects such as prolonged rest, immobility, psychological stress, and others.

Patients with COVID-19 usually complain of fever, headache, and mild to moderate body pain, suggesting virus-induced myalgias (SONG et al. 2020). Associated pain that was present before COVID-19 and may be exaggerated by an overlapping viral infection. Mild pain symptoms associated with COVID-19 can be relieved with simple analgesics such as paracetamol and NSAIDs.

Paracetamol is an alternative to NSAIDs (non-steroidal anti-inflammatory drugs), where its use for patients with COVID-19 has been associated with a worsening of symptoms (DAY et al. 2020). For moderate to severe chronic malignant pain, however, opioids with minimal effects on immunosuppression (such as buprenorphine) are recommended compared to others. It is vital for the physician to avoid corticosteroids if a patient has COVID-19 infection, even if asymptomatic at the time of presentation (DAY et al. 2020).

## DISCUSSION

Regarding non-opioid anti-inflammatory drugs, non-selective NSAIDs (for example: ibuprofen, naproxen and indomethacin) are effective for mild to moderate pain through inhibition of cyclooxygenation-1 (COX-1) and cyclooxygenation-2 enzymes (COX-2) that lead to a reduction in prostaglandins. Prostaglandins mediate pain, fever, inflammation and edema and play a key role in gastric protection and hemostasis (SCHUG et al. 2020; LIM et al. 2020).

Long-term use of non-selective NSAIDs (non-steroidal anti-inflammatory drugs) is associated with an increased risk of adverse effects, including gastrointestinal disease (dyspepsia, gastritis, peptic ulcer and ulceration), renal toxicity, inhibition of platelet function, and respiratory bronchospasm in some patients with asthma (SCHUG et al. 2020; LIM et al. 2020).

Selective COX-2 inhibitors (eg, etoricoxib and celecoxib), COX-2 inhibitors, specifically target prostaglandins that mediate pain and inflammation and have fewer gastric side effects compared to their non-specific NSAIDs. COX-2 inhibitors are as effective as classic NSAIDs for treating mild to moderate pain, but they have been associated with an increased cardiovascular risk (LIU et al. 2021).

As cytokine storm has been postulated

to play an important role in the adverse outcomes of critically ill patients with COVID-19, anti-inflammatories ranging from NSAIDs (non-steroidal anti-inflammatory drugs) to glucocorticoids to hydroxychloroquine and others may be beneficial in reducing inflammation before it overwhelms cancer systems. body (SIDDIQI et al. 2020). Although an anti-inflammatory can reduce inflammation, it can have a limited or poorly understood effect on cytokine storm, which involves multiple cytokines and complex interactions. In other words, an anti-inflammatory agent can affect certain cytokines but not others (ZHANG et al. 2020). Currently, in June 2020, randomized trials are underway for drugs such as canakinumab (TANG et al. 2020), ruxolitinib (CAO et al. 2020), and others that focus on specific cytokines.

However, the role of anti-inflammatory drugs that largely affect cytokines, such as NSAIDs, is unclear. To date, there is no strong evidence that NSAIDs must be avoided in all patients diagnosed with COVID-19. Physicians must weigh these choices individually. Even if anti-inflammatory therapy was advocated, it remains unclear which drug therapies offer the most benefit. Likewise, it is still unknown at what time of the disease, in what doses and for how long the anti-inflammatory therapy must be used (PERGOLIZZI et al. 2020; FOOD et al. 2020).

Currently, there is insufficient evidence to establish a link between the use of some NSAIDs, such as ibuprofen, and the susceptibility to contracting COVID-19 or worsening of its symptoms (DONG et al. 2020; DAY et al. 2020).

Alternatively, acetaminophen/acetaminophen can be used instead of NSAIDs. Care must be taken due to liver toxicity at high doses of acetaminophen (PERGOLIZZI et al. 2020). However, the antipyretic effect of

paracetamol and NSAIDs can mask symptoms associated with COVID-19, such as high fever and, therefore, can delay diagnosis and rapid treatment of the infection (FAVALLI et al. 2020).

The use of opioids by telemedicine must be used sparingly and only when absolutely indicated. The current recommendation for non-malignant acute pain recommends a maximum of 7 days (SHANTHANNA et al. 2020). For patients with acute pain or those with severe exacerbation of chronic pain and requiring short-term opioids, a short electronic prescription following assessment via telemedicine or E-health is reasonable. Before prescribing, warning signs associated with COVID-19, including lethargy, nausea, and gastrointestinal symptoms, must be excluded (DAY et al. 2020). If patients require opioids for longer periods or continue, an inpatient visit is recommended to identify patients who may be candidates for opioid prescription or other pain management interventions (SHANTHANNA et al. 2020; DAY et al. 2020).

Telemedicine is increasingly recognized as a valuable tool for both healthcare professionals and patients. Telemedicine allows providing instructions and guidance for pain relief through real-time bidirectional audiovisual communication (ELKBULI et al. 2020; MANN et al. 2020). As we move towards a post-pandemic care model, telemedicine may be worthy of further evaluation and implementation around the world. Telemedicine has become an effective way to provide needed medical services to patients with chronic pain during the COVID-19 epidemic. Although allowing patients to remain at home, maintaining continuity of treatment, telemedicine allowed the monitoring of chronic conditions (SONG et al. 2020).

## FINAL CONSIDERATIONS

Chronic pain causes significant suffering, leading to reduced quality of life. During the COVID-19 pandemic, there is a risk that patients with chronic pain will not receive important treatment due to the reallocation of resources and reduced services, both to limit the spread of the infection and to deal with saving the lives of those infected. Patients with chronic pain may also be at increased risk for COVID-19 due to several factors. Important considerations for health professionals who care for people with chronic pain are: ensuring continuity of care and pain medications; use of telemedicine; maintenance of the biopsychosocial management approach; evaluation and safe conduction of urgent and semi-urgent procedures to avoid morbidity in patients with chronic pain; and the need to modify current therapies to decrease the risk of COVID-19. These recommendations were developed to assist healthcare professionals and we recognize that they are not guidelines. However, with COVID-19 being a rapidly evolving situation, they represent summaries of the best available evidence and current expert opinion and may need to be adapted to workplace policies.

In this era of telehealth, it is more important than ever to provide patients with education about their condition and treatment options and to involve them in shared decision-making processes. Telemedicine can help provide ongoing services to patients; assessments, treatment and follow-up. Evidence is promising for the use of telemedicine in the follow-up of chronic pain patients. Furthermore, COVID-19 is having a profound effect on healthcare and pain patients. Delaying or interrupting treatment of patients suffering from severe chronic pain will have negative consequences for patients, including increased pain, disability and depression. This can have significant

downstream effects, including worsening mental health and addiction disorders, as well as increased future health expenditures.

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