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Psychosomatic Disorders Affecting the Mouth: A Critical Review

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Authors' contributions

This work was carried out in collaboration between all authors. Authors AD and DP wrote the article. Authors NB, ND and AKN reviewed it. Author DP did literature search. All authors read and approved the final manuscript.

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ABSTRACT

Modern medicine has come to the realization that the human body cannot be treated in terms of a mere sum of its different parts, but must rather be dealt with in terms of the psychophysiological aspects of the organisms as a whole. The mouth is a window to body's health and oral health state can offer lot of clues about the overall health and sometimes the first sign of a disease shows up in mouth. So there is need to learn more about the intimate connection between oral and overall health. A psychosomatic disorder involves both body and mind and these diseases have physical symptoms originating from mental or emotional causes like stress, anxiety and depression. There is a rapid upsurge in prevalence rates of psychosomatic disorders in past few decades globally as a consequence of rapidly changing modern life style of people as well as long standing emotion, social and professional stress. It cannot be argued that there are a significant number of patients reporting to the dental office with complaints primarily of psychological origin that affects oral and paraoral structures having definite psychosomatic cause but unfortunately remained unrecognized because of limited nature of their presenting features. Such patients consistently complain of a symptom that he or she interprets as abnormal but dentist can find no convincing physical

explanation for the same. This has emerged as one of the most difficult problems faced in clinical practice these days for the dental professionals. Thus this review highlights the significance of increasing psychological factors in society resulting in altered physiological responses causing orofacial region pathologies, struggles in handling such patients and challenging treatment plans with highly important role played by recognition of such patients with role of counseling and early referral in patients to psychiatrist.

Keywords: Body; interdisciplinary; mind; neurotransmitters; psychophysiology; psychosomatic.

1. INTRODUCTION

"MOUTH IS THE MIRROR OF THE ORAL CAVITY" says William Osler. Mouth is directly or symbolically related to major human instincts and passion. The oral mucosa is highly reactive to psychological influences [1]. Psychosomatic disorders are defined as disorders characterized by physiological changes that originate partially from emotional factors [2].

A psychosomatic disorder involves both body and mind. These diseases have physical symptoms originating from mental or emotional causes. Most common ones are stress, anxiety and depression. A wide spectrum of psychiatric disorders affects oral and para oral structures which have a definite psychosomatic cause, but unfortunately they remain unrecognized because of the common and limited nature of their presenting features [3].

1.1 Historical Review

The term "Psychosomatic" was first used in 1818 by the German psychiatrist, [4-6] Heinroth. Felix Deutsch in 1922 was probably the first author to introduce the term "psychosomatic medicine". Sigmund Freud Systematically studied a case of now famous "Anna O" who was suffering from what then was called hysteria [5]. The 19th century experienced a more robust expansion of psychosomatic ideas [6].

Explaining the mechanism of psychosomatic disorders, H. Freyberger and R. Sifneos stated that emotional reactions occur in two dimensions: psychological (sensual tons of pleasure or displeasure) and vegetative, which performs an important biological function of energy supply for the coherent behavior. Thus, the study of psychosomatic disorders and psychosomatic diseases has a long history [7].

1.2 Effect of Stress on Oral Mucosa

Stress is defined as a physical, mental or emotional response to events that causes bodily or mental tension. Many authors have proved stress in relation to hypertension, gastric ulcer and diabetes mellitus. Similarly research is going on in identifying and proving the role of stress as one of the etiological factor in few oral lesions such as Oral lichen planus, Apthous ulcers, Burning mouth syndrome and Myofacial pain Dysfunction syndrome [8]. Freud postulated that not only do the oral stage of development determine important personality traits, but that problems at this stage lead to predisposition to certain depression in later life [1]. Stress releases catecholamines from the autonomic nervous system activates the Serotononergic and systems Dopaminergic which increases serotonin turnover leading to release of Corticotrophin releasing factor (CRF), Glutamate and GABA [3].

There is as an association between Oral lichen planus, diabetes and hypertension [8]. Sometimes the body expresses its inner processes through the language of emotions: fear, despair, sadness, joy and mental processes manifest themselves using the "language of organs" [7].

2. CATEGORIZATION

The *Diagnostic and Statistical Manual of Mental Disorders* (DSM), published by the American Psychiatric Association (APA), offers a common language and standard criteria for the classification of mental disorders. The DSM is now in its fifth edition, DSM-5, published on May 18, 2013 [9].

Previously, the DSM-IV organized each psychiatric diagnosis into five dimensions (axes) relating to different aspects of disorder or disability:

- Axis I: All psychological diagnostic categories except mental retardation and personality disorder
- Axis II: Personality disorders and mental retardation

- Axis III: General medical condition; acute medical conditions and physical disorders
- Axis IV: Psychosocial and environmental factors contributing to the disorder
- Axis V: Global Assessment of Functioning or Children's Global Assessment Scale for children and teens under the age of 18 [9].

The World Health Organization (WHO) has offered its own system of mental disorder classification in Chapter V of the International Classification of Diseases (ICD) [10].

3. CLASSIFICATION

One of the few simple working type classification includes the following; [11]

3.1 Pain Related Disorders

- 1. Myofascial pain dysfunction syndrome (MPDS)
- 2. Atypical facial pain
- 3. Atypical odontogenic pain
- 4. Phantom pain II

3.2 Disorders Related to Altered Oral Sensation

- 1. Burning mouth syndrome
- 2. Idiopathic xerostomia
- 3. Idiopathic dysgeusia
- 4. Glossodynia
- 5. Glossopyrosis

3.3 Disorders Induced by Neurotic Habits

- 1. Dental and periodontal diseases caused by bruxism
- 2. Biting of oral mucosa (self mutilation)

3.4 Autoimmune Disorders

- 1. Oral lichen planus
- 2. Recurrent aphthous stomatitis
- 3. Psoriasis
- 4. Mucous membrane pemphigoid
- 5. Erythema multiforme

3.5 Miscellaneous Disorders

- 1. Recurrent herpes labialis
- 2. Necrotising ulcerative gingivostomatitis
- 3. Chronic periodontal diseases
- 4. Cancerophobia

4. MYOFASCIAL PAIN DYSFUNCTION SYNDROME (MPDS)

Mysofascial pain dysfunction syndrome (MPDS) has become a topic of interest in both the dental and psychological fields over the past two decades [12]. The conventional definition of myofascial pain syndrome (MPS) is characterized by regional pain originating from hyperirritable spots located within taut bands of skeletal muscle, known as myofascial trigger points (MTrPs) [1,13]. This syndrome has been broadly defined as "dysfunction of the masticatory and associated muscles characterized by pain" [14]. It is not uncommon that patient suffering from myofacial pain dysfunction syndrome (MPDS) consult dentist for tooth ache [15].

Its etiology is multifactorial. Psychological factors have been shown as major etiology. Schwartz was the first to implicate the psychological make-up of the patient as a predisposing factor. He hypothesized that stress was a significant cause for clenching and grinding habits, resulting in spasm of the muscles of mastication. Occlusal abnormalities play a secondary role. The signs and symptoms of MPDS are unilateral dull pain in the ear or pre-auricular region that commonly worsens on awakening, tenderness of one or more muscle of mastication on palpation and limitation or deviation of the mandible on opening.

Laskin Psychophysiologic theory states that MPDS is primarily a result of emotional rather than occlusal and mechanical factors [16]. "Biopsychosocial Model", that is considering the role of biological and psychosocial factors in the etiology of myofascial pain. Occlusal disharmonies are one of these factors, which has physical, psychological and social effects [17].

Moody et al. in a study of 52 MPD syndrome patients and a control group of equal number, found that approximately half of the MPD syndrome group showed clinical signs of greater stress than the control group. Mercuri et al. subjected MPD patients to several different experimental stresses and recorded the electromyographic response in various muscles [1].

4.1 Treatment

A number of successful treatment outcomes have been reported, including occlusal splints, physiotherapy, muscle-relaxing appliances, and pharmacological interventions [18]. Based on Wall & Melzack's Gate Control Theory, TENS has been used very commonly for pain relief in the last 30 years. The tricyclic antidepressants such as amitriptyline and nortryptyline and cognitive behavioral therapy are often generally helpful [18].

5. ATYPICAL FACIAL PAIN (AFP)

Atypical facial pain (AFP) was first described by Frazier and Russell (1924) [19]. AFP does falls into the category of medically unexplained symptoms, most of which appear to have a psychogenic basis. It must be recognized, however, that a patient in pain may also manifest psychological reactions to the experience [20].

Facial pain, often described as burning, aching or cramping, occurs on one side of the face, often in the region of the trigeminal nerve and can extend into the upper neck or back of the scalp [1]. The pain is called "atypical" because it is a different type of pain than that of a typical toothache. The pain is poorly localized and does not conform to the anatomical boundaries of sensory nerve supply. The areas affected may be one or more of those supplied by the fifth or ninth cranial nerves, or the second and third cervical nerves. Sometimes the pain is bilateral [21,22].

5.1 Treatment

The patients with chronic pain including facial pain need to be screened for depression [22]. Pharmacological treatment with antidepressants, antiepileptic or other drugs can also be tried. Cognitive-behavioural therapy may be indicated. Patients with AFP may be helped by a technique termed 'reattribution' which involves demonstrating an understanding of the complaints by taking a history of related physical, mood and social factors. It may help explain that depression/tiredness lowers the pain threshold and that muscle over activity and spasm (being 'uptight') causes pain [20].

6. ATYPICAL ODONTALGIA

AO has been referred as tooth pain with no obvious organic cause [19]. AO affects 10% of adults and 50% of elderly population. It is more

common in women than in men; in the age of fourth to fifth decade of life. Trauma and psychological factors are implicated factors. Rees et al examined 44 patients with AO and found that 60% had history of depression or depressive symptoms and had other personality disorders [1].

The etiologies most commonly described for AO are:

- 1. Psychological (common)
- 2. De-afferentiation, and
- 3. Vascular or neurovascular [19].

6.1 Treatment

The tricyclic antidepressants such as amitriptyline and nortryptyline are often generally helpful [23].

7. BURNING MOUTH SYNDROME

BMS is any form of burning or stinging sensation in the mouth in association with a normal mucosa in the absence of local or systemic disease [1]. It is a multifactorial disorder associated with psychological components such as anxiety, depression and cancerophobia [2]. The term "syndrome" justified because of is the simultaneous presence of several subjective symptoms, including feeling of dryness (subjective xerostomia), altered taste, and burning sensation of the oral tissues and tingling, or numb feeling in the oral cavity [24].

A burning sensation may also occur at other sites e.g. the anogenital or vulval region. Burning is almost always bilateral and symmetrical and does not follow anatomical distribution of a peripheral sensory nerve. BMS patients will also often report subjective conditions such as xerostomia and dysgeusia, as well as sialorrhoea, globus hystericus, halitosis or dysphagia [25]. The onset of pain is spontaneous, bilateral with no identifiable precipitating factors. Pain may be felt deep within the mucosa, continuous for at least 4-6 months, with moderate to severe intensity that may vary during the day [26].

7.1 Treatment

Cognitive-behavioural therapy or a specialist referral may be indicated. 'Reattribution' helps manage these patients [20]. Topical application of capsaicin (0.025% cream) has been used.

Topical application of 0.5 ml *Aloe vera* gel at 70%, 3 times a day combined with tongue protector is found to be effective. The topical application of clonazepam (by sucking a tablet of 1 mg), 3 times a day for 14 days found some success in some [20,26]. Gabapentin, an anticonvulsant drug, is advised 300-1,600 mg/day; 100 mg at bedtime [27].

8. ORAL LICHEN PLANUS

Oral lichen planus (OLP) is a mucocutaneous disease which can alter the skin, oral mucosa and other mucous membranes. It affects approximately one to two percent of the population, mainly women, and it occurs most frequently during the fifth and sixth decades of life [28]. Several hypotheses have been made regarding its aetiology, including genetic, infective, psychogenic and autoimmune factors (Sugerman et al. 2000; Sontheimer, 2009) [29].

Chaudhary has reported higher scores of anxiety, depression and stress in patients with OLP in comparison to healthy controls [30]. Burkhart et al. (1997) assessed medical history, lifestyle and health habits and pointed out to the occurrence of stressful events at the onset of OLP in 51 per cent of the subjects. More recently Rojo-Moreno et al. (1998) in a controlled study on 100 patients using different psychometric tests found greater anxiety and depression in OLP patients than the controls [31].

8.1 Treatment

A positive response to medium-potency corticosteroid treatment, such as acetate triamcinolone 0.1%, powerful fluorinated steroids as fluocinolone acetonide 0.05% and 0.1%, and more high-potency halogenated corticosteroids, like clobetasol propionate 0.05%, has been reported in most treated patients [28].

Surgical excision, cryotherapy, CO2 laser, and ND:YAG laser have all been used in the treatment of OLP. Photo chemotherapy is also used. Relaxation, meditation and hypnosis have positive impact on many cutaneous diseases and help to calm and rebalance the inflammatory response which can ameliorate inflammatory skin disorders [32].

9. RECURRENT APTHOUS STOMATITIS

Recurrent apthous stomatitis (RAS) is the most common type of ulcerative disease of the oral

mucosa, and it affects approximately 20% of the general population. The classic presentation of RAS is recurrent, self-limiting ulcers that mainly affect non-keratinized oral mucosa. Previous studies have suggested that psychological disturbances such as stress and anxiety could play a role in the onset and recurrence of RAS lesions [33].

Factor potentially related with RAS exacerbations is stress (Natah et al. 2004; Keenan and Spivakovksy 2013; Scully et al. 2003; Sook-Bin and Sonis 1996; Volkov et al. 2009; Zadik et al. 2012) [34]. Psychological stresses induces immunoregulatory activity by increasing the number of leukocytes at sites of inflammation; this is a characteristic often observed during the pathogenesis of RAU [35].

9.1 Treatment

Topical corticosteroids are the main treatment for RAS. These are available as mouthwashes, sprays, and small dissolvable pellets. Use of an antiseptic alcohol-free mouthwash, spray or gel (e.g. chlorhexidine gluconate) may be recommended [36]. 5% Amlexanox has also been proved effective [37] The tricyclic antidepressants such as amitriptyline and nortryptyline are often generally helpful [23].

10. PSORIASIS

Psoriasis is a papulosquamous exfoliative dermatitis which presents as discrete flat-topped papules or plaques covered with thin, white, loosely adherent scales [38]. An outpatient skin clinic at King's College Hospital and the Psoriasis Association demonstrated that around 60% of those with psoriasis believe that stress/psychological factors are causal [39].

Usher in 1933, found oral lesions only in two of his 100 cases of psoriasis he examined. It was observed by DeGregori et al. that until 1971 only 15 cases of oral psoriasis had been documented, of which three had gingival involvement. The occurrence of oral mucosal changes in patients with psoriasis is a debatable issue [40].

11. IDIOPATHIC XEROSTOMIA

Xerostomia is a subjective sensation of dry mouth; whilst hyposalivation is defined as an objective assessment of reduced salivary flow rate [41]. Depressive symptoms are usually evident in individuals with idiopathic subjective dry mouth [2].

Mason and Glen (1967) [1] have stated that as the secretion of saliva is regulated by ANS and is subjected to reflex stimulation from physical and psychic causes, then xerostomia may result from 4 basic causes in which factor affecting salivary centre are primary cause which include:

- 1. Emotions, fear, excitement, stress
- 2. Depression
- 3. Organic diseases e.g. brain tumor, Parkinson's disease
- 4. Drugs

A number of reports have shown that salivary cortisol is associated with depression and anxiety, and hence, salivary cortisol can be used as an important non invasive biological indicator of stress [42].

11.1 Treatment

Salivary substitutes and lubricants with moistening properties are designed to provide prolonged mucosal wetting. Products include "artificial" saliva, rinses, gels, and sprays, which may contain carboxymethyl cellulose (CMC), a mucopolysaccharide, glycerate polymer gel base, or natural mucins, singly or in combination. Pilocarpine increases salivary flow and affect subjective dryness as well [43]. The selective serotonin reuptake inhibitors like sertaline are often generally helpful [23].

12. BRUXISM

Tooth grinding (TG) is an activity of major concern to dentists because of its consequences: tooth destruction, breakage of dental restoration or rehabilitation, exacerbation of temporomandibular disorders or induction of temporal tension headache and grinding sounds that may interfere with the sleep of family or life partners [44].

Bruxers differs from healthy individuals in the presence of depression, increased levels of hostility and stress sensitivity.

12.1 Treatment

Occlusal interventions in the form of splints aim at achieving harmonious relationship between occluding surfaces. Antidepressant drugs may exert deviating effects on bruxism: either they exacerbate the condition (selective serotonin reuptake inhibitors, SSRI) or they are inert in their effects (amitriptyline) [45]. The tricyclic antidepressants such as amitriptyline and nortryptyline are often generally helpful [23].

13. DYSGEUSIA

Dysgeusia is defined as a distorted gustatory perception or persistent gustatory sensation in the absence of gustatory stimulants. These are often perceived as bitter, sour, or metallic [46]. Association between stress and taste might have a possible central mechanism; enhanced activation of multiple neurobiological pathways is involved in stress and appetite regulation [1].

13.1 Treatment

Zinc supplementation is believed to aid in treating taste disorders by promoting proliferation of normal taste bud cells, even in patients without zinc deficiency [47]. The tricyclic antidepressants such as amitriptyline and nortryptyline are often generally helpful [23].

14. CHRONIC BITING OF THE ORAL MUCOSA

It is a form of factitial/unintentional injury that is observed commonly on the buccal and labial mucosa and lateral surface of tongue. Habitual lip or cheek biting usually occurs as an unconscious psychogenic habit caused by a wide range of emotions. This mild form of self mutilation may sometimes emerge as a response to oral stimuli or as an attempt to gain attention from family members or caretakers.

14.1 Treatment

Counseling, biofeedback, relaxation techniques and hypnosis or psychiatric treatment have been suggested along with the dental management of the effects of habit [48].

15. STRESS AND PERIODONTIUM

Mental stress has been suspected of being a factor that can alter the state of periodontal health [49]. Mechanisms through physiologic pathways may influence periodontal tissues through alteration in saliva, changes in gingival blood circulation, endocrine imbalances and altered host resistance.

Psychoneuroimmunologic effects were confirmed by findings of poorer immune functions in persons who experienced stressful life events or chronic stress [50].

Stress is said to influence the host defenses, immunosuppressive effect. exerting an increasing one's vulnerability to disease. When the inflammatory action is sufficiently long and profound, the systemic manifestations of the disease may become evident, as could happen with periodontitis [51]. Psychosocial stressors may play in initiating a cascade of events, the physiological consequences of which are to depress immunity, enhancing the likelihood of infection and specifically, periodontal disease [52]. The tricyclic antidepressants such as amitriptyline and nortryptyline are often generally helpful [23].

16. RECURRENT HERPES LABIALIS

RHL occurs due to either physical trauma or emotional stress leading to lesions of skin and labial mucosa. Emotional stress apparently serves to prevent the antibodies from acting at the local mucosal site [3]. Triggers may include sun exposure, psychological stress, onset of menses, illness and physical trauma.

Infection with herpes simplex virus 1 (HSV1), which manifests as primary gingivostomatitis, usually occurs in preschool or kindergarten children, adolescents and young adults, and does not recur in the same form.

16.1 Treatment

Antiviral compounds for the treatment of HSL infection have been advocated [53]. The tricyclic antidepressants such as amitriptyline and nortryptyline are often generally helpful [23].

17. CANCEROPHOBIA

Fear is an unpleasant emotion and the pervasiveness of cancer fear in the population may have implications for quality of life. In addition, cancer fear has been shown to be associated with screening uptake and presentation of suspicious symptoms, although both motivating and deterrent associations have been found [54].

This disorder falls under hypochondriasis. It is a persistent fear in the patient"s mind that they

have contracted cancer. Cancerophobia has been noted to be associated with depression but exact pathogenesis is unclear [1].

17.1 Treatment

A better understanding of the nature of cancer fear may help identify those who suffer from maladaptive and undue fears, and help explain why the behavioral responses seem to vary [54]. The tricyclic antidepressants such as amitriptyline and nortryptyline are often generally helpful [23].

18. CONCLUSION

"Mind and body are powerful allies. Dentists come across patients with psychosomatic disorders on a daily basis. Hence, recognition and efficient management of such disorders in population has become a necessity in modern and developing world living in constant worry and undergoing stressful lifestyles. This entity opens up the bridge between dentistry and psychiatry. Hence most of the dental colleges and hospitals should have Denistry- Psychaitry liaison units for early referral and better treatment of such psychologically compromised patients."

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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