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An introduction to: Acute pain

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Introduction

Acute pain can be described as that which occurs as the consequence of injury or disease, and resolves with healing. Chronic pain can then be defined as pain which persists beyond the time of healing. Acute pain is encountered in a wide variety of clinical situations, including post-operative patients, victims of trauma, and medical illness. This can make reporting of the overall incidence of acute pain very difficult, and estimates may underrepresent the problem.

However, the importance of effective pain management cannot be overstated. Acute injury and associated pain can lead to pathological consequences in both the short, and long term.

Several studies have shown that poor recognition of acute pain and inadequate pain management occurs commonly. The reasons for this persisting inadequacy are likely to be multifactorial and may include failure in assessment, underuse of effective analgesic techniques, poor protocol availability or application, and insufficient practitioner education.

This module aims to:

- Explain the need for effective management of acute pain
- Describe the role and method of assessing acute pain

Note: pain and its management is a vast and complicated topic and this module only gives a brief overview of the topic.

Why is effective pain management important?

Acute pain is not just an unpleasant experience for the patient. It may have some bearing on patient outcomes such as post-operative complications and length of hospital stay.

Pain is thought to play a major part in the activation of the 'stress' response to injury. This leads to an increase in sympathetic nervous system activity, catabolic hormone release, impairment of immune function and increased coagulability. The manifestations of this response can be seen in several systems, and can lead to complications detrimental to a patient's health.

Activation of the sympathetic nervous system can increase cardiovascular parameters such as heart rate, blood pressure and systemic vascular resistance. This increases workload, and therefore, myocardial oxygen demand. If oxygen demand exceeds delivery, which may itself be compromised by existing cardiopulmonary disease, then myocardial ischaemia or infarction may ensue. Furthermore, changes in regional blood flow may decrease supply to the skin, and impair wound healing.

Immobility due to pain, and increased coagulation caused by the 'stress' response, can predispose the patient to thromboembolic complications. Severe pain in the upper abdomen or chest can impair respiratory function and compromise the patient's ability to clear sputum and secretions. This may lead to atelectasis, hypoxaemia, and lower respiratory tract infections.

Increased levels of catabolic hormones can lead to increased protein breakdown and hyperglycaemia; the former may impair wound healing. Immobility may also lead to muscle wasting, particularly in the elderly, and this may impair rehabilitation. Adrenaline, cortisol, and glucagon are examples of catabolic hormones.

Unrelieved acute pain can have significant psychological consequences ranging from the impairment of sleep to the development of post-traumatic stress disorder (PTSD). Pain is a multi-factorial experience and is influenced by previous pain experiences, beliefs, thought processes, mood, culture and coping skills.

Psychological factors may influence both the patient's response to pain, and to pain therapy, and so should be considered when managing acute pain. However, this aspect is often neglected.

Last, but certainly not least, is the possible development of chronic pain, from the acute pain state. Current thinking regards acute and chronic pain as a continuum, and this idea is reinforced by the progression from the former to the latter. A considerable percentage of surgical or trauma cases develop chronic pain states and the severity of acute post-operative pain in the first hours after surgery has been suggested as a significant risk factor. Therefore, effective acute pain management may play an important role in preventing the development of Persistent Post-Surgical Pain (PPSP).

Assessment of pain

Pain is a subjective experience, and its severity can be influenced by many factors including previous experience of pain, cultural background, coping mechanisms, fear, anxiety and depression. The patient's perception of pain therefore, is different from nociception.

The type of acute pain, and its cause, may affect the treatment chosen, and the response to this treatment. Acute pain may be nociceptive (somatic or visceral), neuropathic, or a combination of the two (mixed). Consideration of pain in terms of its nature and relationship to injury facilitates effective acute pain management.

From this, it can be realised that assessing pain is as challenging as it is important. An accurate, reproducible means of assessing pain is essential for successful management on an institutional scale.

Although individual experience of pain and response to treatment may vary greatly, the means of assessment must be applicable to all. The main components of such an assessment include a pain history, a measure of severity and treatment response, and ideally consideration should be given to the psychological factors that contribute to the pain experience.

Pain History

A pain history should include the character, intensity, location, underlying cause, associated symptoms and current analgesic use. In addition, the patient's ideas and concerns in relation to pain, and their expectations with regard to analgesia should be elicited. This history can be repeated after treatment has begun to monitor progress.

Given the subjective nature of pain, its measurement through self-reporting would seem the most valid technique. Assessment of function also forms an important part of measuring pain.

A number of uni-dimensional scales are available for the measurement of acute pain. The categorical scales include verbal (verbal descriptor scale VDS), numerical (Verbal Numerical Rating Scale VNRS) and visual (Visual Analogue Scale).

The VDS is a quick and simple scale that uses different words to rate the severity of pain. An example would be a four-point scale containing the words 'no pain', 'mild pain, moderate pain, and 'severe pain'.

The VNRS is most commonly employed. This system uses a scale of zero to ten. A score of zero reflects 'no pain', whist a score of ten describes the 'worst imaginable pain'. The patient is asked to score their pain using this scale. This scale does not require any equipment, and is easily repeatable. However, the patient must be able to understand the scoring system and communicate their answer.

The VAS is similar to the VNRS. A 10cm line with descriptors such as 'no pain' and 'worst pain imaginable' at opposite ends is shown to the patient. The patient is asked to mark on the line the point that best reflects their level of pain. The distance from 'no pain' to this mark is then measured in millimetres, giving a VAS score of 1-100. (see figure 1 below).
This scale requires a small amount of equipment, but can be adapted to measure other variables such as treatment side effects or pain relief.

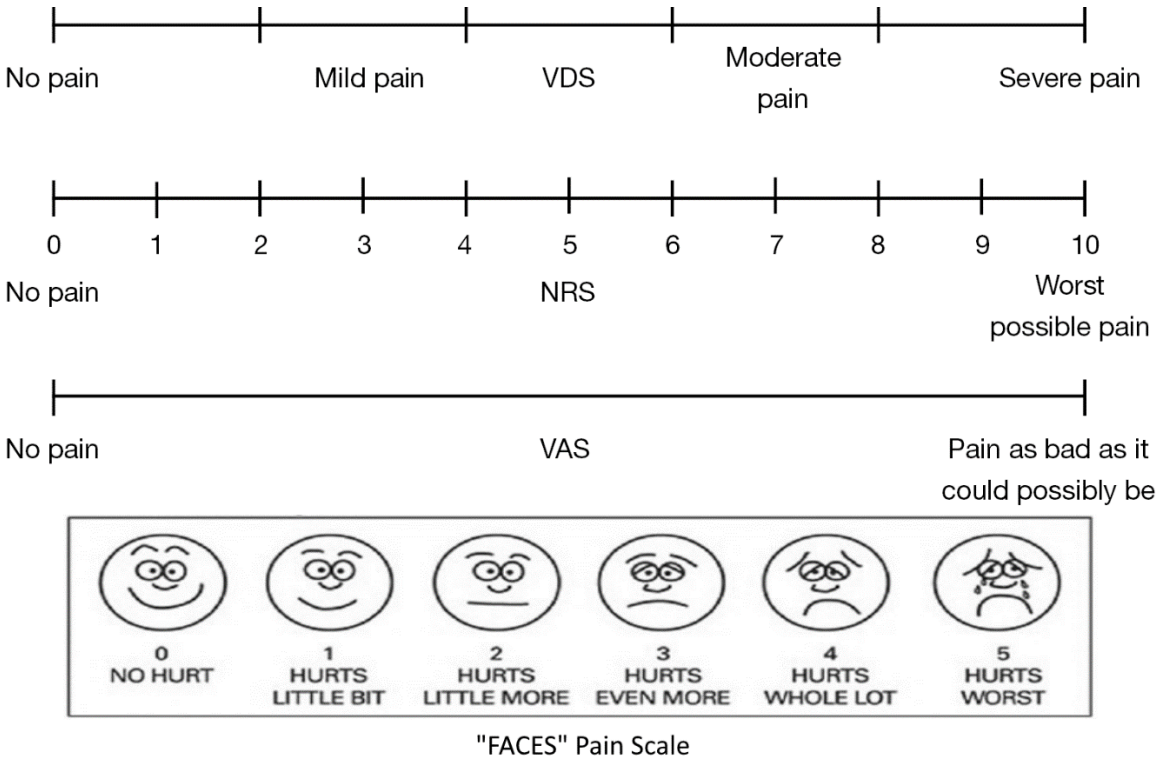

Figure 1. Various Pain Scales

Assessment of Functional Pain

If possible, pain should also be assessed with the patient active. The exact nature of the activity will vary depending on the patient's circumstances and pre-existing disability. The functional activity score (FAS) ranks impairment caused by pain into three categories:

- A – no limitation,
- B – mild limitation,
- C – significant limitation

The resulting score is activity specific such that an appropriate activity may be identified and scored for a particular patient. Examples are deep inspiration in a patient following upper abdominal surgery, or walking in a patient following lower limb joint replacement.

Adverse effects

In order to deliver effective yet safe analgesia, any on-going assessment of pain should include the identification of adverse effects associated with the analgesic drugs employed. Examples of such effects would be nausea, vomiting, sedation or respiratory depression associated with opioids, or the possible hypotension or neurological injury that can occur with epidural anaesthesia.

Pain has been described as 'the fifth vital sign', a moniker that reflects the need for regular assessment and measurement during the treatment regimen. In this way, the response to treatment, and any incumbent adverse effects, can be gauged, and the regimen tailored appropriately.

Finally, it is important for both clinician and patient to realise that complete pain relief may not be possible, and that the aim is to establish patient comfort. This notion of comfort will vary significantly between patients and encompasses not only pain scores, but also side effects of analgesic drugs and functional ability.

Summary

Despite increased awareness of the importance of providing effective management of acute pain, there is still a significant deficit in its provision. Acute pain is not only unpleasant to experience, but may also have short and long term psychological and physiological consequences.

Early recognition and thorough assessment can provide the patient and clinician with sufficient information so that they may tailor an appropriate analgesic regimen and achieve this goal. Proper assessment and management should result in good analgesia and patient satisfaction.

References

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