Reflection of Stress in the Oral Cavity

Mutum Sangeeta Devi[1], Manju J[2], Takhellambam Dhanapati Devi[3], Binita Sorokhaibam[4], Ravi Ranjan[5]

[1]Senior Lecturer, Madha Dental College and Hospital, Chennai, [2]Senior Lecturer, Thai Moogambigai Dental College and Hospital Dr MGR Educational and Research Institute, [3]Private Practitioner, Imphal, [4]Thai Moogambigai Dental College and Hospital Dr MGR Educational and Research Institute., [5]Private Practitioner, Patna

Abstract

Stress is based on the physical, mental, or emotional reaction to events which cause tension in the body or mind. Different types of diseases affect the human body, some of which may have an unknown etiology. It is one such etiology that predisposes many diseases. Dentists often come across patients in their everyday practice showing signs of stress and about their oral manifestations in the form of recurrent aphthous ulcer, oral lichen planus, and temporomandibular disorders, xerostomia, burning mouth syndrome, bruxism, periodontal disease, dental caries. Identification of such an emotional or psychological disorder stands to benefit both the patient and the practitioner. Consequently, psychological management should be considered when treating patients with any of these psychosomatic disorders. This review literature discussed common oral manifestation of stress.

***Keywords**: Stress, psychosomatic, anxiety, depression*

Introduction

Anxiety and depression are among the psychological disorders that are most prevalent. Such diseases can cause physical and physiological changes in the body, no exception being the oral cavity. Oral diseases involving psychosomatic etiology have been known in medicine for a long time but until now these psychosomatic etiology have not been verified. Since oral mucosa is highly sensitive to emotional factors such as stress , depression and anxiety; oral diseases may occur as a direct emotional experience or as an indirect consequence of psychological changes.[1,2] Stress is characterized as an emotional, physically or mentally reaction to the situation that trigger physical or mental stress.[3] Oral disease including psychosomatic etiology has long been recognized in medicine and behavioural or emotional factors can serve as a risk factor that can affect oromucosal disease initiation and progression.[4,5] Some of the common oral manifestation are given below.

Recurrent Aphthous ulcer

The function of stress that causes in episodes of Recurrent Aphthous Stomatitis (RAS) is still unknown. Acute psychological conditions are typically believed to play a role in the production of repeated aphthous ulcers. Stress may also cause bite of the cheek or lip, or exacerbate actions which cause damage to the oral mucosa. Stressful conditions are expected to induce a temporary rise in salivary cortisol and immune regulation activities in inflammation through raising leukocyte quantities and activity.[6] The lack of a clear correlation between stress level and frequency of RAS episodes indicates that psychological stress can serve as a cause or catalyst instead of an etiological factor in susceptible patients with RAS.[7]

Burning mouth syndrome (BMS)

Depression, anxiety, personal oral dryness, age, prescription, taste disturbances, intake of L-thyroxines, disease and enhanced BMS-associated salivary flow rate, according to study.[8] Burning mouth syndrome is related to burning tongue, lips and other mucosal surfaces. Post-menopausal symptoms were assessed significantly by burning throughout the patient's mouth. Sleep disturbances occurred frequent in patients suffering from burning mouth syndrome. Treatment can be given after finding specific etiological factors for every individual patient including symptomatic relief and management of any related behavioural or psychological disorders.[9]

Lichen planus (OLP)

Research on the etiopathogenesis of many somatic diseases indicate control of several factors that have additive action, including psychological and social ones. Depending on this, lichen planus is regarded as a psychosomatic disorder, the etiopathogenesis of which is not yet completely understood. The mental and emotional profile of OLP patients was evaluated and the incidence of stress and anxiety was often correlated with an exacerbation of oral lichen planus lesions.[5] It was therefore, also suggested that OLP can be understood as a psychosomatic condition. Study reported a significant correlation between stress and OLP. In addition, the study evaluated a group of patients with anxiety and found a statistically significant higher prevalence of oral lichen planus.[10,11,12]

Xerostomia

Dry mouth syndrome, also known as xerostomia, is an unexplained saliva decrease and may be common in patients with psychological disabilities. Mouth-dryness influences the quality of life.[3] For young adults, the factors are typically associated with stress, anxiety, depression and deficits for nutrition. Consumption of alcohol including the use of illicit drugs can both be significant contributors to dry mouth etiopathogenesis.[13,14] The frequency of reduced secretions of the salivary gland differs in the general population.[8] Overall, xerostomia is more prevalent in females than in males. [15] Secretion of saliva may be influenced by numerous factors like stress, anxiety and depression, age, prior care or cancer radiotherapy, medicines and other factors. [16-20]

Periodontal disease

stress can also have an adverse impact on periodontal tissues. Gum issues are more common in individuals with mild stress.[21] Among other research it was found that along with behavioural and physiological processes stress and depression can be associated with periodontal destruction. In addition, avoidance of dental hygiene during times of stress and depression was related to the loss of periodontal tissues attachment and loss of teeth. [22-24]During World War I, necrotising ulcerative gingivitis has been classically seen from military personnel, possibly due to several risk factors including poor oral hygiene, extreme psychological stress and malnutrition.[25]

Dental caries

Weakens the immune system and reduces stress tolerance to cariogenic bacteria [26] by serum increase, salivary catecholamines and also corticosteroids. The body's cortisol level is increased throughout stress trying to produce acid that could be determined by litmus testing on the tongue creating a suitable bacterial environment. One research found that children either with or without dental caries differs greatly significantly in urinary catecholamine mean values.[27,2] Reducing salivary secretion resulting in decreased removal of cariogenic bacteria-Subjective oral dryness with unstimulated salivary flow have been significantly correlated with psychological stress [28,29,3]. By serious psychological eating habits that contribute to numerous snacks and more dietary intakes of sugar [4]. By impaired self-care practices (oral hygiene) resulting in poor oral hygiene providing a favourable atmosphere for bacteria.[30,31]

Bruxism

The psychological function is associated with depression, anxiety and mental stress, that perform an important role in the occurrence and perpetuation of bruxism, its severity and frequency. Study found a relationship with anxiety and with signs of depression and symptoms in bruxers. Depressed, nervous, and emotionally stressed individuals are often known to be more predisposed to develop bruxism, particularly during sleep, as a reaction to everyday emotional stress release.[32-36]

Temperomandibular disorder (TMD)

The actual cause of TMD is unclear but is considered multifactorial.[8] Various TMD etiological factors reported in medical literature include psychological factors such as personality traits and behaviour, occlusal differences, inadequate dental care, joint laxity, chronic joint micro damage, overloading / overuse of joint structures, and parafunctional habit. The psychological, physiological, social and emotional problems are also taken into count. Psychosocial factors are most often associated with TMD patients, among various etiological factors of TMD. TMD patients encountered stressful living circumstances before TMD symptoms developed.[37- 39]

MYOFASCIAL PAIN DISORDER

Schwartz is the first one to include the patient's psychological structure as a predisposing factor for the condition of myofascial pain disorder (MPDS). According to him, stress was a leading cause of clenching and grinding activities leading to spasms of mastication muscles. Myofascial pain, according to Travell and Simons, stems from trigger points, which are isolated focal hyperirritable spots throughout the taut bands including its skeletal muscles. A research found that long - term musculoskeletal pain conditions affect about 10 per cent of the United States of America 's population. One such musculoskeletal disorder is syndrome of myofascial pain. As Simon and Backstrom have described, stress is characterized as the reaction of the human body to something like a demand imposed upon it, which would lead to negative effect on the body such as MPDS.[40-43]

Conclusion

Patients that shows sign of stress and their oral manifestations in the form of xerostomia, dental caries, periodontal problem, BMS, RAS, OLP, TMD and MPDS frequently come across through their regular practice dentists. Identification of such emotional and psychological illness helps the patient as well as the clinician. Consequently, psychological treatment should be addressed when treating patients with such psychosomatic disorders. Dentists often meet patients with psychosomatic disorders in their everyday practice, patients with emotional disorders often experience oral signs and knowledge of these emotional disorders helps both the patient and the clinician.

Ethical Clearance- Not applicable

Source of Funding- Nil

Conflict of Interest- Nil

References

1. Soto-Araya M, Rojas-Alcayaga G, Esguep A. Association between psychological disorders and the presence of Oral lichen planus, Burning mouth syndrome and Recurrent aphthous stomatitis. Med Oral. 2004; 9:1-7.
2. Valter K, Boras VV, Buljan D, Juras DV, Sušić M, Pandurić DG, et al. The influence of psychological state on oral lichen planus. Acta clin croat. 2013; 52:1-5.
3. Uma Maheshwari TN, Gnanasundaram N. Stress related oral diseases- A research study. Int J Phar Bio Sci 2010; 1:1-10.
4. Ivica Richter, Iva Vidas, PetarTureinovie, Relationship of Psychological Characteristics and Oral Diseases with Possible Psychosomatic AASC. 2003: 35 39.
5. Nagabhushan D, Rao BB, Mamatha GP, Annigeri R, Raviraj J. Stress Related Oral Disorders- A Review.JIAOMR. 2004; 16(03): 197-200.
6. Soto Araya M, Rojas Alcayaga G, Esguep A. Association between psychological disorders and the presence of Oral lichen planus, Burning mouth syndrome and Recurrent aphthous stomatitis. Med Oral. 2004; 9:1 7.
7. Gallo Cde B, Mimura MA, Sugaya NN. Psychological stress and recurrent aphthous stomatitis. Clinics (Sao Paulo). 2009;64(7):645-648.
8. Bergdahl M and Bergdahl J. "Burning mouth syndrome: prevalence and associated factors". Journal of Oral Pathology and Medicine28.8 (1999): 350-354.
9. Brightman V J. Oral symptoms without apparent physical abnormality In: Burket's Oral Medicine Diagnosis and Treatment, 9th Ed. J.P.Lippincott Company, Philadelphia, (1994):369-399.
10. Preda EG, Pasetti P, Caggiula S, Nidoli G, Boggio E, Azzi R. Oral pathology of pscyhosomatic origin. Review of the literature. Dent Cadmos. 1990;58(1):66-72.
11. Soto Araya M, Rojas Alcayaga G, Esguep A. Association between psychological disorders and the presence of oral lichen planus, burning mouth syndrome and recurrent aphthous stomatitis. Med Oral. 2003;9(1):1-7.
12. Suresh KV, Shenai P, Chatra L, Ronad YA, Bilahari N, Pramod RC, et al. Oral mucosal diseases in anxiety and depression patients: hospital based observational study from south India. J Clin Exp Dent.2015;7(1):95-9.
13. Kandagal VS, Shenai P, Chatra L, Ronad YA, Kumar M. Effect of stress on oral mucosa. Biol Biomed Rep 2012; 1:13-6.

14. Under pressure: How stress can affect your oral health. youroralhealth.ca/media-room/media-releases/316-under-pressure-how-stress-can-affect-your-oral-health.
15. Baharvand M, Hemati F. Prevalence of symptoms of dry mouth and burning mouth syndrome in elderly residents of nursing homes in Tehran. Journal of Islamic Dental Association of Iran 2006; 18(2):86-91
16. New laboratory tool for diagnostic and basic investigation. Clin Chim Acta 2007; 383(1):30-40.
17. Dawes C. Salivary flow patterns and the health of hard and soft oral tissues. J Am Dent Assoc 2008; 139:18S-24S.
18. Gardner MS, Rowland MD, Siu AY, Bundy JL, Wagener DK, Stephenson Jr JL. Comprehensive defensin assay for saliva.Anal Chem 2008; 81(2):557-66.
19. Eliasson L, Birkhed D, Österberg T, Carlén A. Minor sali-vary gland secretion rates and immunoglobulin A in adults and the elderly. Eur J Oral Sci 2006; 114(6):494-9.
20. Borahan MO, Pekiner FN, Atalay T. Evaluation of Effects of the Psychological Factors on Saliva. Journal of Marmara University Institute of Health Sciences 2012; 2(Suppl. 1): S8-S14.
21. Arman K, Petruninaitė A, Grigalauskienė R, Slabšinskienė E. Stress experience and effect on self-perceived oral health status among high school students. Stomatologija. 2016 Jan 1;18(3):75-9.
22. Peruzzo DC, Benatti BB, Ambrosano GMB, Nogueira-Filho GR, Sallum EA, Casati MZ, et al. A Systematic Review of Stress and Psychological Factors as Possible Risk Factors for Periodontal Disease. Journal of Periodontology 2007; 78(8): 1491-1504
23. Ray B, Kaur J, Anand SC, Jacobs R. Salivary Stress Markers, Stress and Periodontitis: A Pilot Study. Journal of Periodontology 2011; 82 (2): 287-292.
24. Rosania AE, Low KG, McCormick CM, Rosania DA. Stress, Depression, Cortisol and Periodontal Disease. Journal of Periodontology 2009; 80(2): 260-266.
25. Hu J,KentP, Lennon JM,Logan LK.Acute necrotising ulcerative gingivitis in an immune compromised young adult. BMJCase Rep2015; 2015.
26. Bosch JA, Brand HS, Ligtenberg AJM, Bermond B, Hoogstraten J, Nieuw Amerongen AV. Psychological stress as a determinant of protein levels and salivary-induced aggregation of streptococcus gordonii in human whole saliva. Psychosom Med. 1996; 58:374-82.
27. Vanderas AP, Manetas C, Papagiannoulis L. Urinary catecholamine levels in children with and without dental caries. J Dent Res. 1995;74(10):1671-78.
28. Bergdahl M, Bergdahl J. Low unstimulated salivary flow and subjective oral dryness: association with medication, anxiety, depression, and stress. J Dent Res. 2000;79(9); 1652-58.
29. Hugo FN, Hilgert JB, Corso S, Padilha DM, Bozzetti MC, Bandeira DR, et al. Association of chronic stress, depression symptoms and cortisol with low saliva flow in a sample of south-Brazilians aged 50 years and older. Gerodontology. 2008; 25:18-25.
30. Sanlier N, Ogretir AD. The relationship between stress and eating behaviors among turkish adolescence. World Applied Sciences Journal. 2008;4(2):233-37.
31. Megan Oaten, Ken Cheng. Academic examination stress impairs self–control. Journal of Social and Clinical Psychology. 2005;24(2):254-79.
32. Arnold A. Bruxism and the occlusion. Dent Clin North Am. 1981; 25:395-407.
33. Rugh JD, Harlan J. Nocturnal bruxism and temporomandibular disorders. Adv Neurol. 1988; 49:329-41.
34. Tsai CM, Chou SL, Gale EN, McCall Jr WD. Human masticatory muscle activity and jaw position under experimental stress. J Oral Rehabil. 2002;29(1):44-51.
35. Manfredini D, Landi N, Romagnoli M, Bosco M. Psychic and occlusal factors in bruxers. Aust Dent J. 2004;49(2):84-9.
36. Pingitore G, Chrobak V, Petrie J. The social and psychologic factors of bruxism. J Prosthet Dent. 1991;65(3):443-6.
37. Fantoni F, Salvetti G, Manfredini D, Bosco M. Current concepts on the functional somatic syndromes and temporomandibular disorders. Stomatologija 2007; 9:3-9.
38. Prashant VK, Dodamani A. Perceived sources of stress among Indian dental students. J Indian Assoc Public Health Dent 2012;17;171-7.

39. Acharya S. Factors affecting stress among Indian dental students. J Dent Educ 2003; 67:1140-8.
40. Schwartz LL. Pain associated with the temporomandibular joint. J Am Dent Assoc 1955; 51:394, (1955).
41. Simons DG, Travell JG, Simons LS, Cummings BD. Travell and Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual. Vol 1. Upper Half of Body. 2nd ed. Baltimore: Williams & Wilkin; 1998.
42. Alvarez D, Rockwell P. Trigger points: Diagnosis and management. Am Fam Physician 2002; 65:653-60.
43. Vaeroy H, Merskey H. Progress in Fibromyalgia and Myofascial Pain. Pain Research and Clinical Management. Vol. 6. Amsterdam: Elsevier; 1993