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## Chronic Pain: The Unbearable Burden

Chronic pain is an area of enormous unmet clinical need because treatment options are limited and our understanding incomplete. Certainly, there is no one-size-fits-all remedy for pain therapy and prevention, even for a single type of pain.



**C**hronic, non-malignant pain, defined as pain which persists for six months or longer, is a common problem in clinical practice, and a costly one for its sufferers. Among the different types of non-malignant pain, acute lower back pain is predominant, affecting 70% to 80% of adults at some time in their lives.

Chronic pain can be accompanied by significant losses, for example, income and autonomy. Sufferers can experience guilt, blaming themselves for their inability to overcome or master pain. Also, pain interferes with the person's activities, interests and relationships, and limits enjoyment of life. It is thus not surprising that the presence of chronic pain is a significant risk factor for suicide.

The management of pain has often been elusive to clinicians. Pain that has not responded to common pain medicines and interventions can present a huge burden to medical services.

### TYPES OF PAIN: THE GOOD, THE BAD AND THE UGLY

The pain system in our human body normally serves a warning function. When suppressed, it permits function despite injury. It may be sensitised, promoting protection of injured parts, and it may be reorganised, in which cells die, new terminals appear, and synapses are modified.

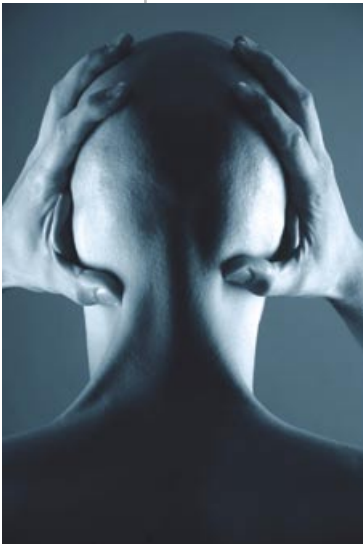
Acute pain results immediately from noxious stimulation, for example, as in acute appendicitis. Recurring pain results from injury or, more likely, disease, which produces repeated noxious stimulation over time. Examples include arthritis, cancer pain, phantom limb pain, irritable bowel syndrome, and thalamic pain syndrome. In chronic benign pain syndrome, the patient experiences pain and suffering that endure beyond the noxious stimulation produced by the injury or disease process that resulted in the original pain.

At this juncture, it will be relevant to distinguish

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between adaptive pain and maladaptive pain. Adaptive pain contributes to survival by protecting the person from injury or promoting healing when injury has occurred, whereas maladaptive pain is an expression of the pathologic operation of the nervous system, for example, of abnormal sensory processing. Chronic pain is an area of enormous unmet clinical need because treatment options are limited and our understanding incomplete.

An interesting analogy is that of the fire alarm system. In maladaptive pain, the fire alarm system is constantly switched on even though there is no emergency. How much a person is bothered by pain, that is, how much he/she suffers, is a function of the meaning of the pain, that is, what it tells about the person's life and his/her relationship with the world.



### **“IT’S ALL IN THE HEAD”: NEURO-IMAGING OF PAIN**

The expression “It’s all in the head” is used here not in a derogatory manner but to emphasise that pain is a perception, and like all perceptions, it is filtered through the brain. Changes occur in the brain when pain is perceived and when it is treated. Pain memories can form through sensitisation, in which individuals become more sensitive to painful stimulation over time.

This increased sensitivity is revealed in brain imaging studies: the primary somatosensory cortex is much more activated in patients with chronic pain.

In a study using functional resonance imaging, researchers demonstrated that distinct areas of the brain are involved in pain processing versus pain anticipation<sup>1</sup>. More importantly, although the level of brain activation in the regions associated with sensory pain processing remained stable across time, the level of activation in the more cognitive-emotional pain anticipation regions increased over time. Thus it appears that cognitions, emotions, and pain experiences can actually change the way the brain processes input from pain receptors. Over time, we may already feel pain in anticipation of pain.

Another interesting study demonstrated that

physical pain strongly activates the anterior cingulate cortex, which in turn is connected to the right ventral prefrontal cortex, which helps dampen the emotional distress caused by pain. It turns out that these two regions of the brain are also activated during social rejection (emotional pain)<sup>2</sup>.

Factors such as attention, motivation and cognition that influence human pain experience also affect activity of nociceptive spinal neurons. A proposed mechanism of such modulation is suggested to involve endogenous pathways that originate from higher centres and descend to the spinal cord. Essentially, pain perception is a dynamic process influenced by past events, emotions and cognition.

### **PSYCHIATRIC ASPECTS OF CHRONIC PAIN**

Psychiatric co-morbidities are commonly found in association with chronic pain. Major depression has been reported to occur in about a third of patients with chronic pain; current alcohol and other drug dependence occurs in 15% to 23%; and anxiety disorder in 7% to 63%. These co-morbidities, together with suicidal behaviour, somatoform disorders, and personality disorders, affect how chronic pain patients cope with the pain. Psychiatric co-morbidities make pain more difficult to treat and vice versa.

Depression worsens pain in many ways, for example, by lowering the stimulus barrier, worsening helplessness, inducing hopelessness, inducing pain-maintaining behaviour (for instance, prolonged bed rest in a patient with chronic backache), disrupting environmental support and interfering with the treatment of pain. Effective pain treatment will make psychiatric co-morbidity easier to treat. For patients with both chronic pain and depression, it will be pertinent to utilise anti-depressants that have efficacy for both pain and affective disorders.

The chronic pain patient is sometimes referred to a psychiatrist under the following circumstances:

1. No tissue pathology demonstrated or failure to find a physical cause for the pain;
2. Poor response to existing treatments;
3. Treatment team frustration; psychological factors or secondary gains are thought to perpetuate the pain;
4. Coexisting diagnosis; migraine, for example, is known to be associated with psychiatric disorders (most commonly depression and anxiety) and attempted suicide.

When pain persists beyond apparent healing, it is important to consider the following scenarios: undetected physical problems; physical dependence and pain secondary to withdrawal of medicines; medicines used for relief of anxiety or depression; and addiction to pain medicines, hypnotics and alcohol. The psychiatrist can contribute in several ways. First, the psychiatrist can be involved in the direct assessment and treatment of pain, in coordinating referrals to other pain specialists, and in all facets of the treatment plan. Second, psychiatric intervention is often sought to help address the psychological consequences and psychiatric co-morbidity. The patient's frustration caused by ongoing pain, the effects on functioning, and the impact on relationships, are all important areas that merit attention. Persistent pain confronts people with a cascade of ongoing stressors that compromise many areas of their lives.

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### ONE SIZE DOES NOT FIT ALL

There have been many false dawns in the development of pain medicines and other treatment modalities. Because neurological changes associated with phantom limb pains are partly mediated by excitatory amino acids at N-methyl-D-aspartate (NMDA) receptor sites, researchers question whether NMDA-receptor antagonists may be effective for treating this type of pain. Recent treatment trials, however, have failed to show a significant clinical effect. In a similar vein, there appears to be no cure on the horizon for many other types of chronic pain conditions.

At this point in time, individualised therapy is indicated in the treatment of chronic pain. There is no one-size-fits-all remedy for pain therapy

and prevention, even for a single type of pain. The treatments for chronic pain are categorised as pharmacological, anaesthesiological, surgical, neurostimulatory, psychiatric, psychological and complementary.

Pain management first emerged as a subspecialty of anaesthesiology. Over the years, it has evolved into an interdisciplinary pain medicine. Currently, management and treatment of pain require the joint efforts of multiple clinical specialties (medical, surgical, physical, neurologic, psychiatric), each of which can contribute to the effective treatment of pain. With so many specialists involved in caring for persons with chronic pain, it is sometimes challenging to have good coordination of care. It would be helpful for the Pain Clinic to identify a staff member to assist in coordinating treatment plans.

The ultimate challenge in pain management is to convince people to change their mindsets, that is, to help people cope with the presence of pain and explore how life can carry on when their motivation to seek treatment is to find a cure, a desire for the pain to go away totally. Group-based pain-management programmes using cognitive-behavioural therapy has been shown to improve physical function, change unhelpful thinking and improve patients' understanding of their situation<sup>3</sup>. Many patients with chronic daily headache suffer from mood disorders that never entirely disappear. Individuals can learn to recognise and change their own reactions to stress through a variety of stress-management techniques and behavioural interventions (for example, maintaining a regular schedule, getting adequate sleep and exercise, trigger avoidance, relaxation training, and so on).

When talking with the chronic pain patient, what I find helpful is the analogy on “mind-body relationships”: “the mind and body are married; when one suffers, the other sympathises”. It is time for the medical profession to abandon Descartes, the mental-physical and mind-body dichotomy. ■

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