Pain assessment and management in patients with chronic wounds


Summary

Pain is a frequent symptom in patients with chronic wounds. It contributes to significant levels of suffering and distress, as well as reduced quality of life. This article considers interventions and procedures for managing pain in patients with chronic wounds.

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THE PAIN experienced by patients with chronic wounds is variable and multicausal in nature (Hollinworth 2005). Acute wound pain can be described as non-cyclic if it occurs as a single or infrequent traumatic event, or cyclic if it occurs regularly. An example of acute wound pain includes that associated with wound debridement and tissue damage at repeated dressing changes (Krasner 1995). Wound pain can be persistent (chronic) and not associated with tissue trauma, for example, as a result of ongoing wound infection or chronic inflammation.

Chronic wound pain can be nociceptive or neuropathic or both. Nociceptive pain can be defined as a physiological response that occurs when nociceptors (sensory receptors) react to painful stimuli, for example, mechanical trauma and inflammation resulting from tissue injury (Johnson 2006). Nociception consists of four processes: transduction, transmission, modulation and perception. Both cyclic and non-cyclic pain are typically nociceptive in nature, with pain diminishing and disappearing on termination of trauma. Persistent pain may be nociceptive as a result of continual stimulation of nociceptors in areas of ongoing tissue damage, and can continue long after the tissue damage that initially triggered its onset has resolved (Ashburn and Staats 1999). It may also be neuropathic.

Neuropathic pain has been defined as pain resulting from disease, damage to the peripheral or central nervous systems, and/or dysfunction of the nervous system (Merskey and Bogduk 1994, Treede et al 2007). The pathophysiology of neuropathic pain is complex; five differing mechanisms have been described (Koltzenburg and Scadding 2001).

The mechanisms of neuropathic pain are substantially different from those of nociceptive pain. Persistent pain can be labelled nociceptive if it is inferred that the pain is directly related to the degree of tissue injury. Although neuropathic changes (such as those underlying tissue sensitisation) are involved, nociceptive pain is presumed to occur as a result of the normal activation of the nociceptive system by noxious stimuli.

Pain assessment

Holistic patient assessment integrates patient cognition into wound management, including inconvenience, social disruption and the impact of pain and discomfort on everyday life. Persistent pain profoundly affects physical and mental functioning, including mood, personality, social relationships and levels of fatigue (Ashburn and Staats 1999, Chapman and Gavrin 1999). Stress, together with environmental and affective factors, may also be superimposed on pain arising from initially damaged and traumatised tissue, contributing to its persistence and intensity (Loeser and Melzack 1999, Katz and Rothenberg 2005).

Effective engagement of healthcare professionals is paramount in gaining an understanding of a patient’s pain experience, with many finding it difficult to describe. Providing patients with descriptive words to choose from and the use of an appropriate pain measuring tool can be beneficial. No single pain
measuring scale is suitable for all patients; choice is dependent on an individual’s needs. However, once chosen, the same scale should be used for subsequent assessments. Changes in pain levels may indicate a need to reassess choice and timing of analgesics, and/or other interventions used in pain management (World Union of Wound Healing Societies [WUWHS] 2004). All assessments should be well documented to ensure effective communication and to maintain continuity of care for the patient. Key elements of pain assessment include: pain type: nociceptive, neuropathic or mixed; duration; severity; impact of pain on the patient; relief rating: assessment of post-analgesia scores; and identification of treatment-related adverse effects to reduce their impact (Doughty 2004, Young 2007).

The value of using a valid pain assessment tool appears unrecognised by many healthcare professionals, or is considered a low priority, with greater reliance being placed on body language and non-verbal cues (Moffatt et al 2002).

Treatment

In many cases eradication of the underlying cause of the wound and concomitant pain may prove difficult, if not impossible, for example, venous insufficiency in leg ulcer patients. A regimen for relieving pain and associated stress should therefore be developed on an individual patient basis. Analgesics and/or psychological and other non-drug therapies can be considered continually or intermittently for relieving persistent or procedural pain, respectively. It is important clinicians recognise that neuropathic pain requires specific pharmacological management and referral for assessment by a specialist.

Psychological and other non-drug therapies

Psychological factors are important modifiers of pain perception. Psychological therapies, complementing other pain-relieving measures, focus on emotional, cognitive and behavioural aspects of illness, and are aimed at reducing anxiety and stress, and improving personal coping skills (Skevington 1996). Varied psychological approaches can be considered including psychophysiological, cognitive behavioural and psychodynamic therapies (Adams et al 2006, Richardson et al 2006). Cognitive behavioural therapy (CBT) is well-recognised and widely used in pain management programmes (Molton et al 2007). CBT attempts to change negative thoughts and dysfunctional attitudes by fostering healthier adaptive thoughts, emotions and actions in patients. Patients with chronic pain have found significant benefits in the use of CBT, including improved quality of life (Morley et al 1999, Molton et al 2007).

Relaxation techniques have been suggested as an option for managing wound pain (Krasner 1995). However, there is no good evidence of their effectiveness (Carroll and Seers 1998). In the treatment of body surface burns, hypnosis has been found to be more effective than stress-reducing strategies at diminishing pain and anxiety both before and during dressing changes. When used as an adjunct to analgesics and anxiolytics, hypnosis can decrease pain and improve patient comfort (Frenay et al 2001).

Transcutaneous electrical nerve stimulation is widely used for the treatment of many types of chronic pain. Carroll et al (2000) found insufficient evidence to draw any conclusions about its analgesic effectiveness in the treatment of chronic pain in adults. There appears to be no robust clinical trial evidence to support the use of complementary therapies, including acupuncture, biofeedback, energy healing, guided imagery, physical therapy, music and prayer, in the holistic management of chronic wound pain (Krasner 1995).

Analgesics and anti-inflammatory drugs

Analgesics are a frequently used intervention which can be given systemically on a continual basis for persistent wound pain. The use of non-steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, can also be considered with or without other analgesics because of the inflammatory nature of many chronic wounds (Popescu and Salcido 2004). Systemic or topical analgesics, or local anaesthetics, can be considered for reducing procedural pain. If systemic drugs are used for treating procedural pain, sufficient doses and time need to be allowed for them to take effect.

Experience from treatment of patients with chronic pain arising from other diseases can be used to guide treatment of persistent wound pain. The three-step analgesic ladder developed by the World Health Organization (1996) for management of cancer pain and chronic pain is an effective regimen (WUWHS 2004).

Analgesic drugs need to be given regularly to control chronic pain, in accordance with their licensed doses and monitored accordingly. Detailed product summaries can be accessed at www.medicines.org.uk. Opioids can be administered, in conjunction with a pain specialist, to provide the necessary level and duration of pain relief in alleviating nociceptive and neuropathic pain (Furlan et al 2006). Neuropathic pain is often difficult to relieve, because of its severity and general resistance to
simple analgesics. Although opioids and tramadol may help, alternative non-analgesic treatments can be effective. These include the novel analgesics, for example, gabapentin and pregabalin which reduce movement-evoked pain; tricyclic antidepressants, for example, amitriptyline; mixed serotonin-noradrenaline reuptake inhibitors, for example, venlafaxine; and anti-convulsants for pain associated with nerve damage (Gilron 2007, Gilron and Coderre 2007).

Topical opioids, acting on peripheral nerves, offer a means to relieve localised chronic wound pain and to minimise the risk of systemic side effects (Ashfield 2005). The successful use of morphine or diamorphine topical gels has been reported for treating painful wounds (Ashfield 2005).

Topical anaesthesia eliminates the need for injection of anaesthetics and may be suitable for use before painful intermittent procedures. The use of EMLA® cream (a mixture of lidocaine and prilocaine) during debridement of venous leg ulcers provides effective pain relief (Briggs et al 2003). A topical lidocaine and adrenaline (epinephrine) mixture was compared with a 2% lidocaine infusion (control) and found to be more effective in the management of a variety of wounds (Gaufberg et al 2007).

For extremely painful procedures, such as the debridement of deep ulcers, it may be necessary to consider general anaesthesia, local neural blockade, spinal analgesia, or a mixture of nitrous oxide and oxygen.

The use of proprietary dressings containing analgesics for pain reduction has been described. A foam dressing containing ibuprofen has been shown to reduce pain intensity scores, although they increased one week after cessation of treatment (Sibbald et al 2007). Although convenient, the use of a proprietary ibuprofen-containing dressing has limitations, excluding dose modification of the NSAID, or the use of other and possibly more appropriate dressing types. The ibuprofen dressing, as with other topical pain-relieving strategies, requires more extensive studies to identify its potential role in wound pain management (Jorgensen et al 2006).

**Wound care procedures**

Dressing removal and wound cleansing are the most painful wound care interventions (Hollinworth and Collier 2000, Moffatt et al 2002). Communication with patients about pain expectation levels, and having strategies to minimise their pain, will reduce fear and anxiety (Briggs and Torra i Bou 2002). A consensus document has indicated that preparation and planning of dressing change procedures are key to effective pain management (WUWHS 2004). The consensus document offers the following advice:

- Consider preventive analgesia.
- Choose an appropriate, non-stressful environment, position the patient to minimise discomfort and avoid unnecessary contact or exposure.
- Explain to the patient in simple terms the proposed treatment procedures.
- Assess the need for skilled or unskilled assistance, such as help with handholding.
- Avoid any unnecessary stimulus to the wound such as prolonged exposure while waiting for specialist advice, and handle wounds gently to avoid tactile pain.
- Be proactive with the patient – encourage real-time verbal feedback and incorporate the use of pain assessment tools.

Use of an adhesive remover spray or wipe reduces these factors significantly and is being used increasingly in wound management (Rudoni 2008). Most pain and trauma occurring during dressing changes can be alleviated by the use of appropriate dressings that provide moist wound healing environments while omitting aggressive adhesives. Non-adherent, atraumatic primary contact layers left in situ at dressing changes require removal of the secondary absorbent layer only, offering a useful means of reducing wound trauma. Atraumatic dressings have also been demonstrated to be cost effective in a variety of acute wounds (Rippon et al 2008).

Pain to the wound and peri-wound skin during dressing changes can also occur as a result of wound irrigation and application of cleansing solutions (Conway and Whetttam 2002). Use of irritant or allergic materials should also be avoided where possible. Although use of sterile 0.9% sodium chloride is an appropriate cleansing solution, one review found that wound cleansing with sterile water was as effective (Fernandez and Griffiths 2007). The use of other cleansing solutions or indeed discontinuation of cleansing demonstrated no difference in infection or healing rates. However, water quality needs to be considered when used for wound cleansing. The temperature of the solution should be warm for patient comfort, but also to avoid arresting the healing process which can occur for some hours post-dressing change (Betts 2003).

**Choice of dressings**

Careful dressing selection alleviates and avoids much of the pain and trauma of wound dressing changes. The following have been identified (Moffatt et al 2002):
Pain-free removal is considered the most highly desirable characteristic of a dressing.

Dried-out dressings and adherent products enhance pain and trauma at dressing changes.

The most common strategies for managing pain were to soak old dressings, select non-traumatic dressings and choose dressings that offered pain-free removal.

Gauze is highly likely to cause pain and trauma. Hydrogels, hydrofibres, alginates and soft silicones are less traumatic.

Use of atraumatic dressings is considered to be the most important strategy to avoid wound damage and patient stress.

Clinical findings reflect continued use of gauze as a wound dressing; with adherent wound dressing removal destroying newly formed fragile capillary loops of granulation tissue (Hollinworth and Collier 2000). Although use of gauze is a particular problem, patients continue to experience pain and trauma with some modern wound dressings, which adhere to the wound or dry out. Of necessity, choice of secondary dressing requires care, as this could have an effect on moisture level maintenance at the wound bed, and overall performance of the primary dressing. Patients can have adverse irritant or allergic reactions to wound dressings or auxiliary wound products. Identification of the agent causing the irritation and/or sensitisation reaction is desirable, and wound care products should be chosen to avoid exposure to the causative agents (Conway and Whettam 2002). Compromised skin barrier function is observed in skin that is subject to excoriation and stripping, as a result of repeated application and removal of an adhesive product, with increasing likelihood of adverse skin reactions. Dressings vary considerably in their skin-stripping potential and the level of pain or discomfort experienced on removal. Standard practice should include:

- Selection of dressing(s) on the basis of peri-ulcer skin condition.
- Avoidance of tenacious adhesives when wear time is likely to be short.
- Use of atraumatic dressings to reduce wound trauma and pain on dressing change.
- Application of skin barrier products to reduce pain were to soak old dressings, select non-traumatic dressings and choose dressings that offered pain-free removal.

It is important dressings are chosen that promote a moist wound healing environment, prevent desiccation and reduce friction at the wound bed.

References


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surface, thus minimising pain and trauma on removal (WUWHS 2004). Choice of a dressing that can stay in place for longer to avoid frequent removal may also be appropriate (Briggs and Torra i Bou 2002). Dressings should be changed before they become saturated, leak and allow the spread of potentially ‘corrosive’ chronic wound exudate on to the peri-wound skin. Appropriate skin barrier products minimise the likelihood of this, with adjustment of dressing wear time complying with the patient’s needs. The practice of ‘force-fitting’ wear times solely for practitioner convenience is to be avoided.

Dressing choice should be reconsidered if soaking is required to assist pain-free removal, or if bleeding or trauma to the wound and surrounding skin is a problem (Briggs and Torra i Bou 2002). Fibrous products, such as alginates and hydrofibres, form a gel in contact with wound exudate, and are effective non-adherent contact layers, providing good pain relief (Reddy et al 2003). However, they can become strongly adherent causing wound trauma on removal should they dry out, as seen with reduced exudate levels. Non-adherent layers can also be used effectively to reduce adhesion to the wound and prevent damage and pain on removal (White 2005).

Preventing or avoiding trauma to the wound bed and surrounding skin on dressing removal has led many manufacturers to modify their adhesives (Hollinworth and White 2006). Soft silicone dressings were developed with this in mind, and have low peel strengths to reduce damage to the delicate wound bed and peri-wound skin. Appropriately designated as ‘atraumatic’, they are the first-choice dressings for preventing wound trauma. Evidence to support the best use of soft silicone dressings can be found in various reviews, health economic reports and reflected in clinical best practice statements (Thomas 2003, White 2005, Rippon et al 2008).

**Conclusion**

Pain is a frequent cause of psychological distress in patients with chronic wounds and can severely affect quality of life. A holistic approach to pain management should be adopted. Healthcare professionals should strive to minimise trauma and pain, and relieve the psychological distress and physical trauma associated with dressing changes. Particular attention should be given to selecting dressings and dressing change regimens that reduce the likelihood of trauma to the wound and peri-wound skin NS