Pain Management During the COVID-19 Pandemic in China: Lessons Learned

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Introduction

It was late January, during the cold winter before the Lunar New Year, when Wuhan began its 76-day lockdown in response to an outbreak of COVID-19. The rest of China followed suit shortly thereafter with the implementation of strictly enforced quarantine measures [1,2]. The Chinese central government issued a nationwide order by listing COVID-19 as a Level 2 infectious disease warranting priority management [2], which has been invoked in the past for deadly infectious diseases such as smallpox, anthrax, and cholera. The subsequent emergence and spread of SARS-CoV-2 around the world has ignited a global crisis, with the World Health Organization (WHO) issuing a global health pandemic notice and urging the avoidance of nonessential travel [3].

In China, while nonessential workers were requested to stay home, those working in health care, emergency services, and disaster control found themselves with more responsibility than ever, mobilized like troops during war. In the initial stages of the pandemic, spanning late January to early February, medical systems in Wuhan faced overwhelming shortages of health care workers and key medical resources including medical-grade personal protective equipment, as well as limited space in hospitals for managing the surge of patients with COVID-19. In the face of these challenges, the central government quickly organized. A total of 42,600 health care providers and workers as well as millions of tons of medical supplies were sent to Wuhan and its neighboring areas in Hubei province from all over the country [4], with additional aid coming from other countries and various international humanitarian aid organizations [5,6]. Those working on the front lines in Wuhan have been serving as part of the ongoing fight against the COVID-19 pandemic, a large-scale global public health challenge.

Having borne witness to such ongoing devastation, the world is recognizing the importance of examining our existing public health and health care systems, their potential to be maximally effective during the pandemic, and how they can be improved. Here, we report some of our personal experiences as Chinese physicians and scientists working in the field of pain medicine in Wuhan and Shenzhen, another large metropolis in China severely hit by COVID-19. We discuss strategies that have been helpful in pain management for our patients during the pandemic and provide recommendations based on the lessons we learned.

Though the first reports of SARS-CoV-2 emerged in December 2019, the government and the public ignored these warnings that emerged from the heart of Wuhan, failing to realize the potential threat of the novel coronavirus. As a result, members of the public, hospitals, and medical workers did not realize they were being exposed to SARS-CoV-2 until hospitals were overwhelmed. The
numbers of patients with fever, pneumonia, and other related symptoms rose exponentially, quickly using up most available resources in hospitals. To concentrate available resources to help patients with the most severe conditions, most Wuhan medical services not directly involved in intensive care were partially or completely shut down, with their resources redistributed to intensive care units and COVID-19-related procedures. These closures included the closure of pain management departments, posing a challenge for patients with medical conditions causing severe chronic pain such as cancer, as well as for vulnerable populations who rely on our services such as the elderly and disabled. In our pain management departments, we implemented a series of practical strategies to better take care of our most vulnerable patients during the epidemic.

Strategies that Were Helpful for Pain Management

Outpatient and Inpatient Pain Management

During government-mandated quarantine, patients were allowed to file requests for outpatient care. After screening using strict control requirements, patients who appeared in the pain clinic were roughly triaged into different levels of care. The first level included patients with mild to moderate pain with a relatively clear etiopathogenesis and who had relatively few comorbidities and were in good condition. They were given prescription medications to manage their pain at home, along with necessary telemedicine support. Those who had had close contact with any individuals diagnosed with or suspected to have COVID-19 or who had recently traveled to or from the epidemic area were required to self-quarantine at home and report for further observation. The second level of patients included those with mild to moderate pain and those who either had COVID-19-like symptoms or had had close contact with individuals diagnosed with COVID-19. The third level included those with severe pain or with emergency conditions. These patients received immediate treatment in the clinic or were admitted as inpatients for further testing and treatment. For patients triaged to levels 2 or 3, those who presented with any symptoms, and/or those suspected of having COVID-19 infection from physical inspection were immediately sent to an isolation ward for further testing and treatment.

For inpatients, contact between the patient and health care workers was minimized by scheduling the minimal number of necessary pain treatments, and recovered patients were discharged and supported with telemedicine aid. For those patients with severe pain, we arranged for the necessary pain treatment, including surgery as needed.

Among our priorities was the timely identification of patients in our pain clinic who were at high risk of COVID-19 infection in order to provide aid to patients with severe cases of COVID-19, to reduce transmission, and to ensure the proper allocation of limited medical resources. With the help of public health systems, we were able to keep most patients home and provide them with necessary medical services including telemedicine support. These strategies brought tremendous benefits to both health care providers and patients and allowed our pain clinics to continue to function during the epidemic.

Telemedicine Support and Patient Home Visits

Telemedicine became a convenient and effective way to provide necessary medical services to patients with chronic pain during the initial periods of the epidemic, as it allowed patients with nonemergent conditions to remain at home and allowed hospitalized patients who had been discharged early to maintain continuity of care. Via telemedicine, we were able to provide our patients with instructions for administering prescription and nonprescription drugs and with guidance for physical at-home exercises for pain relief. When possible, bedside procedures were performed during home visits for patients in urgent need. For instance, in our pain departments in Wuhan and Shenzhen, some patients with cancer pain continued to receive continuous home treatment with programmed intrathecal injection of opioids. We arranged regular home visits for these patients and provided minimally necessary management such as drug refills. During the nationwide quarantine, city traffic was also greatly reduced, allowing physicians to make home visits more easily. Patients with severe pain needing urgent treatment or with complex conditions were still seen at our pain clinic in person or referred to other departments for further observation and treatment.

Special Case Reports: Patients with and Without COVID-19

The very first outpatient in the pain clinic at Wuhan Fourth Hospital to be diagnosed with COVID-19 infection was a 61-year-old woman with a chief complaint of chest and lower back pain. This was at the end of December 2019, almost a month before the lockdown of Wuhan and the national quarantine. Tests were ordered to rule out chest pain of cardiovascular or lung origin, among other etiologies. Her back pain was assessed, and she subsequently received minimally invasive surgery for her back pain. Three days postoperation (about a week after being admitted for treatment), the patient developed sudden-onset fever of 39°C–40°C and was diagnosed with pneumonia, with computed tomography (CT) images showing bilateral lung opacities. This diagnosis was later confirmed as COVID-19-induced pneumonia after nucleic acid testing became available. In early February, the patient had recovered and was discharged from the hospital with much improved lung images and negative nucleic acid test results. However, within a
A patient developed a fever of 38.5°C and was immediately admitted to the hospital and received surgical intervention for a fracture of the lumbar spine with osteoporosis in February. He was diagnosed with compression fracture of lumbar vertebra and partial paralysis resulting from tumor compression of the spinal cord. The patient received surgical intervention and did well postoperatively. He was also confirmed negative for COVID-19.

The second case was a 75-year-old man who presented to the same Wuhan pain clinic with severe lumbar pain in February. He was diagnosed with compression fracture of the lumbar spine with osteoporosis and was immediately admitted to the hospital and received surgery under local anesthesia. Three days after surgery, the patient developed a fever of 38.5°C with lung CT images suspicious for viral pneumonia. This patient was moved to the isolation ward and subsequently diagnosed with COVID-19 pneumonia. The good news for this case was that none of the physicians, nurses, or other health care providers who had close contact with this patient got infected. At this point in time, precautionary measures had already been implemented in the hospital, including consistent use of personal protective equipment. In the past three months, there have been no COVID-19 infections among patients or staff in the Wuhan pain department.

Among the thousands of outpatients the department has seen in the past couple of months, several dozens of patients have presented with body pain without the usual symptoms of respiratory viral illness and then tested positive for COVID-19. Thus, body pain can be an early symptom of COVID-19 infection.

An increasing concern among medical providers is that the fear of missing a COVID-19 infection can lead to the failure to recognize other urgent medical issues. At our Shenzhen hospital, a 34-year-old man visited the pain clinic with moderate right-sided rib pain and mild fever. This patient had traveled from Wuhan one day before the city’s lockdown and had already served two weeks of quarantine in Shenzhen. Medical staff immediately suspected COVID-19. He was sent home for another two-week quarantine with teledicine follow-up. During this second quarantine, the patient had persistent fever, worsening pain, and was partially paralytic when we saw him in our clinic two weeks later. Only at this point was the patient found to have a spinal neurotoma in the right eighth thoracic region, with his temporary partial paralysis resulting from tumor compression of the spinal cord. The patient received surgical intervention and did well postoperatively. He was also confirmed negative for COVID-19.

Some of our patients hospitalized with COVID-19 complained of mild to moderate body pain. Their COVID-19-associated pain was similar to patterns of pain we have seen in some outpatients, as described previously, suggesting viral-induced myalgias. This pain may have also been due to long hospital bed stays, causing pain in the joints, spine, muscles, and other soft tissues, as well as physically manifested pain associated with COVID-19-related psychological stress. Throughout their hospitalizations, we made sure to schedule regular visits to their isolation wards and provided appropriate pain consults and management.

Lessons Learned and Recommendations

Keep Information Transparent and Up to Date, and Take Action Quickly and Firmly

The first lesson we learned was that we must ensure that key information regarding serious infectious diseases is as accurate and as transparent as possible with timely updates. As viruses have the potential to be spread to anyone, it is immensely important to keep the public informed of ways to stay hygienic and minimize the spread of disease. Public administration and media should be honest and responsible in order to facilitate public awareness and reduce false rumors that can cause widespread panic and unease. The right to public discourse including constructive criticism of ongoing public health efforts should be protected and even encouraged in order to achieve optimal strategies in addressing various aspects of the pandemic. Humility in the face of the unknown is a strength. Globally, countries should take firm action and implement preventive and protective measures. Governmental support and coordination of efforts are necessary to ensure sufficient access to and distribution of medical resources for communities and health care systems in need.

Quarantine and Personal Protection

According to the WHO, quarantine and personal protection are two of the best ways to limit the spread of infectious respiratory diseases [7]. Wuhan’s lockdown and China’s nationwide quarantine dramatically reduced the spread of COVID-19. Protecting oneself means protecting others, because one’s own safety depends on the safety of the whole community. Since the early stages of COVID-19 in Wuhan, Chinese people were required to wear masks to reduce the spread of disease [8], a strategy that has also been recommended by the WHO for most respiratory infectious diseases [7].

Wuhan’s experience provides us with both tragic and encouraging information about the importance and effectiveness of personal protection. A report showed that, in some of Wuhan’s hospitals, 54 physicians and nurses were infected with the SARS-CoV-2 virus from late January to March 2020. Of those infected, 22% were working in high-risk departments such as infectious disease and intensive care units, while the majority (78%) worked in departments with less direct exposure to COVID-19 patients [9]. The Red Cross Society of China reported that 35% of infected doctors and nurses nationwide (N = 2,971) worked in high-risk departments and
65% in low-risk departments [10]. Amazingly, of the 42,600 physicians and nurses sent to Wuhan from dozens of other provinces and cities to provide medical support to the city, none were infected with COVID-19 [11] despite working day and night on the front lines, likely because they were equipped with the adequate personal protective equipment. These data provide strong evidence that sufficient personal protection can prevent the spread of COVID-19.

Telemedicine Support
The epidemic provided many medical professionals an opportunity to incorporate telemedicine into pain management for the first time due to the urgent need for remote health care services. For many patients with different types of chronic pain, telemedicine support in addition to necessary in-person visits may be a much better strategy for outpatient treatment, even outside of epidemic conditions, as it both is cost-effective and does not compromise quality care for patients with chronic pain. Telemedicine is increasingly being recognized as a valuable tool to both health care providers and patients and is worthy of further evaluation and implementation worldwide, particularly in China, where telemedicine support has not been widely used and where there is great demand for both inpatient and outpatient health care. The national health council has recently emphasized online services to further strengthen the prevention and control of the epidemic situation in Hubei [12].

Pain Management for Patients with and Without COVID-19
During quarantine, patients with chronic pain were forced to stay home, while many patients who would have qualified for in-person clinic visits chose to stay home due to fear of COVID-19 infection. Now that quarantine is being lifted in many parts of China, many are still understandably wary of seeking in-person health care. We must consider strategies to encourage those with health issues needing management to seek outpatient care and continue to provide telemedicine support. Meanwhile, health care providers should be aware that pain may be related to COVID-19 infection in a variety of forms, as discussed in our cases—as an early sign of infection or as a sequela of infection and iatrogenic effects such as prolonged bedrest and psychological stress. Of course, pain may very well be a manifestation of a non-COVID-19-related process. These patients can be better served with our improved strategies for pain management. We may need to prepare ourselves to see more patients who previously had COVID-19 infection visiting the pain clinic as the epidemic slows.

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