“Ow, doc, it hurts”
Management of nonmalignant chronic pain

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ABSTRACT

In a world where medical conditions are increasingly understood, chronic pain remains among the most difficult to diagnose and treat. Current first-line treatment of nonmalignant chronic pain include tricyclic antidepressants and physiotherapy, while topical lidocaine, nonsteroidal anti-inflammatory drugs and other antidepressants serve as appropriate second-line therapy. Opioids, though highly effective analgesics, remain medical options of last resort due to their highly addictive properties. Surgical implantation of nerve stimulators and/or spinal decompression may also be considered for treatment of chronic pain. As a parallel course of treatment, complementary and alternative medicine such as acupuncture may also be considered. Unfortunately, people with pain are among the least anticipated patients that doctors will see, and lack of both patience and expertise often result in cookie-cutter prescriptions and standardized healthcare that do not benefit individual patients. In the ever-evolving field of pain management, recent evidence has shown that a multidisciplinary approach, rather than traditional physician-based management, offers the best long-term results to patients.

Humans have been finding and using ways to manage pain since antiquity, from the Mesopotamians using the “plant of joy” (the opium poppy) to manage basic surgeries to Chinese surgeons putting their patients under general anesthesia for 3 days at a time. Ever since Joseph Priestley’s first use of ether in the medical setting, doctors have progressively made advances in pain and sensation management, although advances in management of chronic pain remains slow due to the difficulty with which it can be treated, or even managed.

Part of the difficulty lies in the fact that the umbrella term “chronic pain” gives both a false sense of unity to the myriad of conditions (“oh, my uncle had this too”) as well as a false sense of simplicity to the problem (“just give me some pain meds, doc!”). Chronic pain can be broadly characterized as neuropathic versus non-neuropathic and malignant versus nonmalignant. Non-neuropathic pain includes somatic pain such as musculoskeletal pain, and visceral pain such as menstrual cramps, while neuropathic pain derives from faulty nerve signalling and includes conditions like diabetic neuropathy and shingles. Cancer can significantly modulate chronic pain due to its ability to invade multiple tissues and to cause both neuropathic and non-neuropathic pain, often in a progressively worse fashion. Chemotherapy, radiation and surgery can and often do contribute to the profile of pain related to malignancy. This article will address only nonmalignant chronic pain and discuss current treatment methods as well as future directions.

MEDICAL MANAGEMENT

First-line medical management of chronic pain includes antidepressants, anticonvulsants and topical agents. In low doses—lower than those used to treat depression—tricyclic antidepressants have been shown to be effective especially in relieving neuropathic pain, possibly through inhibition of sodium channels unrelated to depression. Anticonvulsant drugs like gabapentin prevent neuronal signalling by blocking calcium channels, and have been shown to be effective as well. Similar efficacy has not been shown in other antidepressant drugs, such as serotonin reuptake inhibitors (SRI) and serotonin noradrenaline reuptake inhibitors (SNRIs), although they can still be considered for second-line therapy.2,3

Topical lidocaine and other nonsteroidal anti-inflammatory drugs are second-line options, as well as options for patients who do not wish to consume pills. Topical lidocaine differs from topical opioids in that it functions locally while opioids work systemically through bloodstream absorption. One other topical option is high-strength capsaicin, which works primarily by desensitizing neurons; it is important to note that this method will be extremely uncomfortable for most patients in the first few months.2,3

Other medical treatments for pain involve treating or modulating the underlying cause of the pain, but the discussion rapidly becomes nuanced and cannot be generalized to chronic pain in general.

OPIOIDS

First purified in 1803, opioids have always held a fascinating place in society. Equally loved and feared, they were among the first class of compounds identified for their analgesic properties, but also for their mind-altering and addictive properties (morphine was so addictive, in fact, that a less addictive form, diacetylmorphine, was produced and marketed under the brand name “Heroin”). Opioids were avoided in treatment of chronic pain for reasons relating to tolerance, withdrawal and abuse. However, due to evidence from treatment of cancer patients, opioids have been the subject of renewed interest and increasing usage since the 1990s.1

Opioids are defined as substances that bind to mu, kappa and delta receptors in the central nervous system, inhibiting neuronal transmission of pain signals. This family of compounds, consisting of agonists, antagonists and partial agonists of opioid receptors, has long been marketed in various combinations and preparations.

CLINICAL PROCEDURES
These include intravenous hydromorphone (eg, Dilaudid), oral oxycodone (eg, OxyNEO), and topical fentanyl (eg, Duragesic), each route of administration with its own indications and side effects.1

In the outpatient setting, physicians have the option of administering oral, transdermal and sublingual preparations. Of these, the oral route is by far the most preferred due to the reduced rate of adverse events (save those of the opioid compounds themselves) and the ability to prescribe slow- and fast-release preparations as required. Patients who do not tolerate oral administration may also use transdermal patches to help maintain a stable plasma opioid concentration, with the risk of both slow onset of relief and longer-lasting effects of toxicity. Sublingual preparations are a third, very rapid onset, option for the chronic pain patient, with minimum adverse effects other than a bitter taste.4

Current Canadian guidelines recommend using opioids as a last resort in treatment of chronic pain. This includes conducting a risk assessment for addiction/abuse (including psychiatric status) and exploring other options (such as physiotherapy and NSAIDs) beforehand. Dosage should be titrated to the patient—being especially careful if the patient is already taking benzodiazepines—and shouldn't exceed 200mg/day of morphine or an equivalent dosage. Due to their different potencies and bioavailabilities, the various opioid compounds can be standardized to their oral morphine equivalent. Even after the optimal dosage has been found, the patient should be followed carefully for adverse drug reactions and tolerance/abuse.3

In terms of special considerations for certain populations, opioids should be tapered and eliminated in pregnant women. In addition to the titration described above, adolescent and psychiatric patients may be at greater risk of addiction as well, so only prescribe opioid medications for well-defined somatic or neuropathic pain, and monitor carefully for psychological changes. Again, elderly patients, especially those on benzodiazepines, are usually tolerant of opioids, although titration should still be slower and start from a lower dose. Chronic pain patients who are already addicted to opioids may still benefit from treatment, although concurrent rehabilitation treatment plans such as methadone/buprenorphine treatment, structured opioid therapy or abstinence should be provided subject to consultation and physician discretion.3

SURGICAL MANAGEMENT

Chronic pain, particularly neuropathic pain, can be treated surgically through direct nerve ablation, chemical sympathectomy (using chemicals to destroy affected nerves) and spinal decompression, although surgical options are often a last-resort method due to the risk of negative sequelae or outcomes. The most common surgical management option for chronic pain is implantation of devices in the body to either electrically or pharmacologically suppress nerve transmission of pain. Intrathecal devices use lidocaine in a “perpetual nerve block,” while electrical stimulators aim to desensitize the affected nerves. On a closing note, there has been relatively little research into the long-term effectiveness of surgical therapies, and these procedures may also be much more costly than their medical counterparts.5,6

COMPLEMENTARY AND ALTERNATIVE MEDICINE

Given the complex nature of chronic pain, including the psychological factor, alternative medicine is increasingly accepted in its treatment provided that there is no interference with ongoing medical or surgical management. Acupuncture is the poster child for alternative treatments for pain, and there have been studies demonstrating effectiveness, although it should be noted that many of the studies have been shown to be of low quality.7 Lifestyle changes and exercise have also been cited as key ways to improve chronic pain symptoms in most conditions, not just those from muscular causes.8

Medical marijuana has previously been considered for treatment of chronic pain, given that cannabis and hashish have historically been used much like opiates to manage pain. However, there has been little peer-reviewed research on the effectiveness of cannabinoids to date. Perhaps in the coming years, given recent changes in the legal status of marijuana in the US, definitive recommendations will emerge regarding its use in chronic pain.

In the last 10 years, a biopsychosocial model of pain, contrary to the traditional model of pain being purely physiological, has emerged and has important implications on the assessment and treatment of patients with chronic pain. Under this model, and in keeping with the increasingly interprofessional nature of medicine, there are recommendations to include social workers and other community care personnel to address psychological and social factors that may exacerbate or even cause the physiological pain. Under this model, pain clinics have been founded across Canada with interdisciplinary teams to manage patients in a more holistic and effective manner.9,10

CONCLUSION

Chronic pain is a difficult condition to treat, especially given the multifactorial causes of many patients’ pain under the biopsychosocial model of pain. With the increasing prevalence of interdisciplinary management teams, it is more important than ever for physicians to understand medical and surgical management options and how they may be affected by other therapies. Given all of these complexities, it is hoped that this primer motivates medical trainees to develop a better understanding of chronic pain.

REFERENCES
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