CLINICAL Viewpoint

# Sorting Through the Challenges of Chronic Pain

**Editorial Consultants**

Brian Goldman, MD, FACEP, FCFP
Staff Emergency Physician,
Mount Sinai Hospital, Toronto
Assistant Professor, Department of
Family and Community Medicine,
University of Toronto

Alan Kaplan, MD, CCFP (EM), FCFP
Adjunct Lecturer, University of Toronto
Family Physician, Richmond Hill, Ontario
Pain Consultant

*Chronic non-cancer pain (CNCP) remains challenging for some physicians to manage, despite growing evidence from prospective clinical trials that opioid therapy reduces pain and improves quality of life.*

## CASE STUDY – PAIN DUE TO OSTEOARTHRITIS

SZ is a 58-year-old male who first injured his back at work at age 42 and was diagnosed with acute lumbar strain. He recovered with bed rest, analgesics and active physiotherapy. Seven months ago, his subcompact was rear-ended by a van traveling at a speed of 60 km per hour. The patient had acute low back pain with no neurological signs or symptoms. Plain X-rays were normal. An ED physician prescribed three days' bedrest plus acetaminophen with codeine.

Since then, he has persistent aching and burning low back pain without radiation to the lower extremities. The intensity of his pain is 5-6/10 at rest, and 9/10 with activity. He has neither neurological nor bowel and bladder symptoms. Passive and active physiotherapy have not relieved the pain, and nonsteroidal anti-inflammatory drugs (NSAIDs), coxibs and acetaminophen with codeine are ineffective. Four or five tablets per day of acetaminophen with oxycodone provide reasonable relief. His other medical problems include gastroesophageal reflux disease (GERD), dyslipidemia, hypertension, and type 2 diabetes. His current medications include acetylsalicylic acid (ASA) 80 mg od, atorvastatin 30 mg od, irbesartan 300 mg od, omeprazole 20 mg od, citalopram 40 mg od, and acetaminophen with oxycodone 1-2 tabs q4-6 h prn.

He is an assembly line worker on long-term disability since the motor vehicle collision (MVC). He has developed secondary depression treated with citalopram, which helped relieve the patient's depressive symptoms but not the pain.

The patient scored zero out of four on the CAGE Questionnaire. His father is an alcoholic, and his brother has a remote history of cocaine abuse and has been in recovery for the past 18 years. The patient uses marijuana recreationally.

Physical Examination:

- Moderately obese; normotensive
- Markedly-reduced range of motion of the back
- Paravertebral muscle spasm from L3 to S1
- Numbness in the area of pain in the back; no tingling, pins and needles or itching
- Hypoesthesia to pin prick, but not to touch
- No pain provoked or increased by brushing the skin overlying the location of back pain
- Normal straight leg raising on both sides
- Normal power, sensation, and reflexes in the lower extremities

A CT scan of the LS spine shows extensive joint space narrowing and osteophyte formation but no nerve root compression.

The patient's goals of treatment are pain relief and to transition to sedentary occupation.

This case is typical of patients with CNCP. The pain was precipitated by a MVC. The prior work-related injury increased the risk of chronic pain following the subsequent MVC.

Table 1

Mechanism of Chronic Non-cancer Pain and Examples

| Nociceptive | Neuropathic |
|---|---|
| Osteoarthritis | Complex Regional Pain Syndrome |
| Rheumatoid arthritis | Diabetic neuropathy |
| Myofascial pain syndrome | Post-herpetic neuralgia |
| | Trigeminal neuralgia |

The first challenge in this case is to determine whether the pain is nociceptive or neuropathic, since treatment depends on the mechanism. The second is to tailor the pharmacotherapy to the patient's medical co-morbidities. The third is to evaluate the impact of the history of depression, the family history of alcohol abuse, plus the patient's recreational use of marijuana.

A systematic approach will reveal that those seemingly complex factors are much easier to resolve than at first glance.

## Epidemiology

The Canadian Chronic Pain Study II found that 25% of Canadians have continuous or intermittent pain for six months or longer, and rises to 33% of Canadians age 55 and older. The most common causes of chronic pain were arthritis and inflammatory conditions (31%), low back or spinal conditions (21%), injury and post-operative sequelae (13%), migraine or headache (11%), neuropathic or neurological problems (11%), and soft tissue pain (8%); no obvious etiology was found in 19% of people surveyed.[1]

Seventy-two percent of primary-care physicians surveyed believe that CNCP leads to needless suffering, and 31% to loss of productivity and other economic costs. Overall, the study found that primary-care physicians perceive that pain is not well managed in 60% of CNCP patients.

## Diagnosis and Treatment

There are two mechanisms of chronic pain: nociceptive and neuropathic (Table 1). Nociceptive pain is caused by tissue damage and/or inflammation, both of which produce neurohumoral substances that activate nociceptors in the periphery and activate pain pathways in the peripheral and central nervous system. Neuropathic pain involves abnormal processing and transmission of pain signals through diseased or damaged pain pathways.

The description of the pain can help distinguish the two. Nociceptive pain is usually a dull or sharp ache. Neuropathic pain is described as burning, shooting and/or stabbing. It may be paroxysmal in nature. Nociceptive pain responds to acetaminophen, NSAIDs and opioid analgesics. Neuropathic pain often requires a combination of anticonvulsant or tricyclic medications plus opioid analgesics.

A validated Neuropathic Pain Diagnostic Questionnaire, called a DN4 (Table 2), is a four-item questionnaire consisting of both sensory descriptors and physical signs that takes less than five minutes for the physician to complete, and has a sensitivity of 82.9% and specificity of 89.9% in discriminating neuropathic from nociceptive pain in patients with persistent moderate to severe pain.[2]

A list of answers are provided for each question on the DN4 questionnaire; each answer should be responded to with 'yes' or 'no.' One point is awarded for each question answered yes and zero points for each question answered no.

A score of four or more suggests the patient likely has neuropathic pain.

Another more recent screening questionnaire that identifies neuropathic components in patients with chronic low back pain is PainDETECT. It takes into consideration sensory descriptors typically characteristic of neuropathic pain, pain intensity, and the pattern of the presenting pain.[3]

This patient has nociceptive CNCP. As such, the pharmacological approach includes acetaminophen, NSAIDs or coxibs, and opioid analgesics. Low dose tricyclic antidepressants may also be tried. Anticonvulsants are unlikely to be effective.

Acetaminophen is a reasonable choice for mild chronic pain. It's generally safer than NSAIDs, such as ibuprofen, naproxen, and ASA, which can cause stomach bleeding and ulcers. NSAIDs other than ASA may also increase heart risk. The maximum recommended dose for short-term use is four grams per day.

Table 2

DN4 Questionnaire for Neuropathic Pain

**Question 1:** Does the pain have any of the following characteristics?

1. Burning ☑ yes ❑ no
2. Painful sensation of cold ❑ yes ☑ no
3. Electric shocks ❑ yes ☑ no

***Answer:*** *The patient describes his back pain as 'burning' – score one point.*

**Question 2:** Is the pain associated with any of the following symptoms in the same area?

4. Tingling ❑ yes ☑ no
5. Pins and needles ❑ yes ☑ no
6. Numbness ☑ yes ❑ no
7. Itching ❑ yes ☑ no

***Answer:*** *The patient has numbness – score one point.*

**Question 3:** Is the pain located in an area where examination reveals either of the following?

8. Hypoesthesia to touch ❑ yes ☑ no
9. Hypoesthesia to prick ☑ yes ❑ no

***Answer:*** *The patient has hypoesthesia to prick – score one point.*

**Question 4:** Is the pain provoked or increased by the following?

10. Brushing ❑ yes ☑ no

***Answer:*** *There is no pain on brushing the area in pain – score zero points.*

***Therefore, the total score is three out of 10. Since the score is less than four, the patient does not likely have neuropathic pain.***

However, lower doses are recommended for long-term use.[4] More stringent dosage reductions are recommended for patients with hepatic and/or renal disease.

With the patient's hypertension and cardiac risk profile, NSAIDs and coxibs would not be recommended.

Opioid therapy may be the optimal choice in this patient, since it has no risk of organ toxicity, and does not increase the risk of cardiovascular complications. Opioid therapy should be considered for patients who have moderate or severe chronic pain and a reduced quality of life when other classes of analgesics have either been ineffective or are contraindicated.

Before prescribing opioid therapy, the patient's psychiatric and addiction co-morbidities should be assessed, since these factors can make the prescribing of opioid analgesics more challenging.[5]

Primary-care physicians can manage patients with no past or current or family history of substance use disorders, and no major or untreated psychopathology with relative ease. Patients with a past history of a treated substance use disorder or a significant family history of problematic drug use or a past or current psychiatric disorder may be managed by the primary-care physician with the support of a psychiatrist and/or expert in addiction medicine as indicated. A specialist in pain management should manage patients with active substance abuse or major untreated psychopathology.

This patient suffers from reactive or secondary depression that has responded to citalopram. Since this is not considered to be a major or untreated psychopathology, a primary-care physician would be considered competent to manage this patient without the help of a specialist.

The patient does not have a serious active substance abuse disorder. However, a significant family history of alcoholism and cocaine abuse plus the recreational use of marijuana put the patient at moderate risk of opioid abuse. The patient can be managed by a primary-care physician with the support of an expert in addiction

medicine, provided such is readily available.

Since codeine has proven ineffective, options for this patient include oxycodone with or without acetaminophen and tramadol. Currently, there are three long-acting preparations of tramadol.

Tramadol has weak serotonin reuptake inhibition. Combining tramadol with citalopram may potentiate the risk of serotonin syndrome. However, it may be prescribed in combination with selective serotonin reuptake inhibitors (SSRIs) if the potential benefit outweighs the risk. Patients should be closely monitored for serotonin syndrome (altered level of consciousness, confusion, myoclonus, ataxia, abdominal cramping, hyperpyrexia, shivering, pupillary dilation, diaphoresis, hypertension, and tachycardia).

A different opioid such as morphine, hydromorphone, fentanyl or methadone could be selected instead. The opioid selected should be prescribed on a scheduled rather than a prn basis.

Patients should record pain levels on a scale from zero to 10 on the Numeric Rating Scale (NRS). According to the IMMPACT study, a reduction in pain intensity of > 30% is considered moderately important, while a reduction of > 50% is considered substantially important. Objective improvement in function and/or quality of life is another benchmark of success.[6]

## Prognosis

Given the moderate risk of substance use disorder, the physician chose a long-acting form of tramadol. The patient was advised regarding the symptoms of serotonin syndrome with close follow-up by the physician. The physician consulted with an expert in addiction medicine who suggested appropriate precautions to minimize the risk of iatrogenic addiction. The expert also recommended that the patient curtail his use of marijuana and encouraged prn follow-up if there were any concerns. The patient was advised to keep the medication safe from theft and diversion.

The maximum recommended dose of tramadol should not be exceeded as doing so increases the risk of seizures (one per 7,000 patients at less than maximum doses). The risk of tramadol-induced seizures is increased in patients with head injury, central nervous system disease, as well as patients who concomitantly receive SSRIs, tricyclic antidepressants, monoamine oxidase inhibitors, and neuroleptics.

The patient was titrated to 300 mg per day of tramadol, with acetaminophen as needed for breakthrough pain. Lactulose was prescribed for constipation.

The patient's baseline pain levels dropped to 3-4/10 with 5-6/10 pain with activity. He was able to do active physiotherapy and has taken a sedentary job.

## Conclusion

The patient turned out to be more straightforward for the primary-care physician to manage than was first presented. The physician ruled out neuropathic pain quickly. A systematic approach to psychiatric and addiction co-morbidities reassured the physician that the patient could be managed by a primary-care physician with a bit of advice from an expert in addiction medicine.

Finally, though the combination of tramadol and citalopram increased the risk of serotonin syndrome, the prescribing of tramadol is not contraindicated in such patients. Rather, they should be followed closely for symptoms and signs of serotonin syndrome and monitored closely.

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