The assessment and treatment of patients with chronic pain

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Chronic pain is an illness in its own right, with its own signs, symptoms, and complications. It has biological, psychosocial, physical, and emotional dimensions and due to its complexity it is often poorly understood. In many cases treatment cannot rely purely on the medical model of analgesic drugs but must encompass the management of all the other factors resulting from the pain. This article discusses the assessment of chronic pain, and the range of treatment methods available.

Chronic pain is a common health problem that can have devastating effects on patients’ lives. It affects approximately 19 per cent of the population, with one-third of these experiencing constant pain (Pain in Europe, 2003).

A medical model is often used to treat chronic pain, in which a cure is the aim. However, while some patients’ pain responds well to analgesia, chronic intractable benign pain often has no pathological or biological cause and does not respond well to traditional treatments. This can make patients feel stigmatised and make caregivers, family, and employers believe the patients are imagining their pain (Walker et al, 1999). Specialist multidisciplinary approaches are needed if the pain experienced by these patients is to be managed effectively (Rowbotham, 2000).

**Definition of chronic pain**

Chronic pain is thought to serve no useful physiological function and does not elicit sympathetic nervous system responses. It is defined as pain persisting usually in the absence of noxious stimulation or where symptoms fail to resolve after the point where healing would normally be complete (usually three months) (Wood, 2003).

Chronic pain syndrome (CPS) is considered to be a psychosocial disorder where pain becomes the patient’s central focus. It is the end result of a variety of pathological and psychological mechanisms that may have included tissue or nerve damage (Grady et al, 2002).

There are two specific types of pain: nociceptive and neuropathic. Both of these can be chronic. Nociceptors are receptors sensitive to noxious stimuli (those that are damaging to normal tissue). They are located on A delta and C nerve fibres. Examples of nociceptive pain include:

- Osteoarthritic pain;
- Rheumatoid arthritic pain;
- Postsurgical and trauma pain.

Neuropathic pain is caused by a functional or anatomical abnormality of the peripheral or central nervous system. Damaged nerves lead to pathophysiological changes resulting in a distortion or amplification of naturally generated signals. Patients with this type of pain usually describe it as burning, with notable temperature changes in the affected region, or as shooting pains, which are often described as being ‘like lightning’. Examples of neuropathic pain include:

- Phantom limb pain;
- Neuralgia;
- Fibromyalgia;
- Peripheral neuropathy;
- Complex regional pain syndrome (previously known as reflex sympathetic dystrophy).

**Individual responses to chronic pain**

Pain is a unique experience for the patient that is governed by factors such as culture, past experience, anxiety levels, age, and gender. For example, culture consists of a set of behaviours and attitudes within a group, and these can shape beliefs and behaviours around illness. Both cultural factors and social learning influence behaviour related to pain, including verbal expression and physical behaviour. Culture not only influences pain responses but also how others become aware of an individual’s suffering, initiating a care response (Walker et al, 1995).

Pain memories are a powerful influence and have a strong impact on current pain experience. However, it is possible to modify patients’ expectations and therefore current experience of pain by giving them appropriate and accurate information (Carr, 1997).

Age can have a powerful influence on the experience and expression of pain. Babies and young children react strongly to pain in both a vocal and a physical manner, while older people may not verbalise their feelings. They have often developed effective coping strategies.

Evidence suggests there is little difference in pain experience between men and women and that past experience and pain duration are more influential than gender (Carr, 1997). It is thought that women who have given birth are better equipped to cope with pain in later life. It is also thought to be more acceptable in many cultures for women to verbalise expressions of pain than for men, for whom it may be seen as a sign of weakness.

Genetic factors are also thought to be implicated in nociceptor function and therefore in the individual pain experience. Pain receptors in nerve cells are thought to
be present in greater numbers in some people due to variations in DNA sequencing (Wood, 2000).

Another factor that can affect individuals’ experience of pain is its duration. Patients who have suffered chronic pain over a long period often have a well-established pain and illness behaviour role. This can result in them feeling that they ‘need’ their pain in order to receive attention and affection.

Assessment of chronic pain
To plan appropriate treatment, thorough assessment is required to exclude abnormal pathology, find physical signs associated with the pain, and set a baseline in order to monitor treatment. The assessment should identify the site, severity, nature and character of the pain and its psychosocial impact on the individual. Assessment of beliefs, behaviours, and motivational factors can also inform the clinician. Specific assessment tools can be helpful, such as the McGill Pain Questionnaire (Melzack, 1975) or the Brief Pain Inventory (Daut et al., 1983) (Box 1).

It is also important to assess pain behaviour by noting:
- Vocalisation (such as sounds or words used to describe the pain);
- Facial expression (such as grimacing);
- Motor activity (such as slow or difficult movements);
- Disposition (such as irritability);
- Posture or gesture (such as limping or rubbing the affected area);
- Other behaviours including medication-taking or using protective devices such as neck braces.

Depression is relatively common in people with chronic pain – an estimated 26 per cent of patients attending pain clinics have a well-defined affective illness (Grady et al., 2002). Depression should therefore be assessed along with suicide risk where appropriate (McCaffery and Pasero, 1999). The Hospital Anxiety and Depression scoring system is commonly used for this purpose (Zigmond and Snith, 1983).

Treatment
Treatment involves long-term management of the pain (Grady et al., 2002) and has five main aims:
- To reduce pain (whenever possible);
- To restore/improve function;
- To develop self-help and maintenance skills;
- To improve depression/anxiety;
- To improve relationships with family/friends/health care professionals.

Medication
Non-steroidal anti-inflammatory drugs (NSAIDs) are the most frequently used non-prescription pain medicines, and are taken regularly by 56 per cent of people with chronic pain (Pain in Europe, 2003). NSAIDs interrupt the inflammatory response by reducing the levels of chemical mediators inhibiting the enzyme cyclo-oxygenase to prevent prostaglandin synthesis (Stalker, 1999). Koes et al. (1997) undertook a systematic review of 26 randomised controlled trials (RCTs) examining prescription of NSAIDs for back pain. Five of the 10 trials that compared NSAIDs with placebo reported that NSAIDs showed significant benefit. Overall, there was no convincing evidence to suggest that one particular NSAID was most effective, or that NSAIDs were better than other treatments they were compared with. Towheed et al. (1999) and Watson et al. (1999) carried out systematic reviews of 3,014 patients from 29 trials of NSAIDs used in the treatment of osteoarthritis. The main outcome was that NSAIDs provided at least a 50 per cent improvement in pain relief.

Forty-two per cent of patients with chronic pain take paracetamol regularly (Pain in Europe, 2003). Although its exact mode of action is unknown, in combination with other analgesic drugs it can significantly reduce pain.

Opioids mimic the action of enkephalins and endorphins, natural substances found in the central nervous system. They bind with opioid receptors to modify nociceptive pathways and thus reduce the pain sensation.

Opioids are the most powerful analgesics known, and are commonly used to treat postoperative, traumatic, and cancer pain. There are, however, concerns about their use for chronic non-malignant pain – mainly that long-term use can lead to drug tolerance, dependence, and addiction. Surveys by the Pain Society and the American Pain Society suggest that opioids are underused and the risk of addiction is overestimated (Mann, 2003).

Opioids can be used successfully in patients with a long life expectancy but their use must be approached in a logical and evidence-based fashion and they should form just part of the strategy to improve pain control.

While nociceptive pain responds to NSAIDs, paracetamol and opioids, neuropathic pain is more difficult to manage. It is resistant to common therapeutic agents but responds to adjuvant analgesics, which have a primary function other than pain management. They include:

- Antidepressants such as amitriptyline, which inhibits the uptake of noradrenaline and 5-HT in the spinal cord, enhancing the inhibitory effects of the descending spinal pathways. The use of antidepressants for this purpose should not be confused with their use for depression itself (Rowbotham, 2000);
- Anticonvulsants such as gabapentin or carbamazepine affect the function of the neuronal sodium ion channels and stabilise neuronal membranes (Rowbotham, 2000). A systematic review of 19 RCTs comparing the use of antidepressants and anticonvulsants in treating neuropathy and postherpetic neuralgia found that both achieved at least 50 per cent pain relief (Collins et al., 2000);
- Clonidine inhibits the release of noradrenaline from the dorsal horn and brain. It can be effective in treating sympathetically maintained pain (Grady et al., 2002);
- Anti-arrhythmic drugs, such as intravenous lignocaine or mexiletine, block sodium channels and can act as effective analgesic agents. Neuropathic pain can be caused by repetitive firing in afferent fibres that depends on influx of sodium through sodium channels;
- Botulinum toxin selectively acts on peripheral cholinergic nerve endings reducing neuromuscular transmission and can be effective for conditions where muscle spasm

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Invasive treatments

Numerous invasive techniques are used to treat chronic pain, including facet joint injections. Facet joints link the vertebrae together and as the spine ages, the intervertebral discs become drier and thinner. With these degenerative changes, inflammation of the facet joints can occur, causing pain (Ali, 2003). Injection with local anaesthetic and corticosteroids may provide temporary pain relief.

Box 1. Brief Pain Inventory (Adapted from Daut et al, 1983)

1. Throughout our lives, most of us have had pain from time to time (such as minor headache, sprains or toothache) Have you had pain other than these everyday kinds of pain today? Yes/No
2. On the diagram shade the areas where you feel the pain. Put an X on the area that hurts the most.
3. Rate your pain by circling the number that best describes your pain at its worst in the last 24 hours.

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>no pain</td>
</tr>
<tr>
<td>1</td>
<td>slight pain</td>
</tr>
<tr>
<td>2</td>
<td>mild pain</td>
</tr>
<tr>
<td>3</td>
<td>moderate pain</td>
</tr>
<tr>
<td>4</td>
<td>severe pain</td>
</tr>
<tr>
<td>5</td>
<td>very severe pain</td>
</tr>
<tr>
<td>6</td>
<td>unbearable pain</td>
</tr>
<tr>
<td>7</td>
<td>pain as bad as you can imagine</td>
</tr>
<tr>
<td>8</td>
<td>pain as bad as you can imagine</td>
</tr>
<tr>
<td>9</td>
<td>pain as bad as you can imagine</td>
</tr>
<tr>
<td>10</td>
<td>pain as bad as you can imagine</td>
</tr>
</tbody>
</table>

4. Rate your pain by circling the number that best describes your pain right now.

5. Rate your pain by circling the number that best describes your pain on average.

6. Rate your pain by circling the number that best describes your pain at its least in the last 24 hours.

7. What treatments or medication are you receiving for your pain?

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Ketamine, an N-methyl-D-aspartate (NMDA) receptor antagonist, affects the central sensitisation mechanism and thus sensitivity to pain.

**Intravenous analgesia**

Epidural injection, often used to treat back pain and whiplash injuries, involves the administration of local anaesthetic into the spine at the cervical, thoracic, lumbar or caudal level to interrupt the passage of sensory, motor, and autonomic impulses. Adding a long-acting corticosteroid will increase the duration of action. A review of clinical trials by McQuay and Moore (1998) demonstrated that epidural corticosteroids give more than 75 per cent pain relief in the short term (1–60 days) and 50 per cent in the long term (12 weeks to one year). Trigger point injections involve inserting local anaesthetic into small, circumscribed hypersensitive areas located within a tight band of muscle. Trigger points are
categorised by mechanical stresses from muscle overuse, misuse or disuse. They refer pain in a distinctive pattern specific to the muscle, known as a ‘referred pain zone’ (McCaffery and Pasero, 1999). Myofacial pain syndrome is a local or regional condition caused by the presence of one or more active trigger points.

In lumbar sympathectomy, local anaesthetic is injected into the plexus. If this is successful, a neurolytic agent can achieve more permanent relief. It is used for pain caused by overactivity of the sympathetic nervous system.

Stellate ganglion block is an injection of local anaesthetic into the stellate ganglion in the neck. It can be given to interrupt the sympathetic nerve supply to the head, neck and arms and is used for circulatory insufficiency (Ali, 2003).

Regional sympathetic block is used to relieve reflex sympathetic dystrophy or ischaemic pain. Guenethidine is often used, and is injected into a vein in the lower limb below a tourniquet, where it perfuses into the tissues to produce a sympathetic blockade (Ali, 2003).

Nerve blocks are achieved by administering a one-off injection, or by means of a continuous infusion. The targeted nerve is identified and local anaesthetic is injected into the nerve sheath in a bid to relieve pain (Fig 1).

Nerve tissue can be destroyed by freezing (cryotherapy) or heating (radiotherapy). Freezing is reversible and nerve function will return. It is often used for painful neuromas, scars, and nerve entrapments. Heat therapy results in more permanent destruction, and is usually used for chronic low back pain (Ali, 2003).

Intrathecal drug delivery systems involve inserting an catheter connected to an injectable reservoir port via a fine-bore tunnelled catheter. This can provide analgesia while allowing the patient to be mobile.

Spinal cord stimulation is an electrical device whereby percutaneously electrodes are passed down a Tuohy needle into the epidural space. The electrodes can then be connected by a subcutaneously tunnelled lead to a receiver or pulse generator. The major disadvantage with this form of pain relief is that it is difficult to keep the electrodes in position, which can result in unpredictable increases or decreases in stimulation (Grady et al, 2002).

Intrathecal catheters and spinal cord stimulators require considerable expertise and need to be inserted and maintained by highly specialist centres.

Other measures

Medication is not the only way to manage chronic pain, and a recent survey (Pain in Europe, 2003) reports that two-thirds of patients state that their medication is inadequate at times. Where medication fails, other measures are required to improve quality of life. Many pain clinics are moving towards non-invasive techniques (Ali, 2003).

Physiotherapy can be helpful as pain stops people from using affected part of the body. This lack of movement can lead muscle wasting and joint stiffness, which in turn can exacerbate the pain. Physiotherapy relies on introducing realistic goals, controlled exercise, and gentle mobility, which can help the patient to regain normal movement and function. It can also help improve strength, endurance, and flexibility – all of which reduce pain levels (Hall, 2003).

Transcutaneous electrical nerve stimulation (TENS) uses a small battery-powered device to deliver rapid pulses of mild electrical impulses to electrodes applied to...
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the skin. These impulses can be delivered in a burst mode, which stimulates the production of endogenous opioids, or continuously, which stimulates the A beta nerve fibres thereby closing in the pain gate of the dorsal horn. TENS provides immediate but short-lived relief.

In a systematic review of 19 trials where it was used as to treat chronic pain there was a positive analgesic outcome in favour of TENS in 10 studies (Carroll et al, 2002). However, the quality of the trials was generally poor because blinding was deemed to be impossible.

Acupuncture was developed centuries ago in China and is now used throughout the world. It involves inserting fine needles in defined areas situated along ‘meridians’ in an attempt to attain analgesia.

The principles are allied to those of the gate-control theory; it also stimulates the production of endorphins promoting an analgesic effect (Rowbotham, 2000). The Association of Anaesthetists of Great Britain and Ireland recommends the use of acupuncture in chronic pain management (Ezzo et al, 2000). However, there is limited scientific evidence for its efficacy, partly because it is not possible to perform a placebo-controlled study.

Massage has a similar effect to TENS and acupuncture, stimulating the release of endogenous opioids and closing the pain gate in the dorsal horn. It can also have a relaxing effect.

Relaxation can not only close the pain gate in the dorsal horn of the spinal column but also decrease central arousal and muscle tension, improving symptoms and self-control. Diversion therapy reduces pain perception by teaching patients to concentrate on other stimuli.

Pain management programmes (PMP) are generally used with patients who do not respond to medical treatment. They offer a psychological approach to pain management in an effort to improve well-being and change the patient’s perception of pain (Collins, 2003).

Psychological techniques aim to inhibit the pain gate using higher centres in the brain. Tension, stress, negative thoughts, and immobility all open the pain gate, while relaxation, distraction, positive thoughts, and exercise can close it and therefore alter pain perception. Therefore if thoughts and beliefs can be changed, so can response to pain (Rowbotham, 2000).

The main elements of a PMP are:

- Information – an explanation of the nature of chronic pain can help to overcome fears that it is a sign of harm that requires rest, while explanations of the role of analgesic drugs and their side-effects are useful;
- Coping skills – strategies for dealing with an exacerbation of pain can be taught, such as distraction techniques or relaxation;
- Mood modification – patients can be encouraged to challenge negative thoughts, which are known to exacerbate pain;
- Activity modification – inappropriate expectation of ability and fear of activity need to be addressed by setting goals for physical activity and the pace at which they should be achieved;
- Behaviour modification – pain behaviours that lead to dependence on others need to be addressed as they can harm normal social functions. They can be overcome by teaching family members to encourage appropriate behaviour and pay little attention to pain behaviour.

A systematic review of 19 RCTs and six non-randomised trials that included 1,672 patients found that cognitive behavioural therapy was effective in reducing pain experience, and improving positive behaviour and coping in individuals with chronic pain (Morley et al, 1999).

The nursing role

Nurses care for patients in pain in both the primary and secondary care settings, and are ideally placed to explore the physiological, psychosocial and emotional experiences of each patient’s pain.

To do this they need to develop therapeutic relationships with patients and to gain knowledge and experience of chronic pain and its management. The Pain Society (2002) recommends they follow the Dreyfus model, gradually moving through five levels of skill acquisition from the newly qualified nurse at novice level to expert practitioner, which would be expected of a clinical nurse specialist in pain management. The main elements of the novice role are:

- Undertaking basic pain assessment through the use of a recognised tool;
- Administering analgesia as prescribed;
- Ensuring access to other forms of pain management that have been arranged;
- Communicating effectively with patients;
- Communicating effectively with the multidisciplinary pain management team.

The main elements of the role of the clinical nurse specialist working within the speciality of pain are:

- Undertaking assessment including psychosocial needs;
- Running nurse-led medication follow-up clinics, and reviewing efficacy and side-effects of drug therapy;
- Providing nurse-led TENS clinics;
- Providing nurse-led acupuncture clinics;
- Working with patients in areas such as pain education, reducing inappropriate medication usage, relaxation techniques and sleep strategies, pacing, and reinforcing wellness behaviour and normal functioning;
- Providing education regarding chronic pain management to the multidisciplinary health care team.

However, nurses cannot work in isolation. They are an important part of the multidisciplinary team that can include physicians, psychologists, physiotherapists, occupational therapists, and pharmacists.

Conclusion

Chronic pain is a common complex problem that can have a profoundly damaging effect. This challenging problem can often be managed effectively using a multidisciplinary approach. A thorough and appropriate assessment is an integral part of the overall strategy.

Providing nurses understand the complex factors influencing patients’ experiences of pain, they are ideally placed to play a leading role in managing chronic pain.