

The psychological management of pain: a case report and overview of techniques

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Summary

A serviceman seriously injured in battle after recovery from his initial injuries developed severe stabbing pain in his left leg. The pain was persistent, distressing and caused significant functional impairment. The pain failed to remit with pharmacotherapy which included sub cutaneous morphine. At the time of referral the

pain had lasted 18 months. The patient was treated with six sessions of cognitive behavioural therapy with significant reduction of his pain. Nine months later, on follow-up, he was pain free and functioning almost normally. The principles of psychological management of pain are also discussed.

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Introduction

Pain is probably the most frequent source of human distress. It is the most common reason for seeking medical care and it has been estimated that 80% of medical consultations include a component of pain. It is a major symptom in many medical conditions and can cause a severe impairment in a person's level of functioning. Psychological factors can significantly alter pain intensity or the degree of unpleasantness, a fact that is often forgotten in modern medical practice where pharmacological intervention takes primacy.

Over a hundred years ago Sherrington defined pain as "the psychical adjunct of an imperative protective reflex" (1). Pain can occur without tissue damage. 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". An understanding of the nomenclature regarding pain is useful. Nociception refers to pain caused by the stimulation of pain sensors. This is also referred to as "good" pain or "eudynia". Neurogenic or neuropathic pain is due to damage or malfunctioning of nerves and central pain is due to dysfunction of perception. Acute pain is pain that lasts within a specified time frame for a given condition and chronic pain is pain that persists beyond the time one would expect normal healing to occur (2).

The understanding of pain as primarily a psychological rather than a physiological process is important in the management of pain. The gate control theory of Melzack and Wall show the importance of the mind and brain in pain perception (3). When tissue is damaged or pain sensory nerve endings are stimulated, a signal travels from the site through nerve fibres to the spinal cord, and then to the brain. The brain interprets the signal about tissue damage or stimulation and pain is perceived. The gate control theory suggests that there is a type of "gate" in the spinal cord that can open and close based on input from the brain and the body. The opening and closing of the gate modifies how much information is sent to the brain from an injured area.

The theory accounts for how the mind or the cerebral cortex can control pain and also provides the basis for psychological interventions to control pain (4).

We illustrate a case of a serviceman who was suffering from severe pain following injuries suffered in battle. Several forms of pharmacological and physical therapies were tried and failed to alleviate his pain

Case Report

A navy serviceman suffered a blast injury whilst on operational duties in July 2008. He had a traumatic amputation of the right forearm, shrapnel injuries to the right thigh and the right flank, a ruptured colon, crush injury to the third lumbar vertebra resulting in paraplegia with incontinence. His right arm was amputated below the elbow. He had a hemiclectomy and fixation of the lumbar spine for spinal stabilisation. He subsequently received treatment at a rehabilitation centre. He developed intermittent severe pain of the left leg which had lasted 18 months at the time of consultation. The pain was severe, non-radiating, stabbing, and below the knee. It was present during most of the day. There were identifiable triggers. There was some relief when the site of pain was rubbed hard. He was treated with a combination of analgesics consisting of amitriptyline 50 mg nocte, morphine sulphate 15 mg four times daily, gabapentine 1200 mg three times daily and subcutaneous morphine 5 mg three times daily, but the response was short lived. He was diagnosed as having chronic regional pain syndrome (CRPS). In addition to the pain the prolonged hospital stay limited social activities and interaction with family and friends. His appetite was normal. Sleep was disturbed due to the pain but there was no early morning awakening. There was no hyperarousal, recurrent intrusive memories of the traumatic experience or avoidance of the reminders of the injury suggestive of post-traumatic stress disorder. He was distressed but not depressed. There were no depressive cognitions or ideas of self-harm. His cognitive functions were normal and insight was well preserved.

After an initial assessment session the patient was given six sessions of therapy. Initially his pain was rated as 90 on a visual analogue scale of 0 to 100. In the first session the patient was taught the relationship between physical sensation and emotions. He was given home work to practice relaxation, pain monitoring and activity scheduling. In the second session the home work was reviewed, automatic thoughts and cognitive errors were explained and he was asked to maintain an automatic thought record as home work. He was also asked to start time based pacing. In session three the recorded negative thoughts were evaluated, the evidence explored and the helpfulness of the thoughts discussed. Assertiveness training was also started to reduce his anger and frustration. In session four, further work was done on identifying and modifying his negative automatic thoughts and the downward arrow technique was utilised to identify core beliefs. In sessions five and six, material learnt was reviewed and a self-plan for coping with possible recurrence of pain and stresses was formulated. At the end of six sessions his pain rating was 10 out of 100. At a follow-up session nine months after therapy ended he reports that he is pain free, off all analgesics and coping well with his life.

Discussion

The psychological management of pain

The main psychological therapy available for the management of pain is cognitive behavioural therapy (CBT). The principles and steps in using CBT for the psychological management of pain are discussed below (5).

The first step is patient education. The patient is taught an understandable model of pain and how the mind influences the brain. The person is also shown the impact of pain on social life and work and how this influences the experience of pain. Base line pain is measured using a suitable scale and a period of self-monitoring is useful before the start of proper therapy. This gives an objective measurement against which improvement may be judged and is also the baseline for feedback to the patient. Self-monitoring gives the patient a sense of control over the pain. There are several psychological techniques available for the reduction of pain which could be combined into a treatment package suitable for a particular patient. A discussion of these techniques follows.

Progressive muscular relaxation with visual imagery

The most common response to pain is muscle tension. It is initially protective but in the long term worsens pain. Emotional distress also increases muscle tension. Increased muscle tension worsens chronic pain leading to fatigue and irritability. Progressive muscular relaxation (PMR) is a method of graded muscle relaxation aimed at relieving this chronic muscle tension. The purpose of PMR is to help the patient develop an awareness of which muscles are becoming tense and learning to control the tension before it causes pain. In PMR each group of muscles is taken in turn and tensed for a few seconds and then released gradually. This technique in

addition to releasing muscle tension also induces a state of general calmness and relaxation. The effect of PMR can be enhanced by combining it with visual images which are relaxing, peaceful or positive.

Cognitive restructuring

Negative thoughts in general are related to an increase in pain. Negative thoughts specifically about pain can have an even greater impact on the experience of pain. Cognitive restructuring aims to reduce the negative thoughts of patients. Initially automatic thoughts regarding pain are identified. Once patients identify their automatic thoughts they are evaluated for accuracy, reality and usefulness. Thereafter patients are helped to modify their automatic thoughts about pain and implement problem solving strategies for realistic problems.

Stress management

Stress and pain reinforce each other. Chronic pain is also a source of stress. This can result in a cycle of pain and stress. Managing stress would include change of life style such as exercising regularly and getting adequate sleep, changing how situations are approached such as developing increased self-assertiveness and changes in the way of thinking.

Time based pacing

When people attempt to work while in pain the level of pain could increase. This may cause severe pain that may result in prolonged periods of rest. Once pain decreases extra work would be necessary to compensate. This may result in further pain. One way of breaking this pain-rest cycle is time based pacing. Time-based pacing is a process in which activity breaks are based on time intervals and not on how much of the task is completed.

Pleasant activity scheduling

The experience of pain causes patients to withdraw socially and reduce activity levels. Avoidance may also be due to embarrassment or frustration with physical limitations. One method of preventing this would be to schedule pleasant activities throughout the week. Such activities reduce negative thoughts and emotions, increase overall activity levels, and thereby decrease pain.

Anger management

Anger worsens pain. This may be due to several reasons. Anger increases muscle tension. This can heighten pain especially if the muscle tension is in the area of pain. Anger leads to negative thoughts associated with pain, opening the gate to pain sensation according to the gate control theory. People in pain are irritable as pain lowers the threshold for anger. Therefore anger management is a useful component of pain management.

Sleep Hygiene

People with pain often have difficulty falling asleep or staying asleep. Poor sleep can also interfere with the body's ability to heal. Sleep hygiene is a set of behavioural strategies that could be used to promote sleep. These strategies consist of establishing a pattern of sleep by going to bed at the same time each evening,

avoiding day time sleep, establishing a pre-sleep ritual, arranging a suitable environment for sleep free of unnecessary stimuli, and avoiding stimulants close to bedtime.

Relapse prevention

It is likely that after recovery a patient could have a temporary increase of pain. It is important for the patient to be prepared for an exacerbation of pain. This includes becoming aware of physical and emotional clues that pain is increasing, rehearsing positive statements regarding the ability to cope with pain, stopping negative thoughts and redirecting attention to positive coping statements.

The specific management strategies used in this patient

Patient education made a significant impact on this patient. He was receptive and able to grasp the relationship between pain and the mind. He also carried out the self-monitoring activities with enthusiasm. Pleasant activity scheduling such as watching TV, interacting with his colleagues and family was also carried out. Though no specific anger management techniques were taught the other strategies used resulted in a significant reduction of his irritability. Time based activities were also done during periods of leave at home away from the hospital where he was asked to do timed activities such as walking in the garden. The improvements in this patient were consistent and sustained and relapse prevention strategies were unnecessary.

In this patient where extensive physical treatments had failed it was possible to achieve near total remission of pain using psychological methods. Such a remarkable response may not be seen in most patients with chronic severe pain. However a significant reduction of pain should be possible. Ideally a patient should not be referred for psychological treatment only after physical

therapy has failed but both should be offered as part of a comprehensive treatment package delivered by a multidisciplinary team. In addition to the quality of care given, the physical and psychological resilience of the patient would play a key role in the final outcome, as it did in this patient.

Declaration of interest

None

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