

Psychological factors in oral mucosal and orofacial pain conditions

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ABSTRACT

The psychological aspects of chronic pain conditions represent a key component of the pain experience, and orofacial pain conditions are not an exception. In this review, we highlight how psychological factors affect some common oral mucosal and orofacial pain conditions (namely, oral lichen planus, recurrent aphthous stomatitis, burning mouth syndrome, and temporomandibular disorders) with emphasis on the significance of supplementing classical biomedical treatment modalities with appropriate psychological counseling to improve treatment outcomes in targeted patients. A literature search restricted to reports with highest relevance to the selected mucosal and orofacial pain conditions was carried out to retrieve data.

Key words: Oral mucosa, orofacial pain, psychology, psychosocial

INTRODUCTION

The International Association for the Study of Pain (IASP) has defined pain as “an unpleasant, sensory, and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.”^[1] This definition does not only include the sensory aspect of pain but also the emotional and interpretive or cognitive aspects of pain. The IASP has also described chronic pain as pain lasting longer than 6 months.^[2] The emotional factors are more significant in chronic than in acute pain and assert a significant influence that has to be recognized and addressed in order for effective management of chronic pain conditions, including orofacial pain, to take place.

During the first 6 months of pain, the discriminative system dominates the motivational/effective system, allowing the patient to better comprehend the location

and duration of his/her pain. The patient can describe the pain more accurately because the brain is better able to localize and isolate it. However, as time progresses, this ability declines and expression of the motivational/effective system begins to become more dominant in the pain experience, and so, the pain language used by patients changes to one that is characterized more by psychological nondescriptive terms.^[2] Common symptoms reported by the chronic orofacial pain patients include headaches, depression, chronic fatigue, sleep disorders, decreased productivity, feelings of inadequacy, low self-esteem, withdrawal, and mood disorders.^[3]

MATERIALS AND METHODS

Oral mucosal pathology and orofacial pain comprise the main two domains of oral and maxillofacial

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medicine. A literature review on individual aspects within these two extensively broad areas requires restrictions to be applied to the searched literature. Accordingly, to limit the scope of this review, oral mucosal lesions were limited to oral lichen planus (OLP) and recurrent aphthous stomatitis (RAS) while orofacial pain conditions were limited to burning mouth syndrome (BMS) and temporomandibular joint disorders (TMD). Literature search was initially performed using MEDLINE/PubMed databases with different combinations of “psychological factors,” “psychiatric factors,” “oral lichen planus,” “recurrent aphthous stomatitis,” “orofacial pain,” and “orofacial pain classification” as key words. Exclusion criteria included articles on mucosal conditions or orofacial pain other than the aforementioned entries as well as those published in languages other than English. No restrictions on articles types or dates of publication were applied. In addition, individual articles retrieved manually from the reference list of the relevant papers were also included in the study. Thereafter, papers with the highest relevance to the review topic were selected with the consideration of the total number of references allowed.

PSYCHOLOGICAL ASPECTS OF PAIN PERCEPTION

Proper pain assessment, and subsequent management, should take into consideration both the somatosensory input (nociception from the body tissues) and the psychosocial input (influence from the higher centers). Therefore, pain classification has been based on two levels or axes.^[4] Axis I represents the physical factors that are responsible for the nociceptive input, while Axis II represents the psychological factors that influence the pain experience. Chronic pains, as opposed to acute ones, often have significant Axis II factors. Psychological intensification of chronic pain may proceed until the suffering is wholly disproportionate to the peripheral nociceptive input as in somatization. Pain may lack an adequate source of input that is anatomically related to the site of pain, it may be felt in multiple and sometimes changeable locations, bilateral pain may become evident in the absence of bilateral sources of noxious input, and the complaint may display unusual or unexpected responses to therapy which may further complicate the management.^[3,4]

The significant impact of psychological factors on orofacial pain conditions, including mucosal lesions,

has been well established.^[1,2,5-9] Psychopathological disorders were even shown to be common among orofacial pain patients.^[9] Furthermore, it has been postulated that persistent orofacial pain as a manifestation of psychological factors in the presence or absence of organic pathology may become a source of significant personal distress and life disruption.^[10] A recent report found that as the levels of pain-related disability increase, the perception of psychological influence on pain initiation and aggravation also escalates.^[11]

Biobehavioral is a term that integrates the important roles biological factors play in governing human functioning with the influences of behavioral factors, including principles of learning, interpersonal processes, and techniques for self-change.^[5] Biobehavioral factors may promote or prolong physical dysfunction as well as thought processes and emotions that may be distorted as a result of this dysfunction.

These factors are as important to consider as the physical disease factors if the pain patient is to return to normal functioning, especially in the case of chronic pain.

Accordingly, the biobehavioral model and cognitive behavior therapy (CBT) approaches were introduced to establish an effective and comprehensive management of chronic pain conditions. Biobehavioral interventions are designed to address both excitatory factors for pain (e.g., expectations, negative emotions, parafunctional behaviors) and inhibitory factors (e.g., confidence, relaxation, positive emotion). These tools are designed to provide patients with skills to understand and manage their pain experience.^[5]

When these approaches were applied in the management of orofacial pain conditions, significant positive results were reported, and hence, it was recommended to utilize these approaches in such conditions.^[12-17] However, it appears that orofacial pain management is still largely dependent on biomedical interventions and is lacking proper implementation of psychological interventions.^[18,19]

OROFACIAL PAIN CLASSIFICATION

A convenient classification of orofacial pain can be based on etiologic factors^[20] and thus would include

- Dentoalveolar

- Dental – dentine sensitivity, cracked tooth, pulpitis
- Periodontal – periapical periodontitis, acute necrotizing ulcerative
- Gingivitis/periodontitis
- Mucosal disease
 - Ulcerative/erosive disorders including desquamative gingivitis
- Bony pathology
 - Alveolar osteitis (dry socket)
 - Osteomyelitis
 - Infected dental cyst
 - Osteonecrosis
- Sinusitis
 - Maxillary, paranasal, ethmoidal, and/or frontal
- Salivary glands
 - Salivary duct calculi causing obstruction
 - Infective sialadenitis
 - Salivary gland tumor
- Musculoskeletal
 - TMD
- Neuropathic
 - Trigeminal neuralgia
 - Glossopharyngeal neuralgia
 - Trigeminal neuropathic pain and dysesthesia in relation to
 - Pathology/iatrogenic nerve damage
 - Postherpetic neuralgia
 - BMS
- Vascular
 - Migraine
 - Tension-type headache
 - Temporal arteritis
 - Trigeminal autonomic cephalgia
- Others
 - Chronic Idiopathic facial pain
 - Atypical odontalgia
 - Central poststroke pain
 - Secondary Cancer
- Referred pain from
 - Eyes
 - Ears
 - Intracranial
 - Heart.

Although dental pain is largely acute in nature, the majority of other orofacial pain conditions are chronic (e.g., mucosal conditions and musculoskeletal pain) and as such will have a significant psychological part. The following discussion will focus on psychological aspects of some of the most common mucosal and orofacial pain conditions, namely RAS, OLP, BMS, and TMD.

PSYCHOLOGICAL FACTORS IN COMMON MUCOSAL CONDITIONS, ORAL LICHEN PLANUS, AND RECURRENT APHTHOUS STOMATITIS

A relationship was postulated between psychological factors and the occurrence and long-term course of some common oral mucosal conditions; namely OLP and RAS.^[6] The two conditions are widely believed to be initiated and aggravated by many factors, including stress and anxiety.^[21-23] Hence, terms such as psychosomatic diseases and stress-related oral ulcerations are frequently used in literature to refer to such conditions.^[6,24] Likewise, oral mucosal conditions are likely to cause significant levels of stress and anxiety in affected individuals.^[25]

Several studies found higher levels of stress, anxiety, depression, and mental disturbance among OLP patients as compared to non-OLP controls.^[26,27] Furthermore, it was reported that more than 50% of studied OLP individuals were able to correlate the occurrence of stressful events with the time of onset/exacerbation of OLP.^[28,29] Anxiety and mental stress may even drive the progression of reticular pattern of OLP to erosive or ulcerative forms.^[6]

Stress alters the regulation of both the sympathetic and parasympathetic branches of the autonomic nervous system, with consequential alterations in hypothalamic pituitary adrenal axis. These changes play pivotal roles in regulating immune surveillance mechanisms, including the production of cytokines that control the inflammatory process as well as events responsible for healing.^[30] Accordingly, it seems plausible that a stressed patient is prone to immune-mediated conditions (e.g., OLP) due to significant disturbance in psychobiologic balance.

Patients with persistent RAS often show elevated anxiety levels.^[31,32] In a well-designed prospective study,^[33] 160 RAS patients were followed up weekly by a telephone survey for up to a 1 year providing data on the occurrence of RAS episodes and details of any stressful events they experienced during the previous week. Stressful life events were significantly associated with the onset of RAS episodes but not with the duration of the RAS episodes. Experiencing a stressful life event increased the incidence of RAS episode by almost three times, and mental stressors had a larger effect than physical stressors on the occurrence of RAS episodes.

The mechanisms whereby stress may result in RAS episodes are not well understood. It has been suggested that increased levels of salivary cortisol,^[34,35] or reactive oxygen species (a possible determinant of stress level in the individual)^[36] in the saliva, may lead to the onset of lesions. Furthermore, stress may simply stimulate self-induced trauma thereby initiating an episode of RAS. As mentioned earlier, stress can affect different components of the immune system including the distribution, proliferation, and activity of inflammatory cells, phagocytosis, and production of cytokines and antibodies.^[37]

PSYCHOLOGICAL FACTORS IN BURNING MOUTH SYNDROME AND TEMPOROMANDIBULAR JOINT DISORDERS

BMS is chronic disorder characterized by a burning sensation or other dysesthesias, while the clinical appearance of the oral mucosa is within normal limits. BMS etiopathogenesis is not fully understood although there is some evidence that a dysfunction in central and/or peripheral nervous system plays an important causative role.^[38] The prevalence of psychiatric disorders in BMS is high, but their actual role in the pathogenesis of BMS remains unclear. Several studies have reported high frequency of psychiatric morbidity in BMS with depression being the most prevalent disorder.^[39,40] Interestingly, although BMS patients are subjected to elevated psychological stress, the onset of their symptoms is not necessarily directly associated with stressful life events. BMS patients may have a unique psychological profile with higher levels of depression, anxiety, hypochondria (excessive worry about having a serious illness), and cancerophobia.^[38]

Psychological factors are well-recognized risk factors for TMD.^[41,42] Depression and sleep disturbances were shown to be significantly higher in TMD patients as compared to controls.^[43] Psychosocial stressors can enhance TMD possibly through increased corticosteroid levels or aggravation of parafunctional habits or even through activation of sympathetic nervous system.^[41,42,44]

The evaluation of psychological profiles between different subgroups of TMD patients has led to conflicting results. Whereas some studies found that significant psychological differences exist between patients with either muscle or jaw joint problems,^[45] others found no differences between

subgroups.^[46] It was shown that chronic TMD patients have higher rates of depression and somatization as compared to acute TMD patients.^[47] In a study that involved 1149 TMD patients from three highly specialized university-based centers, pain-related disability was found to be strongly related to depression levels and somatization as well as pain duration following 6 months.^[48]

In managing TMD, CBT is typically added to a program of standard treatment that includes use of an intraoral appliance, medications, and a jaw rest program. Results from clinical trials that included long-term follow-up data showed that CBT intervention causes a significant decrease in pain self-reports and pain interference in daily activities.^[49] In one study, CBT alone was enough to relieve TMD symptoms in 112 out of 134 patients who had pain and/or limited jaw movement in <2 months without any further treatment.^[50]

CONCLUSION

Psychological factors are key players in the initiation and perpetuation of several oral mucosal and orofacial pain conditions. However, despite the evidence presented in the literature for such a relationship, it appears that these factors are still underestimated and psychological interventions are underutilized by many clinicians. There is a crucial need to familiarize clinicians with the psychological aspects of common orofacial pain conditions and to highlight the importance of psychological intervention, where applicable, to provide an effective long-term pain management in affected patients.

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Conflicts of interest

There are no conflicts of interest.

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