Should Chronic Pain be considered a Disease?

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The conventional assumption is that pain is a symptom of underlying disease: treat the disease and the pain should resolve. Yet the experience of patients often challenges this assumption, as chronic pain outlives its precipitants, frequently worsens for no understood reason, and alarmingly often takes on a course of its own[1]. Should chronic pain now be thought of as a disease in its own right?

Acute pain appears to be a function of a healthy nervous system, a physiological response to tissue that is damaged or to body processes gone awry. But chronic pain is increasingly associated with characteristics that resemble a disease. For example, Thernstrom (2001), in the New York Times, described pathology of the nervous system reflected in abnormal changes in the brain and spinal cord[1].

While the current understanding—that, because pain is a symptom of underlying disease, it should resolve once the disease is treated—certainly describes the course of events with acute pain, the experience of patients and some healthcare providers often challenges the validity of this understanding.

Chronic pain is resistant to medical treatments. Clipper (2006) observed that it is exacerbated by environmental and psychological factors[2]. It may come to dominate the patient's life. Swierzewski (2007) reported that, without relief, or the hope of relief, patients may lose the ability to eat, sleep, work, and function normally[3].

Chronic pain is known as the silent epidemic because of the frequent absence of objective physical findings, which make it invisible in that, as Finch (2008) commented, its debilitating effects often go unnoticed[4]. The Chronic Pain Policy Coalition (2006)[5] found that it may remain undiagnosed and therefore untreated in the absence of a definitive diagnosis of a disease strongly associated with pain[4].

Chronic pain reportedly affects over 8.5 million people in the UK[6] or 1 in 7 people[5].

Pain

The International Association for the Study of Pain defines pain *as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage*[2]. Chronic pain is differentiated from acute pain by time, persistence and clinical characteristics.

Acute and chronic pain differ greatly. Chronic pain[2,7]

1. persists or recurs for more than three months, or
2. persists for more than one month after healing has occurred from injuries, or
3. results from chronic disorders, or
4. exhibits no apparent cause (that is, primary pain disorder)

Chronic pain is classified by pathophysiology (the functional changes associated with or resulting from injury or injury) as nociceptive (due to ongoing tissue injury) or neuropathic (resulting from damage to the brain, the spinal cord or peripheral nerves), with mixed or undetermined causes as well.

New terminology is proposed by the American Academy of Pain Medicine, which uses *eudynia* for nociceptive pain and *maldynia* for neuropathic pain[8]. On this terminology, unresolved, long-lasting disorders that produce ongoing nociceptive stimuli may account for chronic pain. Also on the terminology, even mild injury may lead to long-lasting sensitization of the nervous system that can produce pain in the absence of nociceptive stimuli. With sensitization, discomfort that might otherwise be perceived as mild is instead perceived as significant pain.

Psychological factors commonly play a role in sustaining chronic pain or amplifying persistent pain. In these circumstances, chronic pain appears out of proportion to identifiable findings. In some instances,

the original precipitant of pain is obvious; in others, such as chronic headache, the precipitant is so remote as to be mysterious[7].

Patients who must continually prove that they are ill to obtain medical care, insurance coverage, or work relief may unconsciously reinforce their pain perceptions, especially when litigation is involved. The unconscious reinforcement differs from malingering, which is conscious exaggeration of symptoms for gain, such as time off, or disability payments. Factors in the patient's environment, such as family dynamics, may reinforce behaviours that perpetuate chronic pain[7].

Because of the absence of objective evidence or physical findings to explain the pain, patients with chronic pain may perceive themselves treated as if their history is exaggerated or even imaginary. They may be told that there is no reason for the chronic pain, which therefore "cannot be that bad". For such reasons, many chronic pain sufferers go from one doctor to the next searching for explanations, which can lead to unnecessary investigations and unsuccessful treatments[9].

Woolf (2001) compares chronic pain to a broken alarm: a wire was cut and the entire system malfunctions. He holds that this is true pathology in that the repair fails to occur because the system itself is damaged. The cut wire represents neuropathic pain, pathology of the nervous system. He argues that, because the body's pain system is plastic, it can be moulded by pain to cause even more pain. He explains that pain nerves recruit others in what he terms *chronic-pain windup* by which the central nervous system undergoes *central sensitization*[1].

Disease status and problematic diagnosis

Emerging explanations do no automatically induce rapid professional acceptance. While support groups and associations exist for chronic pain, the term *chronic pain syndrome* as used by many healthcare professionals implies either that they attribute the pain to psychological causes or that they have failed to establish a physical cause. Chronic pain syndrome is thus a problematic diagnosis.

Two of the most influential systems for classifying disease are The Diagnostic and Statistical Manual of Mental Disorders (DSM)[10] of the American Psychiatric Association and WHO's International Classification of Diseases (ICD)[11]. ICD classifies disease by causal agent, systems of the body affected, pattern and type of symptom, and whether or not the disease is related to a medical procedure. Because chronic pain is by definition pain that has persisted beyond the time of healing, classification based on causal agency is problematic, though it does recognize persistent somatoform pain disorder characterized by physical symptoms that mimic disease or injury for which there is no identifiable physical cause.

DSM contains the classifications *pain disorder* and *psychogenic pain disorder.* The latter is a diagnosis of exclusion in that there are no specific defining diagnostic signs or symptoms. Instead, the diagnostic criteria for include severe and prolonged pain in excess of what would be expected from physical findings, and the pain's enabling the individual to obtain some adjustment to his or her physical or social environment or to avoid some activity which is noxious to the individual. DSM requires that a diagnosis of psychogenic pain disorder is differentiated from other causes of pain, such as histrionic personality traits, other psychiatric conditions such as somatisation disorder, and malingering.

Nordin et al (2006)[12] examined the DSM-IV and ICD-10 classification systems and found no support in either for a "pure" pain syndrome. Instead, they observed a picture of a mixed psychosomatic condition. Their conclusion suggests a classification reflective of a broad somatoform disorder, with subgroups based on personality characteristics, with account taken of a *stress-coping* model and of interpersonal attachment behaviour.

Why is the diagnosis controversial?

Chronic pain is a leading cause of disability. Functional disability is disproportionate to what is expected on the basis of the objective physical findings/ impairment and limitations. Patients often have Waddell signs (i.e. indicating a non-organic component to pain)[13],reflective of somatoform disorder. Social and

workplace demands become difficult challenges, and unemployment is often an issue. It is the second most common cause of lost work time, accounting for 206m lost workdays in the UK 1999-2000[14]. According to Foster's report (2003) chronic pain warrants recognition as an entity in its own right[14].

Chronic pain is so much of a personal experience that it cannot readily be measured and validated. There is no specific medical test to measure it. Inevitably, challenging clinical and disability management questions arise when the occupational roles of patients are threatened or lost[15]. Is the claimant's inability to work based on a legitimate medical problem? Can disability be defined solely by subjective complaints? Is chronic pain syndrome a legitimate diagnosis and a compensable disability? Should return to work be the primary and valid measure of success in the treatment of chronic pain syndrome?

The challenge of evaluating a claimant's disability is typically exacerbated by the failure of documentation or assessor reports to establish whether the chronic pain is a medical or a psychiatric condition. Without medical evidence of objective worsening of a claimant's physical condition over time, there exist only subjective complaints. Without impairments and limitations, disabilities cannot be validated. For occupational injury claims a claimant's medical testimony must prove on a more-probable-than-not basis that the augmentation of pain is causally related to the workplace injury.

To further complicate matters is the controversy on what constitutes under-treatment and over-treatment chronic of pain. Iatrogenic factors include causing or perpetuating opioid or other drug dependency.

Research findings and opportunities for practice and policy

If pain has reached the point at which it is no longer the signalling of a healthy nervous system that there exists disease or underlying injury, then the very chronicity of the pain becomes the dominant problem which needs to be treated as the primary pathology[9]. Research increasingly suggests important physical changes that cause and perpetuate chronic pain, changes which cannot be detected by normal clinical investigations.

Chivalo's study (2008) which indicates that chronic pain has widespread impact on overall brain function, may offer an explanation for common cognitive and behavioural co-morbidities. Using functional magnetic resonance imaging, the investigators found that individuals with chronic back pain had alterations in the functional connectivity of their cortical regions, areas of the brain unrelated to pain. Chivalo observed that this finding provides the first clue that conditions such as depression, anxiety, sleep disturbances, and decision-making difficulties, which affect the quality of life of chronic pain patients as much as the pain itself, may be directly related to altered brain function as a result of chronic pain[16].

Research into the genetics of pain and brain imaging is producing evidence that points to severe persistent pain as a disease entity[17]. According to Woolf (2001), chronic pain is not just a sensory or affective or cognitive state, but is also a disease afflicting millions of people[1] . Pain is a disease when the organ involved with perpetuating the pain sensation becomes damaged and fails to shut down, leaving the patient with chronic pain.

Technology exists to identify which genes become active when neurons respond to pain. Of the over 1,500 have been identified to date but not the key gene, the master switch that drives the others.

The nervous system may undergo considerable reorganization following injury. The spinal cord is "rewired" following trauma as nerve cell axons make new contacts, a process called sprouting. This process disrupts the cells' supply of trophic factors (helper protein molecules that allow and nourish a neuron to develop and maintain connections) Researchers can now explore the changes that occur during the processing of pain. With the technique *polymerase chain reaction* (PCR), they can examine genes induced after injury and persistent pain. The proteins synthesized by these genes may be targets for new therapies aimed at preventing the long-term changes in the nervous system. Genes may also affect a number of neurotransmitters involved in the control of pain. Using imaging technologies, researchers can now visualize what is happening biochemically in the spinal cord[2] .

A particular line of research focuses on certain abnormal sodium ion channels expressed only in sensory neurons that have been damaged. Identifying which among these channels is the most important one may lead to future pharmaceutical agents targeted for these channels[1].

Researchers believe that advances in neuroscience will lead to more effective treatments. Clinical investigators have found that chronic pain patients often have lower-than-normal levels of endorphins in their spinal fluid. Investigations of acupuncture have shown that there are higher levels of endorphins in cerebrospinal fluid following acupuncture[2].

In the UK, 96 per cent of General Practitioners believe there is a need for improvement in treatment methods[18]. Crichton (2003), for example, believes that chronic pain is currently under-treated in primary care and that an important opportunity exists to help those suffering with chronic pain[19].

Cousins (2008) observes that too few pain medicine specialists are being trained and not enough patients with pain have access to effective treatment[17].

But progress is occurring with policy and service developments, such as PACE (Pain: Collaboration and Exchange), a UK national network supporting the development of primary care pain services, and the Chronic Pain Policy Coalition (CPPC). CPPC members work collaboratively with patients, professionals and parliamentarians to improve the prevention, treatment and management of chronic pain and its associated conditions. CPPC is actively campaigning to have pain recognized as the fifth vital sign – routinely assessed as blood pressure, temperature, pulse and respiration[4].

The concept of pain relief as a basic human right also has its champions[17].

Conclusion

Chronic pain is often a misunderstood and mismanaged problem. Chronic pain's epidemic and endemic proportions call for re-evaluation of our approach. The discipline of pain management needs strengthening through clinical practice guidelines, and better and more focused research especially into the adverse effects of existing methods of treatment. To drive the fresh approach, a unifying concept would be that chronic pain is a disease in its own right, most likely affecting the nervous system. To impel the fresh approach, an ethical concern would be that people continue to suffer needlessly because their pain is too often ignored or too rarely appropriately treated. To win attention for the fresh approach, the economic concern would be that people in chronic pain too often become unforeseen casualties and therefore unproductive costs to the system.

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