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PHARMACOTHERAPY FOR OROFACIAL PAIN

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Abstract

The sensation of pain is the means by which the body is made urgently aware of the presence of tissue damage. Pain represents a protective reflex for self-preservation. It is often pain that brings the patient to the dental office but also can be the factor that keeps the patient from seeking treatment at the appropriate time.

Pain control is of great importance in dental practice. The clinician has to know the functional neuroanatomy, peripheral and central nervous system pathways, pain modulating system and various categories of pain of the head, neck and face. Psychological and psychosocial factors also contribute to pain, whether pain arises endogenously from pathologic processes or exogenously from trauma or even dental treatment.

The dentist s task is threefold: first, to establish the correct diagnosis, second to find the cause of the pain, and third to select the treatment plan that addresses the patient s complaint. By knowing the classification of orofacial pain, the clinician will easily make a diagnosis and determine the cause of the pain. After establishing the physical diagnosis it is easy then to determine the therapy to be made. The treatment in managing dental pain from pharmacotherapy is still effective using analgesic and local anesthetic drug.

Introduction

Pain is a normal manifestation of everyday life and serves a vital defensive function. Uncontrolled pain can dramatically diminish quality of life. Most of the cases that dentists are facing in their office is orofacial pain. Pain is often associated with dental treatment, which in most cases are often accompanied by a range of other psychological and central disturbances (e.g. anxiety, depression) and profound changes in autonomic function (e.g. heart rate, blood pressure)[1]. It is clear that pain is an important component of response to trauma, surgery and disease. This paper will discuss mostly the background of orofacial pain encountered in dental practice, as well as several treatments to manage orofacial pain from a pharmacotherapy point of view.

Pain in Dentistry

Pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage[2]. It is commonly described as a multidimensional experience such as stinging, pricking, burning and aching.

Usually pain is subdivided into acute and chronic pain. Acute pain is pain of recent onset and limited duration. It usually has an identifiable cause relating to injury or disease. Chronic pain is pain that persists for long periods, usually beyond the time of tissue healing and for which the cause may not necessarily be easily identifiable.

To properly manage orofacial pain, the dentist must be able to appreciate the underlying pain mechanisms. The dentist must have a working knowledge of functional neuroanatomy, peripheral and central nervous system pathways, pain modulating system and various categories of pain of the head, neck and face.

The nerve fibers that innervate the pulp arborize extensively, especially in the coronal part of the tooth, and form a subodontoblastic plexus[3]. The dentin is normally well protected from the environment, although this may change as a result of dental caries, attrition, or tooth fracture. In case of the dentin being exposed, it is not known how the different types of stimulation that cause pain from dentin excite intradental nerves[4]. Such stimuli include heat, cold, mechanical, drying, large changes in hydrostatic pressure, and solutions of high osmotic pressure. Under these conditions, dentin is sensitive throughout its thickness.

Despite the lack of vital cellular elements in the outer ends of the dentinal tubules, this area of the dentin is sensitive to stimulation, and very gentle mechanical probing of the enameldentin junction will evoke a discharge of impulses in intradental nerves if the smear layer left by drilling has been removed.

Any injury to the oral tissues leads to release of chemical mediators, sign of inflammation, and tissue edema. Prostaglandins have been implicated in the genesis of dental pain because their production is associated with sensitization of trigeminal afferent nerve endings to other mediators, such as bradykinin or histamine. Acute oral pain is a symptom of many orofacial diseases including periodontal abscesses, mucosal lesions, obstructed salivary gland ducts, and tissue trauma[5].

Moreover, the dentist also has a role as biobehavioral pain clinician, because psychological and psychosocial factors contribute to pain, whether pain arises en dogenously from pathologic processes or exogenously from trauma or even dental treatment.

Classification of Orofacial Pain : Diagnostic Range

In 1996 the American Academy of Orofacial Pain (AAOP) expanded their diagnostic classification, in conformity with the International Headache Society classification, to include all head, face, and neck conditions that could be associated with orofacial pain[2].

The scope of practice for the dentist includes intraoral pain conditions, musculoskeletal pain conditions affecting the jaw (temporomandibular disorders), and medical conditions that either directly cause or refer pain to the region or that masquerade as orofacial pain (e.g. cancer, AIDS, sinus etc).

The task of establishing a physical diagnosis can be simplified by trying to answer clinical questions regarding the source of the pain. The first thing to do is

determine whether the pain has a local origin and is likely coming from the structure where it is felt. Is the pain site the same as the pain source?

Pharmacotherapy Used for Management of Orofacial Pain

General dentists are often the first to be consulted by patients complaining of a variety of acute and chronic orofacial pain problems. It is clear that dentinal tubules as well as the pulp are innervated, and that the afferents can respond to a wide variety of stimuli that predominantly, if not exclusively, produce pain. The clinician s task in such cases is threefold : first, to establish the correct diagnosis, second to find the cause of the pain, and third to select the treatment plan that addresses the patient s complaint[6].

Drugs Generally Used to Manage Orofacial Pain

NON OPIOID

1. Acetaminophen.

For mild pain, maximal dose of 600 mg every 4-6 hours. For moderate pain and patients unable to tolerate Non Steroid Anti-inflammation Drugs (NSAIDs), usually in combination with codein. The side effects of these drugs need to be considered.

2. NSAIDs.

These are generally the medication of choice. A wide choice of such drugs is available, but efficacy seems to be inversely related to toxicity. Ineffectiveness is often related to inadequate dosage and duration. Care should be taken to ensure minimal unacceptable side effects. A newer drug, a COX-2 inhibitor (Nimesulide, celecoxib, rofecoxib) is now available and may prove to be safer than NSAIDs for long-term use due to lower gastrointestinal toxicity.

OPIOID

1. Codein.

Mild opioid. Fairly effective in managing moderate pain. It is often combined with acetaminophen. The maximum dose suggested is 30mg every 4 hours.

2. Tramadol.

Mild opioid. It s relatively new medication, often used for acute and chronic pain. Analgesic efficacy unimpressive, lack of addiction potential questioned.

3. Morphine.

Strong opioid. Morphine is used parenterally to control postoperative pain in hospitalized patients. It is also used orally, primarily in the treatment of terminal illnesses. Sustained release morphine tablets are the most commonly used form of morphine for outpatient use in the terminally ill. Few, if any, sustained release analgesics are useful in dentistry because the patient needs immediate relief, not future relief. Usual dose 10 mg at intervals of 4-6 hours.

4. Fentanyl transdermal.

This opioid medication is for special use, it s patched to the skin and sustained release. It is more often use for maintenance. For patients that cannot swallow or whose general condition is not good. Usually works for 3 days, available in various doses.

LOCAL ANESTHETIC

Controlling pain during dental treatment using local anesthetic is very essential in dental treatment. For dental application are: Amides (lidocaine, mepivacaine), Esters (procaine, tetracaine), Ketones (topical dyclonine) with/without vasoconstrictors (epinephrine, levonordefrin). Local anesthetic solutions must be deposited close to those branches of the trigeminal nerve that innervate the area to be treated by :

1. Regional anesthesia, infiltration.
2. Local blocks.
3. Periodontal ligament anesthesia.

ADJUVANT

1. Anticonvulsant (gabapentin)
2. Antidepressant (amitriptyline)
3. Muscle relaxant (diazepam)
4. Corticosteroid (dexamethasone)

Summary

Pain is one of the most common symptoms for which patients seek treatment. Managing pain and relieving suffering should be at the core of the health professional s commitment to patients. It is more effective to treat a patient when the clinician knows the functional neuroanatomy, peripheral and central nervous system pathways, pain modulating system and various categories of pain of the head, neck and face. Also the clinician must be able to categorize the site and the source of the pain.

Both opioids and NSAIDs are relatively effective against different types of pain, but the relatively high incidence of adverse effects and other problems associated with their clinical use means that neither group can be considered to be the ideal analgesic. Local anesthetic drugs are also effective in treating patient with odontalgia from wound healing to pulp capping procedures.

It is hoped that the continually improving understanding of the physiologic basis of pain will ultimately be translated into the development of more powerful and safer pain killer.

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