PAIN MANAGEMENT *in General Practice*

Text by Dr Bernard Lee MK

Dr Lee, MBBS (Singapore); FPM ANZCA (Australia); FAM (Singapore), is an associate professor at the Faculty of Medicine and Surgery, Santa Tomas University, and a consultant pain physician and consultant anaesthesiologist at the Singapore Paincare Center.

What is pain management?

The term "pain management" gives an impression that the persistent pain reported is coming from a difficult patient who does not respond to standard treatments that are available, making the suggestion that it may be fictitious or psychological. Within the medical circle, many opine that pain management is not to get rid of pain but rather just to palliate the pain. This gives rise to the patient's pain not being taken seriously, or worse, being trivialised and ignored.

While pain may be a symptom of a disease, such as headaches in brain cancer cases or chest pain in a heart attack, the term "disease" requires an underlying explanatory abnormality identifiable by laboratory and other investigative procedures. When we find no underlying disease explanation for a symptom – say, pain or fatigue or loose stools – the descriptive term "unexplained symptoms" is presently the best we can do in medicine. Unexplained symptoms are common. Over three quarters of all physical symptoms have no explanatory disease.[1] Indeed, who has not had some symptom without a disease, such as a minor headache or light-headedness? The spectrum of unexplained symptoms extends from minor, for which we don't even seek care or are easily reassured if we do, to very severe and disabling. Chronic pain is at the most severe end of the spectrum.[2]

In certain chronic pain syndromes, pain can be the sole or leading complaint and would require special treatment and care. In conditions such as fibromyalgia or non-specific lower back pain, chronic pain may be conceived as a disease in its own right. In other persistent pain states, due to our poor clinical acumen or lack in medical knowledge, this pain may be secondary to an underlying disease: chronic neuropathic pain (eg, complex regional pain syndrome), chronic secondary visceral pain (eg, chronic pelvic pain, interstitial cystitis), chronic posttraumatic and postsurgical pain (eg, post amputation, phantom limb, post thoracotomy pain), chronic secondary headache and orofacial pain (eg, trigeminal neuralgia), and chronic secondary musculoskeletal pain (eg, plantar fasciitis, frozen shoulder,

chronic knee pain). These conditions are summarised as "chronic secondary pain" where pain may at least initially be conceived as a symptom.[3]

It will not be pain management but resolution of pain once we can identify those reversible secondary pain syndromes with new perspective of pathophysiological mechanism, rather than just inflammatory nociception for some of those chronic pain conditions.

Pain as more than just a symptom

Pain is no longer just a symptom but it is being considered as a disease in itself. As stated by John J Bonica, the founding father of the discipline of pain medicine, in 1953 on pain: "in its late phases, when it becomes intractable, it no longer serves a useful purpose and then becomes, through its mental and physical effects, a destructive force."[4] Thus, in these circumstances, the peculiar nature of pain is revealed in its complexity, particularly because of the double value of the phenomenon; that is, pain is biologically a protective tool, but it can also lose its adaptive function and become a pathologic condition severely impacting the quality of life.

The development of a universally accepted definition of pain and its related concepts was indicated as main narratives by the International Association for the Study of Pain (IASP).[5] Among the first proposals of the association were the definition of pain and the classification of chronic pain syndromes. These first efforts have contributed to stimulate a worldwide debate on pain terms and classification, which continues till today.[6]

In his 2004 Bonica lecture, John D Loeser recalls Encyclopedia Britannica's definition of **disease** as "an impairment of the normal state of an organism that interrupts or modifies its vital functions" and concludes that since "chronic pain certainly does modify functioning, in many different ways", it has to be recognised as a disease in its own right.[7]

The efforts in providing specific biologic characterisation of pain as a disease are shown through aberrations in neurophysiology. Neuroimaging has shown compelling evidence that functional, structural and chemical changes occurring in the brain in association with chronic pain were reported in a 2009 review by Tracey and Bushnell.[8] In the authors' view, these findings support the idea that chronic pain should be put "in the realm of a disease state" as a condition characterised by a disordered nervous system.[9] In the same year, the American Academy of Pain Medicine put forward a position paper recommending to distinguish between two categories of pain and proposing new terminology for pain: eudynia and maldynia, literally meaning "good pain" and "bad pain".[10] While the first term refers to pain as "a symptom of an underlying pathological disorder, either an illness or an injury", maldynia denotes instead "'pathological pain', referring to pain as a neuropathological disorder or disease process that occurs due to changes at cellular and molecular levels".

Nowadays, it is recognised that persistent pain entails a pathologic reorganisation of the neural system.[11] This process can be due to several factors, such as a genetic predisposition,[12-14] central sensitisation mechanisms,[15] as well as many other factors. However, Cohen et al challenge the view of pain as a disease, by claiming that scientific findings showing pathologic changes associated with persistent pain are not sufficient to define pain as a disease.[16]

What types of pain are there?

Broadly speaking, there are acute pain, chronic non-cancer pain and cancer type pain.

Acute pain is associated with acute tissue damage or potential damage, or as described in such terms. There is usually a pain generator secondary to injury of tissue or structures resulting in inflammation, damage and pain; for example, a fall on the knee and a fracture of the knee. There is usually a direct relationship between stimulus event and pain response (ie, a pain source and a pain response). It acts as an alarm to draw attention to the painful area, to receive treatment and to allow for healing. Once the source is removed, healed or recovered, the pain should resolve. Such acute pain conditions are very responsive to standard painkillers and simple treatment modalities, such as rest and immobilisation.

Chronic pain is an often misunderstood condition. It is defined as pain lasting beyond expectation or beyond nociception. Temporally, this is taken as more than three months of daily pain. It can affect any part of the body and it may not go away despite traditional models of assessment and treatment. A eudynia pain model of a chronic pain generator, an inflammatory source, is arthritis of the knee. But in other chronic pain states, the pain generator may be less obvious (eg, lower back pain, chronic neck pain). The maldynia model would be the perseverance of pain despite the lack of pain source/generator, such as persisting pain in the ankle after an innocuous twisting ankle sprain.

Neuropathic pain is an example of chronic pain syndrome. This nerve type pain can arise from different conditions. It can happen in either the central nervous system (within the brain; eg, post-stroke pain), or it can happen in the peripheral nervous system (outside spinal cord; eg, diabetic nerve pain, trigeminal neuralgia and postherpetic neuralgia). Nerve pain is very different from inflammatory pain/somatic pain. The mechanism of pain is not mediated by the same pathway. Medications that treat inflammatory pain (eg, trauma, fractures and contusions) are usually not able to treat nerve type pain.

Joint pains can be inflammatory, neuropathic or non-mechanical. When a patient complains of knee pain, we have to exclude the inflammatory cause of the knee pain. Any mechanical causes such as arthritis will also be investigated. Hence, an X-ray would be done to assess the integrity of the knee joint. Only when that is satisfied would we look for other causes, such as neuropathic or pain-memory conditions. Chronic knee pain may be both inflammatory and neuropathic, thereby requiring multi-modal approach to the problem. In certain situations, all of the above approaches may not be useful for the chronic knee pain, such as a phantom type pain. An example of that would be post-amputation pain of the leg. While the pain generator has been removed by surgery, the nerves continue to remember the pain signals that were sent previously, despite the tissue having healed or the source removed.

Example 1.

Mrs Goh (not real name): 50-year-old lady. No medical problems. Developed shingles attack over left chests wall extending to her back in January 2009. Pain started one week after the blisters appeared. Six months later, she was still having the shingles pain – very distressing pain – and unable to lie down. Clothes over the area will trigger off a pain flare. She was very sensitive to touch and pressure. She described her pain as a shooting pain with current-like flare ups. The background pain is burning in nature, like a hot iron.

The peripheral nerves have been infected and damaged by the latent chicken pox virus (herpes zoster). These patients have intense and severe pain over the shingles blister without relent. Instead of conducting electrical signals, the nerve becomes sensitised and starts to have ectopic firing. These aberrant signals are perceived by the brain as painful impulses. When examined, there is no ongoing tissue destruction or inflammation. The damage has occurred and now, only the post-damage effect remained. Standard painkillers, such as paracetamol or anti-inflammatory painkillers, do not have an effect on shingles pain. Treatment would be anticonvulsants (eg, Carbamazine or Lyrica) instead.

Example 2.

Mrs Lim (not real name): 40-year-old woman. She complained of leg pain while walking that has occurred for more than one year; back pain with pulling leg pain whenever she was standing or walking; and difficulty walking upslope. While lying or sitting down, the pain improves and settles down. The deep ache in the leg is constant, with sporadic pain flares of intense pulling nerve pain. Anti-inflammatory medications were marginally helpful in controlling the pain, though without abolishment. There is a need for anti-neuropathic drugs such as anticonvulsants or/and antidepressants, not to treat her depression but to stabilise the hypersensitised nerves.

Back pain with leg pain (nerve compression by slipped disc) is another condition of neuropathic pain. The prolapsed disc will compress on the surrounding nerve, causing pain in the legs. The pain in the legs will get progressively worse when one walks. This is called claudication pain. The pain is due to the stretching of the impinged nerve. This type of pain has two components – inflammatory and neuropathic pain. Hence, it is a mixed pain condition.

Persistent neuropathic pain commonly seen in general practice

1. Disease specific: Patients who are suffering from the following conditions (nerve injury)
   A. Shingles (viral zoster infection)
   B. Diabetes neuropathy
   C. Nerve compression from slipped disc or any external causes
   D. Cancer treatment using certain chemotherapy and radiotherapy
   E. Trauma and post-surgery
   F. Post-stroke syndrome
2. Intense refractory pain during an acute condition that was not properly treated and progressed to chronic neuropathic pain (eg, painful arthritic knee)
3. Poor sleep and poor rehabilitation status

Types of pain management strategies

The first and primary aim in pain treatment is to identify and eradicate the source of pain generator. In chronic pain conditions, the mechanism of pain and its maintenance are often not obvious. While the pain generator may be elusive, we have to arrive at a diagnosis that accurately represents the patient's condition, rather than loosely labelling it as degenerative pain. If the pain generator is not amenable to eradication, we can still reduce the pain and effectively control it.

Understanding chronic pain and its difference from an acute pain model will have an impact on the principles of treatment. In acute back pain relating to trauma or acute inflammatory condition, it would require patients to rest, be immobilised and apply cold compress, as well as use painkillers such as NSAIDs. In chronic back pain of more than three months, the opposite instructions would have better outcomes. The patient should not undergo further prolonged bed rest but gentle mobilisation and exercise instead. We should not only rely on anti-inflammatory but also anti-neuropathic agents.

Pain medications

The usual treatment of chronic pain using the standard painkillers, such as paracetamol, ponstan, voltaren, arcoxia and celebrex, are ineffective. Chronic neuropathic pain cannot be treated like the usual type of inflammatory pain. The pain will not be controlled even with morphine. Based on the new understanding of this type of pain (nerve pain), we need to stabilise the nerve with special medications such as anticonvulsants (used to treat seizures) and antidepressants (to treat depression). The doses we use to treat patients are far lower than those needed for treating seizures and depression. These patients with nerve pain are not suffering from depression or seizures, but the combination of these drugs independently or together is effective in the treatment of nerve pain by membrane stabilising the over-excited painful nerves. I have sent many chronic pain patients to psychiatrists for evaluation and they returned with a note saying that they are not suffering from any mood disorders or "imagination" of pain.

The group of antidepressants with the most extensive research experience would be the tricyclic antidepressants (TCAs; eg, amitriptyline and prothiaden), with a fairly good number needed to treat (NNT) for painful conditions such as shingles, trigeminal neuralgia, diabetic neuropathy and post-stroke pain (ie, NNT 2–3). However, they also have

poor numbers needed to harm (NNH) for medication-related complications. There are other medications such as selective serotonin reuptake inhibitors (SSRI; eg, lexapro and fluoxetine) and serotonin and norepinephrine reuptake inhibitors (SNRI; eg, effexor and duloxetine) that showed promises in the treatment of these chronic painful conditions. However, some of these side effects of medication can be potentially problematic, such as suicide risk and depression, even at low doses.

Anticonvulsants, such as lyrica, gabapentin and carbamazepine, have good NNT 2 for chronic painful conditions too. They potentiate the descending inhibition pathway of pain via GABAergic and calcium antagonist receptors, thereby blocking the ascending pain signals. Similarly, some common minor side effects have to be noted (eg, blurring of vision, constipation, weakness, giddiness, nausea and low mood).

Multimodal analgesia has established its role in the treatment of chronic pain. While we target the inflammatory condition with NSAID/COXII inhibitor and/or opioid, we need to consider the concurrent use of anti-neuropathic agents for the treatment of central sensitisation of central nervous system.

Pain procedures (minimally invasive procedures)

Taking an example of chronic low back pain, evaluation of this pain may point to mechanical spinal conditions such as prolapsed disc (slipped disc), spinal stenosis (spinal canal narrowing), facet joint arthritis, and inflammation of the nerve and disc. However, myofascial pathology is much more common, accounting for up to 70% of all back pain.

Many bedside injection procedures can be used in general practice to treat common chronic secondary musculoskeletal pain conditions (eg, back pain, neck pain, shoulder pain, foot pain, leg and foot pain, and upper limb pain). The accurate identification of myofascial trigger point and its injections into the painful area can reduce the inflammation and the hypersensitised muscle and ligaments, as well as to stop the pain. Even mechanical compressive spinal conditions can be managed as such by GPs.

Only when these conditions progress to numbness and weakness of the legs, signifying nerve compression, then is there an impetus to refer onward to a specialist to aim for removal of the underlying compression. Currently, this alternative to open surgery has established itself within the pain medicine specialty. Percutaneous (+/- endoscopic) decompression of the disc using a specialised needle/drill to suck out excess herniated disc material or percutaneous dilatation of the canal space with a ballooning catheter (neuroplasty – likened to ballooning of blocked blood vessels of the heart) and radiofrequency ablation (injections to desensitise and/or denervate the hypersensitive injured or impinged nerve).

These minimally invasive procedures target removal of the pain source (eg, disc decompression and bone spur decompression) with little complication and downtime. With the guidance of radiological fluoroscopy, these procedures can be performed safely within a day surgery facility.

Conclusion

Once we have addressed the Cartesian model of pain transmission and perception, and look beyond the limitation of cause and effect by applying new models of transmission of pain signals to the "chronic pain" conditions, we can possibly give rise to pain resolution rather than just pain management. It should be pain treatment rather than just managing of pain, with complete abolishment of pain as the final goal.

There may be other chronic pain conditions needing longer-term medications. This is similar to using long-term medications to treat hypercholesterolemia and hypertension. With a good understanding of pain pharmacology, we can achieve good pain control with the least possible complication and side effects.

Pain treatment of various chronic pain conditions can be achieved with great efficacy without needing to bear with or tolerate ongoing pain. Rehabilitation, together with cognitive behavioural therapy, may be utilised in certain refractory painful conditions (eg, Fibromyalgia). It should no longer be managing pain but treating pain at source. ◆

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