

Oral Neuropathic Pain

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Neuropathic pain is characterised as a persistent and severe pain, often with sensory pain qualities that are described as burning, sharp and stabbing. Associated features include hyperalgesia, allodynia, sympathetic hyperfunction and secondary myofascial pain. There is often a delay in the onset of the pain after the initial injury (days - months) and there is a lack of identifiable clinical or radiographic abnormalities. The prevalence of neuropathic pain as a result of maxillofacial trauma and surgery has not been established but its incidence following other types of surgery is high; between 2-97% of patients with phantom limb pain and 26-65% of postmastectomy patients.

The treatment/management of neuropathic pain is multidisciplinary and includes a psychological assessment that is often crucial in developing strategies for pain management. Psychological variables include distress, depression, expectations of treatment, motivation to improve, and background environmental factors. Drug regimens utilise tricyclic antidepressants, anticonvulsants, and topical applications of capsaicin for intraoral pain. Neuropathic pain responds poorly to opioid medication.

Introduction

The emergence of neuropathic pain following maxillofacial injury or surgery causes an unexpected challenge to the surgeon and the patient as it is unlikely to be cured or resolved in the postoperative surgical phase. The surgeon's and patient's expectation of a chronic pain condition developing as a result of injury or surgery may vary depending on the site and severity of injury, and prior experience of chronic pain states. For example, patients who have suffered a back injury are usually cognisant of the fact that persistent pain and disability may ensue due to its frequency in the community; personal exposure to family or friends with back pain, and its well publicised socioeconomic costs. Furthermore, our orthopaedic surgical colleagues are likely to provide sufficient information to the patient concerning the risks and limitations of surgery to cure or alleviate back pain. In the area of oral / maxillofacial / head and neck cancer surgery, patients are usually well informed about likely functional and aesthetic limitations from the surgery and reconstruction. However, from the patient's, and often, the oral and maxillofacial surgeon's viewpoint, chronic pain is an unexpected complication of surgery. Consequently, the surgeon is left to deal with a patient who has a complex surgical complication involving sensory (pathophysiological) and affective (psychological) aspects. Unfortunately, surgical revision for neuropathic pain is usually contraindicated as there is a high risk of propagating further maladaptive changes in the sensory pathways of the peripheral and central nervous systems. Furthermore, expectations of surgery to 'fix' pain when there is significant background psychological distress often lead to poor patient outcomes (Turk et al., 1983). Accurate and comprehensible information provided by the surgeon to the patient at the preoperative stage may change the way the patient construes his/her pain and can reduce the risk of the patient developing postoperative chronic pain (Gamsa, 1994). Absence of information, on

the other hand, may promote anxiety and fear, in the presence of pain, (Vlaeyen and Linton, 2000), and lead to avoidance of normal daily activities (Linton, 1985). Failure to attend to the patient's fear of pain may interfere with patient trust of the surgeon and, by a conditioning process, make more likely the rejection of any future surgeon's advice (Turk and Rudy, 1991; Turk and Flor, 1999). Thus, there are a number of important potential risks for the surgeon who does not integrate physiological and psychological factors in preoperative, perioperative and postoperative care.

The physiological purpose of pain is to serve as a warning of actual or potential tissue damage and, consequently, to arouse the organism and initiate withdrawal reflexes to prevent any further tissue damage. However, for various reasons, some well researched, and others not, the release of putative inflammatory mediators from tissue damage initiates the expression of hormones such as nerve growth factor that may produce maladaptive changes such as neuronal sprouting. This, in turn, and among other changes, leads to neuropathic pain. Neuropathic pain is defined as "pain initiated or caused by a primary lesion or dysfunction in the nervous system" by the International Association for the Study of Pain (IASP). Causal factors in the development of neuropathic pain include injury, infection and surgery.

Prevalence of neuropathic pain from surgical procedures and injury

The prevalence of neuropathic pain varies according to the site and type of surgery, age of the patient, and co-existing medical conditions. Smith et al found that 43% of postmastectomy patients reported recurrent / persistent pain with age being an important variable (65% in the 30-49 year age range, 40% in 50-69 years, and 26% in 70+ years). Smith et al Pain 1999;83;91, reported that between 2-97% of patients may develop postamputation pain in the limb (phantom limb pain). In Charcot-Marie-Tooth disease (hereditary / sensory motor neuropathy) 71% of patients were reported to develop neuropathic pain. Carter et al Arch Phys Med Rehab 1998;79;1560. In postherpetic neuralgia 75% of elderly patients develop pain with zoster infection but only 10-15% of the younger age group subsequently develop the condition. Following traumatic spinal cord injury 60% of patients have pain one year after the event. A review of patients conducted at the authors' institution, a multidisciplinary pain centre [Pain Management and Research Centre (PMRC), University of Sydney] revealed that 14% of patients with neuropathic pain referred to the PMRC chronic pain service listed surgery as the causal factor, and that 1-2% of postoperative patients referred to acute pain service described features of neuropathic pain (C. Hayes, unpublished data, PMRC).

There is a paucity of published data on the incidence of neuropathic facial pain following injury or trauma in the maxillofacial region. The limited information available has focussed on an intraoral neuropathic pain condition called atypical odontalgia (also termed phantom tooth pain). Marbach et al. estimated that 3-6% of female patients who had completed endodontics met most of the criteria for "phantom tooth pain". In another study that reviewed 118 patients who had completed surgical endodontics, six patients (5%) had persistent pain following surgery, three patients had pain before the surgery and there was no postoperative pain reduction, and three patients developed pain following

surgery. Vickers et al found 25% of patients with chronic orofacial pain to have a diagnosis of atypical odontalgia.

Patient case study 1

A 55 year old Caucasian male underwent cancer surgery for carcinoma of the soft palate in 1995. He had a background medical condition of Charcot-Marie-Tooth disease. For the surgery, he had his mandible split for access. Three months after the surgery he complained of pain at the intraoral site of the incision passing over the mandibular alveolar crest. He described the pain as “very painful” (indicated 6 on the numerical rating scale where “0=no pain” and “10=worst pain imaginable”). McGill Pain Questionnaire word descriptors ascribed to the pain included “crushing, pulling, tiring, annoying, radiating, numb” qualities. At the time of his first pain management consultation he reported poor pain relief using a preparation containing 30 mg codeine and 300 mg paracetamol per tablet, with an intake of 8 tablets per day for 3 years. He had previously tried mexiletine (200 mg), amitriptyline (50 mg), and carbamazepine (200 mg) daily for pain relief but had discontinued these medications as they were ineffective. He was engaged in full time employment, and was in a stable, happy marriage and with two children. His responses to psychological questionnaires revealed he had a positive attitude towards managing chronic pain. However, based on his previous three years of failed medical treatments he believed that his pain condition would get worse.

The patient underwent a trial of topical capsaicin that was applied to the site of the incision. For the trial he applied a topical anaesthetic mouthrinse to the mucosa for three minutes then followed by a three minute application of 0.025% capsaicin cream (Zostrix). This was carried out morning and evening for six weeks. At his review appointment at eight weeks he reported “very good pain relief” and had ceased his codeine / paracetamol intake entirely.



Commentary

Several features of this case are worthy of comment. The head and neck surgeon who had carried out the operation was pleased with the surgical result and the patient was being reviewed every six months for possible recurrence. The surgeon initially thought that the pain may have been due to recurrence of the cancer. However, there were no other features suggestive of recurrence and he was unable to explain to the patient the nature or

source of his pain. The surgeon referred him to his local doctor for pain relief. His doctor had considered the pain to be neuropathic in origin and conducted trials of mexiletine, amitriptyline, and carbamazepine. However, while the drug selections were appropriate for this patient, the dosage of all three drugs were in the subtherapeutic range. It is likely that the patient would have gained benefit at dosages of mexiletine 600 mg (200 mg tds), amitriptyline 75 mg (nocte), and carbamazepine 600 mg (200 mg tds). The long term use of codeine was ill advisable and he continued its use for three years despite the drug providing only marginal benefit.

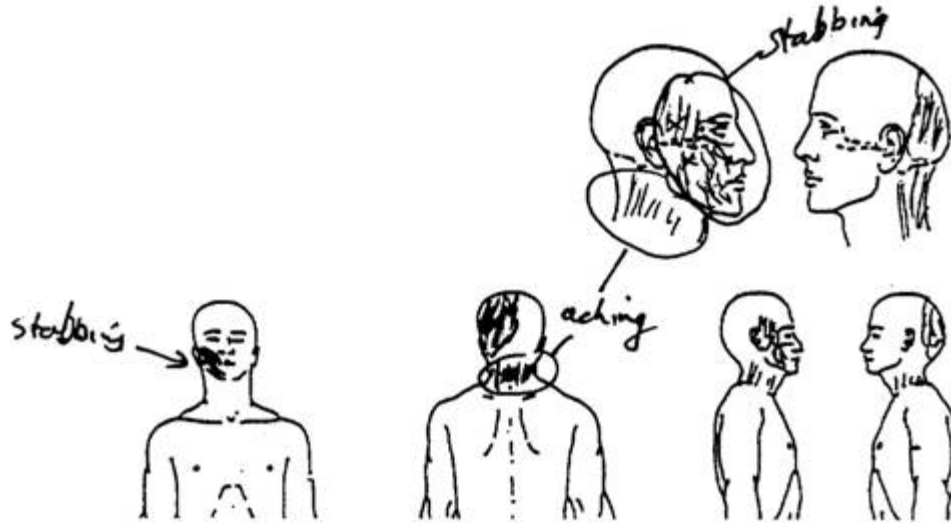
Psychological assessment

The patient was well motivated as he did not want the pain to disrupt his marriage or work. He had realistic expectations of treatment - a “50% reduction in pain as being acceptable to live with”. He was satisfied with obtaining ‘good pain relief’ and was not seeking ‘complete pain relief’. The patient had not demanded additional medication for further pain relief as he recognised that an increased drug dose may initiate drug side effects, thus potentially hampering his work performance and enjoyment of family life. By having a positive, hopeful attitude and agreeing to take the responsibility for his own improvement, he has complied with treatment guidelines, applying the capsaicin that is currently used sparingly. He continues to report excellent long term pain relief.

Patient case study 2

A 65 year old Caucasian male, who in June 1997 worked as a truck repairer, suffered severe maxillofacial trauma as a result of a crush injury at work. He incurred a Le Fort II fracture of the maxilla with significant displacement of the walls of the antrum and orbital floor. He subsequently underwent internal fixation with plates. He was referred to the PMRC for multidisciplinary assessments. The pain was constant and rated 6/10 on the NRS. McGill Pain Questionnaire word descriptors ascribed to the pain included “throbbing, shooting, stabbing, sharp, aching, splitting” sensory qualities and exhausting, punishing, annoying, intense, piercing, tearing, torturing” affective and evaluative qualities. He was married and lived with his wife. At the time of his referral he was taking 2 g paracetamol daily. He had previously trialed carbamazepine but it was discontinued after only two weeks due to excessive drowsiness. He reported a poor sleep pattern of only two hours sleep each night.

The patient was trialed on gabapentin with an escalating dose up to 900 mg daily over one week. At his review appointment at two months he had achieved a 50% reduction in the neuropathic facial pain by maintaining this regimen. He reported a slight occasional itch as the only side effect. He was still complaining of “aching” pain in the occipital region that was attributed to coexisting C 4/5 degenerative changes involving the facet joints.



Psychological assessment

The patient was a 'self-made' man. He had worked very hard over many years and had always been a hard-driving, rather perfectionistic person. At the time of his injury, he owned and managed his business and was financially very comfortable. The injury, hospitalisation and continuing pain problem interfered with his business. The patient sought 100% remission of facial and neck pain. As a result, despite his reports of a 50% pain reduction on gabapentin suggesting an excellent early result, the patient remained disappointed and distress levels remained high.

The results of the early gabapentin trial give rise to optimism that the neuropathic pain problem can be impacted by appropriate medication over a period of time. At the same time, psychological rigidity of attitude and expectations, high stress and sympathetic arousal, depression and an unwillingness to adapt to less favourable physical conditions threaten to undermine the pharmacological improvement.