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STRESS RELATED ORAL DISEASES- A RESEARCH STUDY

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ABSTRACT

Stress is defined as a physical, mental or emotional response to events that causes bodily or mental tension. Every organ in the human body is affected by various types of diseases like infection caused by microbes, immunological, metabolic, endocrinal disturbances etc., Etiopathogenesis of many diseases are discovered and managed at any early stage, still some diseases are considered as idiopathic, hence diagnosis and treatment plan of such diseases always becomes controversial. Stress is one such etiology or predisposing factor in many diseases. Many authors have proved stress in relation to hypertension, gastric ulcer and diabetes mellitus. Similarly this research study aims 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.

KEYWORDS

Oral lichen planus, Apthous ulcers, Burning mouth syndrome, Myofacial pain Dysfunction syndrome

INTRODUCTION

Psychiatric disorders have traditionally been classified into two main groups namely organic and functional. In organic disorders, known physical etiology can be established like in dementia or delirium. In functional disorders such as schizophrenia, constitutes the large majority of psychiatric illness in which no physical factors were present. Anxiety and depression are universally experienced neurotic symptoms, included under functional disorders [1].

Anxiety is an emotional state, unpleasant in nature associated with uneasiness, and discomfort and concern or fear about some defined or undefined future threat.

Some degree of anxiety is a part of normal life. Treatment is needed when it is disproportionate to the situation and excessive[2].

Depression is used in everyday language to refer to a passing mood of unhappiness, sadness or the blues that all of us experience from time to time as part of the normal pattern of life. The dentist who treats patients with chronic oral diseases, must be able to recognize and obtain appropriate treatment for the depressed patient, if the dentist is to succeed in managing the patient's oral problem[3].

Continued biochemical studies of the role of biogenic amines is focused on the overactivity of adrenergic receptors, serotonin and uptake sites. Overactivity of hypothalamic–pituitary-adrenocortical axis as evidenced by hypersecretion of cortisol and cortisole resistance to dexamethasone - suppression has been established [4].

Emotional stress can produce physiologic changes that are measurable in part as increase in urinary catecholamines and 17-hydroxy steroids[5, 6].

Oral Lichen planus [OLP], Apthous ulcers, Burning mouth syndrome [BMS], and Myofacial Pain Dysfunction Syndrome [MPDS] are the most common oral lesions associated with stress. The etiological factors causing these lesions are multifactorial proved by earlier studies.

AIMS AND OBJECTIVES:

1. Proper screening of the oral lesions and diagnosing all these clinical subjects such as OLP, Apthous ulcers, BMS, and MPDS.
2. Evaluation of the role of stress in these oral lesions.
3. Management of these oral lesions based on the evaluation to ensure proper treatment plan.

REVIEW OF LITERATURE:

Lichen planus is a relatively common, chronic dermatologic disease that often affects the oral mucosa. Erasmus Wilson was the first person to describe it in 1869. Lichens are primitive plants composed of symbiotic algae and fungi. The term planus is a latin word for flat. Wilson probably thought that the lesions looked similar to the lichens growing on rocks to merit this designation. Lichen planus is an immmunologically mediated mucocutaneous disorder. Skin lesions are classically described as purple, pruritic, polygonal papules usually affecting the flexor surface of extremities. Oral lesions can present as reticular, erosive or bullous type. Reticular lichen planus is common and it involves the buccal mucosa, lateral and dorsal tongue, gingiva, palate and vermilion border. Typical radiating white striae and erythematous atrophic mucosa are present at the periphery of well-demarcated ulcerations on the posterior buccal mucosa, the diagnosis can sometimes be rendered without histpathological study. Topical steroids applied to most symptomatic areas are usually significant[7].

Grinspan et al., (1966) suggested that there is as an association between Oral lichen planus, diabetes and hypertension[8].

Atrophic or erosive OLP involving the gingiva is often referred to as desquamative gingivitis, a descriptive clinical term used for bright red edematous patches involving the full width of the attached gingiva. Symptomatic treatment can be provided by topical analgesics or antihistamine rinses or more specifically by use of topical steroids[9].

Recurrent oral ulcerations is the most common disease affecting the oral mucosa which is characterized by the appearance of one or more painful ulcers which heal after a few days or weeks, only to recur after a variable period of time. There are three types namely minor apthous ulcers, major apthous ulcers and herpetiform ulcers. The etiology of these ulcers has not been clearly estabilished. Emotional stress and cessation of smoking have also been implicated. There is considerable evidence that immune responses are involved in the pathogenesis of these recurrent ulcers. One or two days before the onset of ulceration, prodromal phase of paresthesia followed by pain is present. Round or oval shaped ulcers with surrounding erythema and oedema, usually less than 10 mm in diameter are called apthous minor. These ulcers affect the non-keratinised mucosa like lips, buccal mucosa, vestibule and margins of the tongue. They may last for 4-14 days. They may recur irregularly at 1-4 monthly

intervals and are not usually associated with systemic manifestations[10].

Recurrent apthous stomatitis is a common disease characterized by the development of painful, recurring solitary or multiple ulcerations of the oral mucosa. In cases of apthous ulcers, acute psychologic problems appear many times to have precipitated attacks of the disease. Iron, vitamin B 12, folic acid deficiency is considered as predisposing factors. Recurrent apthous minor commonly referred as canker sores, vary in size from 2-3 to 10mm and they heal gradually. Recurrent apthous major or sutton's disease are large usually 1-10 in number, greater than 10 mm in size, painful ulcers and heals on scarring. Recurrent herpetiform ulcers are characterized by multiple, small, shallow ulcers up to 1-100 in number, which may occur at any site in oral mucosa. Tetracycline mouthwash and topical steroid application can be used for treating apthous ulcers[11].

Burning mouth syndrome is associated with burning sensation of tongue, lips and other mucosal surfaces. Post - menopausal symptoms was rated significantly high by burning mouth patients. Sleep disturbances were common among the burning mouth syndrome patients. Treatment needs to be customized to the etiological factors identified in an individual patient with attention also given to symptomatic relief and management of any associated behavioral or psychiatric disorders[12].

Myofacial pain is referred from a localized tender area, a trigger point in a taut band of skeletal muscles of the body including the muscles of mastication[13].

Schwartz was the first to implicate the psychological make up of the patient as a predisposing factor in this pain dysfunction syndrome. 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 in the etiology of the pain syndrome[14].

The signs and symptoms of MPDS outlined by Laskin included the following.

- Unilateral dull pain in the ear or preauricular region that commonly worsens on awakening.
- Tenderness of one or more muscle of mastication on palpation.
- 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. The theory states that the stress can cause clenching and grinding which in turn can lead to muscle fatigue and finally spasm. A self-perpetuating cycle of stress – pain-stress can be created[15].

MPDS patients have significantly higher levels of steroids and catecholamines than is normal. Treatment of MPDS, therefore must accent emotional support and stress reduction, as well as physically therapeutic technique[16].

An occlusal splint is a maxillary full coverage, flat plane night guard made of hard processed acrylic. This promotes greater freedom in mandibular movement and an increase in muscle balance[17].

MATERIALS AND METHODS

MATERIALS:

This Research study is conducted in a private dental hospital with an average patient flow of 300 patients per day for a period of six months. All patients were subjected to complete oral examination as per the proforma for examination of dental patients.

CLINICAL SUBJECTS:

Oral mucosal lesions like Oral Lichen planus, Apthous ulcers, BMS and MPDS affecting the Temporomandibular joint are selected for the study.

Group I: 50 clinical subjects of OLP
Group II: 50 clinical subjects of Apthous ulcers.
Group III: 25 clinical subjects of BMS
Group IV: 25 clinical subjects of MPDS

METHODOLOGY

The clinical subjects in Group I II, III ,IV are then subjected to following examination criteria.

SELECTION OF CLINICAL SUBJECTS UNDER STRESS [18, 19]:

History taking- [Past medical history to rule out any known systemic diseases like Diabetes mellitus, hypertension etc.,]

↓

Patients free from systemic disease

↓

Anxiety and Depression rating scales [HAMD AND MADRS]

↓

If the score rate is positive for stress

↓

Routine hemogram

↓

Serum iron, Vitamin B_{12} and folic acid.

↓

Serum cortisole [normal 2-12.5 µg/dl]

↓

Urinary cortisole [1.00 +/- 0.52 mg/ml]

Clinical subjects irrespective of age and sex with positive Anxiety and Depression scales, elevated serum and urinary cortisole values were alone selected for the study and others were considered as control groups.

All the clinical subjects were given symptomatic treatment and were regularly followed up.

OLP clinical subjects were easily diagnosed with the characteristic appearance of radiating white lines intersecting with each other, raising an elevated white dot called as wickam striae seen commonly in the buccal mucosa, tongue and labial mucosa. In gingiva OLP presents as gingival desquamation with radiating white lines at the periphery. These lesions were treated with topical application of 1% Triamcenolone acetonide paste in orobase twice daily (Figure-1).

Oral Lichen Planus

Figure 1 : A case of Lichen Planus in Lip

Apthous ulcers can be diagnosed based on the history of multiple recurrent ulcers which heals within 10-14 days with size ranging from 1-10 mm in [Apthous minor] and larger than 10 mm in [Apthous major] Herpetiform ulcers were not present in these 50 clinical subjects All clinical subjects had multiple recurrent ulcers with no history of traumatic injury and no invasive investigations were done .All the 50 clinical subjects were subjected to serum iron, Vitamin B_{12} and folic acid, evaluation. Few patients had deficiency of any of these nutrients. Most of the clinical subjects were students who are in the eve of examination, which also proves the significance of stress in these lesions. Topical application of antiseptic

gel [Hexigel, Metrohex gel], multivitamin tablets once a day along with antiseptic /antibiotic mouth rinse, were prescribed for pain relief and asepsis (Figure-2).

Apthous Ulcers

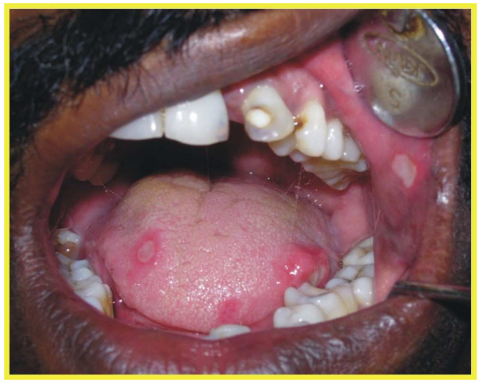


Figure 2 : Multiple apthous ulcers seen on the buccal mucosa and tongue

Burning mouth syndrome is not a common symptom, hence only 25 clinical subjects were present. BMS is associated with various etiological factors. Irrespective of the etiology it can be controlled symptomatically with topical anesthetic gel [mucopain gel-5% Xylocaine] along with topical antihistamine application [5% diphenhydramine hydrochloride]

MPDS clinical subjects was also not a common disease seen in our study, the diagnosis was based on the presence of unilateral pain in and around the ear and trigger points in the muscles of mastication insertion sites. The dental examination in all these subjects had severe attrition of the occlusal surfaces of the teeth caused due to bruxism. These subjects were managed with Tricyclic-antidepressants [under the guidance of the concerned specialist]. Occlusal splints were fabricated for all the subjects to maintain the vertical dimension of the jaw to restore the jaw function, as attrition of all the teeth will decrease the vertical dimension (Figure-3).

Myofacial Pain Dysfunction Syndrome

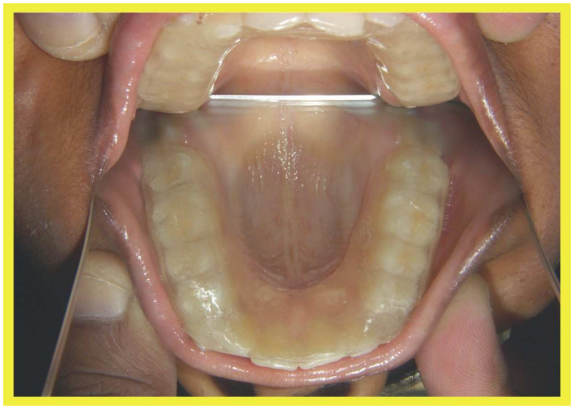


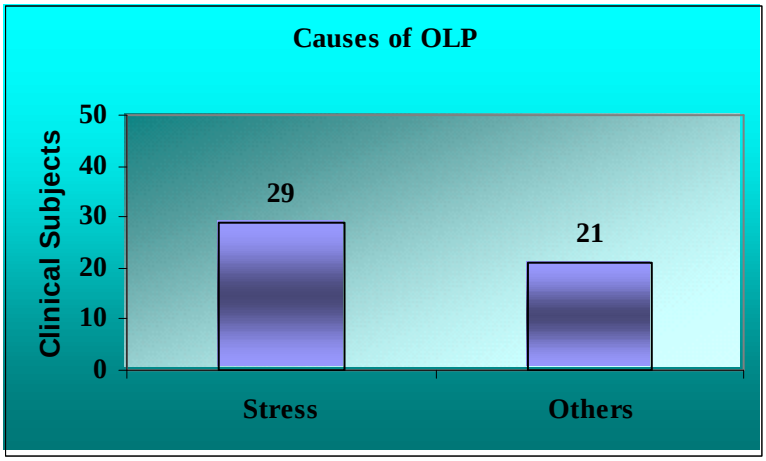
Figure 3: Fabricated Occlusal splint for treatment of MPDS

RESULTS AND OBSERVATIONS:

This research study aims in identifying the association of stress as one of the etiological factor in few oral lesions such as OLP, Apthous ulcers, BMS and MPDS.

Graph 1

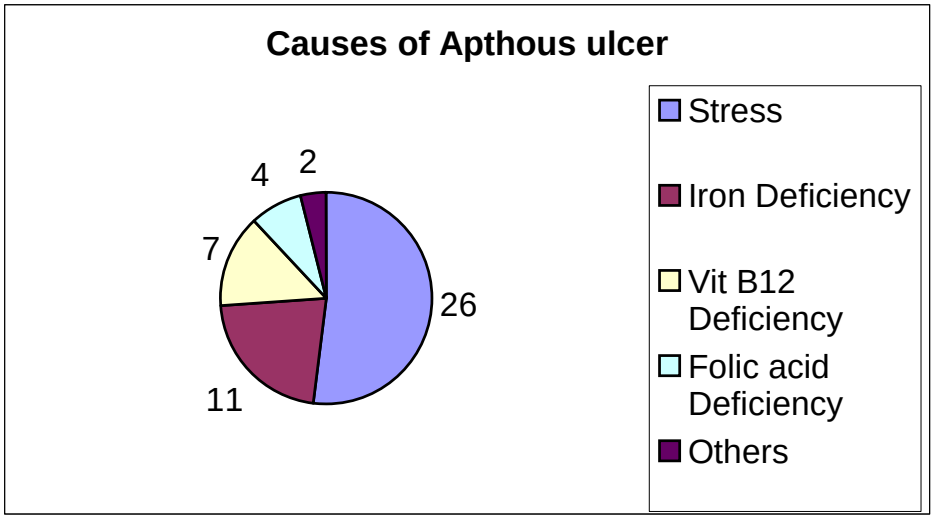
Oral Lichen Planus



In 50 clinical subjects of OLP [Group I], 29 clinical subjects were diagnosed with significant stress association, based on the positive HAMD and MADRS score rates, elevated serum and urinary cortisole levels. The remaining 21 subjects were considered as control group, as they did not have any significant association with stress.

Graph 2

Apthous Ulcer

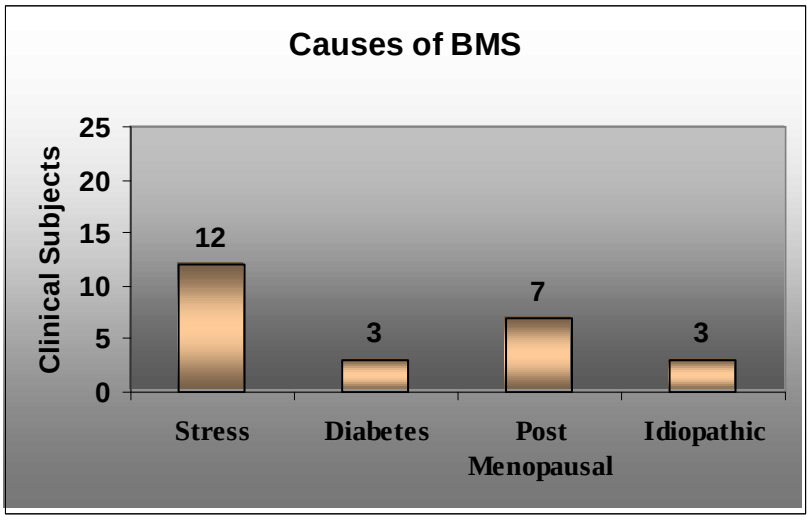


In Group II, 26 clinical subjects out of 50 Apthous ulcer subjects were positive for stress as the etiological factor for these lesions. In which 15 subjects were anxious students who are in the

eve of examination. The remaining 24 subjects were considered as control group. All clinical subjects were subjected to evaluation of serum iron, Vitamin B $_{12}$ and folic acid and it was found that 11 subjects had iron deficiency, vitamin B_{12} deficiency seen in 7 subjects, 4 of them had folic acid deficiency and in 2 clinical subjects, the cause was unknown.

Graph 3

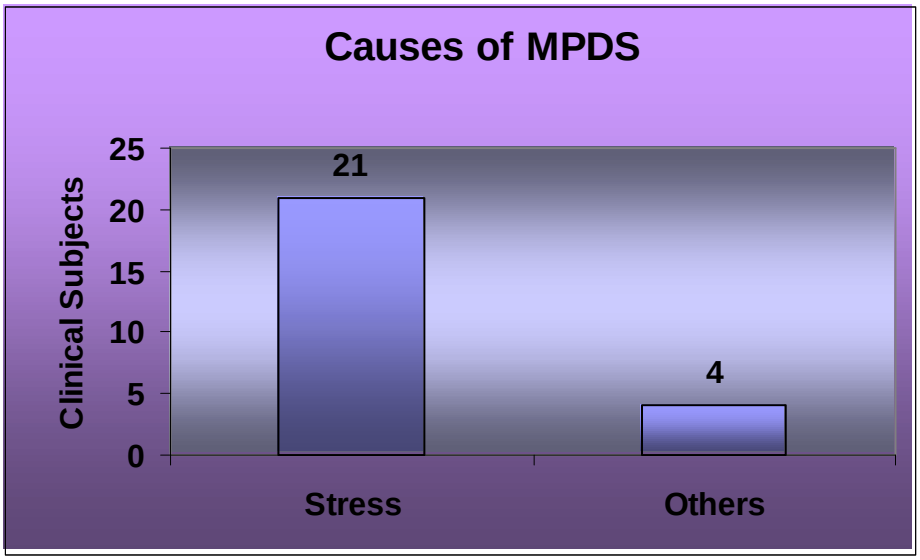
Burning Mouth Syndrome



In Group III, 25 clinical subjects of BMS was subjected to the rating scale as well as serum and urinary cortisole levels, in which 12 subjects were positive for stress association in these lesions. The remaining 13 subjects were the control group. One more remarkable finding is that 7 out of 13 were postmenopausal woman, which proves the common manifestation of BMS in postmenopause due to estrogen deprivation, which also plays a role in loss of epithelial integrity. Since diabetes also causes BMS in few cases, all were subjected to fasting blood sugar and 3 clinical subjects had elevated blood glucose, strongly suggesting diabetes as one of the cause for BMS. Three out eight had no significant pathology, their blood and urine examination results were normal which also proves the idiopathic cause for BMS.

Graph 4

Myofacial Pain Dysfunction Syndrome



In Group IV, 21 was positive for stress and remaining 4 clinical subjects were not positive for stress. Severe attrition of all the teeth caused due to bruxism [clenching and grinding of the teeth as tension relieving event] was evident in all the subjects positive for stress.

DISCUSSION

Lichen planus is a relatively common dermatosis that occurs on skin and oral mucosa[20]. The etiology of the disease is unknown but some authors state that it is a psychosomatic disorder caused by anxiety or stress[21]. A retrospective study of 420 Iranian patients also reported that stress was one of the factors in atleast 50%of patients[22].

Our Research study also definitely proves the association of stress in some of the clinical subjects in Group I ,II, III and IV.

M C Cartan B has also established the role of emotional stress in causing OLP[23]. Lesions of OLP were typically symmetrical in agreement with previous studies, the buccal mucosa and tongue were common sites.

It has been shown that individuals with an outlet that allows some relief of anxiety and tension have smaller increase in urinary level of 17-hydroxy corticosteroids, than those without such outlets[24]. This is very much true in all clinical subjects with significant stress association. It is well known that people facing stressful life situations frequently develop tension-relieving mechanism. Thus oral-clenching habits may serve a useful function psychologically to relieve tension, such activities have been implicated in the etiology of MPDS[25].

CONCLUSION

Mouth is the mirror of the body says Williams Osler, as mouth reflects many systemic diseases. The different oral manifestations are like spontaneous gingival bleeding in hypertension and in blood dyscrasias like Leukemia, Thrombocytopenic purpura etc., dry mouth in diabetes, enamel hypoplasia in Rickets etc., Stress also induces oral lesions, but stress may not be the cause in many of the lesions in some subjects. Proper history and essential investigations will ensure correct diagnosis of the etiological factor and thus results in successful treatment plan. Clinical subjects free from stress must be properly differentiated as other causes like immunological, hormonal and metabolic disturbances may be the etiological factor in these subjects. Oral lesions not related to stress, if subjected to antipsychotic measures, it might lead to further complications.

This Research study thus emphasizes the need to consider the role of stress in these

oral lesions namely OLP, Apthous ulcers, BMS and MPDS. If the clinical subjects are positive for stress, they must be referred to psychological counseling and anti-anxiety management. The professional obligation of a dentist does not stop with only referral of these clinical subjects to concerned specialist but also periodic follow up ensures faith and sympathetic management of such cases along with symptomatic management.

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