52nd Annual Scientific Meeting

Canadian Association of PHYSICAL MEDICINE & REHABILITATION

Making Strides In Pain Management

When Canadian soldiers returned home from World War II, a new specialty of physicians provided care, offering pain relief and rehabilitation to the injured and disabled men. These medical specialists, called "physiatrists," are trained in the diagnosis and treatment of impairment and disability, working towards the goal of improving patients' functional capabilities and quality of life. There are now more than 300 physiatrists in Canada.

In past years, patients typically presented with histories of injuries or diseases such as stroke, neuromuscular disorders, musculoskeletal disorders, cardiopulmonary diseases, arthritis, peripheral vascular disease and cerebral palsy. Today's physiatrists are increasingly seeing patients who have become disabled due to diseases that were once fatal but are now considered chronic, including cancer and HIV. "Thanks to medical advances, many people now survive traumatic injuries and illness that once would have cost them their lives," says Dr. Jeff Blackmer, a physiatrist with The Rehabilitation Centre in Ottawa. "They live longer, but with impairments and disabilities that require intervention."

Physiatrists treat patients with integrated therapy that includes prescription of pharmacologic, physical, occupational, psychological and speech therapies, social nursing, prosthetics, orthotics and vocational services.

The Canadian Association of Physical Medicine and Rehabilitation (CAPM&R) was founded in 1952 to provide a national professional forum to help advance the specialty and the provision of rehabilitation in Canada. In June, the CAPM&R hosted its 52nd annual scientific meeting in Charlottetown, PEI; the theme was "Reeling in Pain."

"The theme is particularly important, as many Canadians suffer from chronic pain," says Dr. Blackmer. "Family physicians can take a step towards helping them by referring to a physiatrist any patient who has an illness or disability that impacts on the ability to function in their daily lives."

DIAGNOSIS KEY TO TREATMENT OF NEUROPATHIC PAIN

A structured approach to choosing medication

From nonsteroidal anti-inflammatory drugs (NSAIDs) to opioids, there is a wide range of options available in the treatment of chronic pain. But which medication is right for which type of pain?

At the CAPM&R annual meeting, Dr. Christine Sang of Harvard Medical School in Boston explained that understanding the pathophysiologic mechanisms of neuropathic pain allows for a structured approach to choosing the most effective pharmacologic treatment.

Traditionally, physicians have been taught to look at pain based on the etiology of the initial insult or the anatomical distribution of the pain (e.g. diabetic neuropathy, spine disease, cancer, surgical procedures resulting in nerve damage, stump pain from amputations, stroke, etc.). "However, classifying neuropathic pain in this way does not help target pain mechanisms and offers little framework for the clinical management of pain," said Dr. Sang. "In addition, more than one mechanism may be at work in an individual patient, and each mechanism may be causing multiple symptoms. So perhaps we should look at pain in a different manner."

In the past few decades, research with animal and human data has led to a new conceptualization of pain as, in simplistic terms, no less than two different types. "First pain," also known as "acute" or "nociceptive pain," involves the normal activation of the nociceptive system by a brief noxious stimulus. When the stimulus is removed, the pain stops. This pain is protective and physiological. "Second pain,"

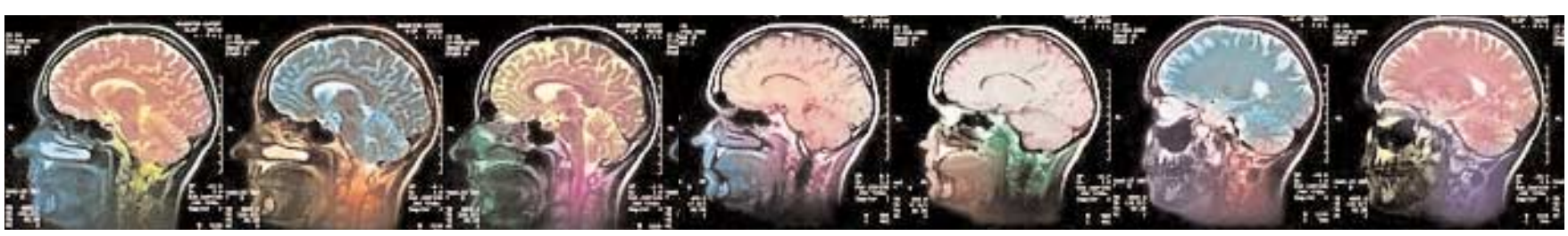

Table 1

OVERVIEW OF CLINICALLY AVAILABLE ANALGESICS AND ANALGESIC ADJUVANTS

GABAPENTIN (NEURONTIN)
Used in the treatment of postherpetic neuralgia. Is safe for use in elderly patients or those on dialysis, and its absorption is not affected by food. In doses beyond 1200 mg, it may not always be well absorbed; therefore, it might be prescribed twice or four times daily.

AMITRIPTYLINE (ELAVIL, LEVATE)
Has been shown to offer at least moderate pain relief in patients with certain peripheral neuropathic pain conditions. Side-effects such as sedation, hypotension and seizures, as well as anticholinergic side-effects must be considered.

OXYCARBAMAZEPINE (TRILEPTAL)
Structurally similar to carbamazepine (Tegretol) but involves fewer side-effects and risk of toxicity, and is better tolerated because its breakdown does not include the toxic epoxide metabolite.

TOPIRAMATE (TOPAMAX)
May be prescribed for the treatment of peripheral neuropathic pain because it has multiple relevant mechanisms of action. It should be avoided in patients with a history of urinary tract infections.

DEXTROMETHORPHAN
A safe, nonopioid treatment that has a minimal potential for fatal overdose or organ toxicity. In high doses, it offers good response for patients with painful diabetic neuropathy and spinal cord injury. Higher dosing requires close patient follow-up for the development of psychotomimetic side-effects.

Source: Dr. Christine Sang, Harvard Medical School, Boston, at the 52nd Annual Scientific Meeting of the Canadian Association of Physical Medicine and Rehabilitation

on the other hand, involves multiple mechanisms at the level of the central nervous system that includes the spinal cord and brain. "Third pain," or "chronic pain," is neuropathic. Even after the stimulus is removed and the inflammation has calmed down, the pain continues because the central nervous system is so activated. The work of Dr. Linda R. Watkins, of the University of Colorado at Boulder, suggests that the process of third pain is not only neural, but also involves activation of the structural elements in the spinal cord. Under second pain there is activation of astrocytes and microglia that releases interleukins, cytokines, reactive oxygen species, nitric oxide (NO), prostaglandins, excitatory amino acids and adenosine triphosphate (ATP), forming an "angry milieu" which, together with the facilitated state of the neurons, creates a "sensitized" state of pain processing at the central nervous system level.

Both animal and human models have demonstrated that there is a differential effect of some medications on different types of pain. The ideal analgesic would interact on several selective sites with the potential for acting synergistically for efficacy but not toxicity. This is "easier said than done," admitted Dr. Sang.

Dr. Sang gave an overview of the clinically available analgesics and analgesic adjuvants. "A number of treatment options exist, but the clinical trials to date have not been overwhelmingly convincing," she said (see Table 1).

Of the drugs currently available, tricyclic antidepressants may be the best for neuropathic pain, said Dr. Sang. Due to side-effects, however, "I restrict the use of tricyclic antidepressants to patients who are relatively healthy," she said.

Opioids may be effective for nociceptive pain. Although opioids are often not useful in the treatment of pure neuropathic pain, results may be mixed because chronic pain tends to involve heterogeneous mechanisms.

Regardless of the choice of drug, said Dr. Sang, it is important to start at the lowest dose and gradually titrate up to efficacy or to the highest dose tolerated without side-effects. If a patient receives only partial pain relief with monotherapy, then a second agent should be considered.

"Because pain is comprised of nociceptive, peripheral neuropathic and central neuropathic mechanisms, it is unlikely that any one mechanism is solely responsible for the onset of neuropathic pain," Dr. Sang concluded. "Therefore, we must design the most appropriate treatment strategy based on the relative contribution of each mechanism. Combination therapy, which targets multiple mechanisms of action, is often the best option, but the benefits must always be weighed against the risk of side-effects."

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~ Dr. Christine Sang

Table 2

THE FIVE A's OF OPIOID THERAPY

Fear of a patient addiction and possible sanction prevent many practitioners from offering opioids to their chronic pain patients. Carefully monitoring and documenting the patient's response to the opiate medication can reduce these risks:

1. Analgesia	Is the patient receiving adequate pain relief with this medication?
2. Activities	Has the patient experienced any improvement in activities of daily living?
3. Adverse effects	Has the patient experienced any adverse effects related to the opioid?
4. Aberrant behaviour	Is the patient demonstrating any aberrant drug-taking or drug-seeking behaviour?
5. Accurate records	Regular assessment and documentation of the patient is very important. Physicians must keep adequate and accurate records of the patient's level and type of pain, treatment, and response to therapy.

Source: Dr. Pankaj Dhawan, University of British Columbia, Vancouver, at the 52nd Annual Scientific Meeting of the Canadian Association of Physical Medicine and Rehabilitation

THE ROLE OF OPIOIDS IN PAIN MANAGEMENT

A valuable yet underused option

Although almost 4 million Canadians suffer from chronic pain, both cancer pain and noncancer pain continue to be "grossly" undertreated, said Dr. Pankaj Dhawan of the University of British Columbia in Vancouver. A downward spiral can enmesh patients when their pain is poorly managed: they limit physical activity out of fear of more pain, which leads to atrophy that can result in additional injury and pain, causing patients to withdraw even further from physical activity and social interaction. "Adequate analgesia and patient education are the keys to breaking this spiral," emphasized Dr. Dhawan.

In most patients, the complete elimination of pain may not be possible. Rather, said Dr. Dhawan, the goal should be to reduce pain within realistic expectations and improve the patient's functioning and quality of life. As always, the benefits of any therapy must be weighed against its potential for harm.

"Many of the drugs we use to manage pain are not safe," he said. Even acetaminophen is not free of problems, as chronic users face the risk of hepatoxicity, gastrointestinal (GI) bleeds, and long-term renal insufficiency.

While coxibs were thought to solve the problem of GI complications associated with acetaminophen, it has been discovered that they, too, have GI toxicity. In addition, coxibs do not protect against renal dysfunction, are not safe in pregnancy, and are not protective against stroke. Recent reports now suggest that coxibs are associated with significant increased risk of hypertension and congestive heart failure.

Ironically, although many practitioners are hesitant to prescribe opioids, they are "one of the safest pain-management drugs available," said Dr. Dhawan. "Opioids should be considered because they don't cause organ damage, they don't have any ceiling, and side-effects are predictable and opioid-related. Randomized control trials clearly show efficacy, so we know they work."

In arthritis management, for example, the judicious use of opioids is an option, depending on the treatment goal (i.e. pain relief rather than inflammation reduction) and the individual patient.

Recent studies have found opioids to be effective in the treatment of neuropathy. For example, a six-week study of 159 patients with painful diabetic neuropathy found that controlled-release oxycodone provided more analgesia than placebo (Gimbel J et al, *Neurology* 2003 Mar 25;60(6):894-5).

Of course, opioids are not for all patients, and careful assessment and screening are vital when considering this class of medication (see Table 2). Opioids are indicated