

Psychological Stress as a Contributing Factor for Aphthous Stomatitis

Suman Sen^{1*} Priyanka Narang² Shruti Sharma³ Vela Desai⁴

¹Reader, Department of Oral Medicine and Radiology, Inderprastha Dental College & Hospital, Sahibabad, India.

²Senior Lecturer, Department of Oral Medicine and Radiology, Aadesh Dental College, Bhatinda, India.

³Senior Lecturer, Department of Oral Medicine and Radiology, Hitkarni Dental College, Jabalpur, India.

⁴Professor and Head, Department of Oral Medicine and Radiology, Jaipur Dental College, Jaipur, India.

ABSTRACT

Background: Oral ulceration is a common complaint of patients attending out-patient department. Aphthous stomatitis being the most common form of Oral Ulceration. The purpose of this study is to evaluate and correlate the levels of stress, serum cortisol and hemoglobin in aphthous Stomatitis patients in Jaipur District of Rajasthan, India.

Material and methods 60 patients comprising of 40 recurrent aphthous stomatitis (RAS) patients and 20 control subjects were included in the study. Blood examination was done to evaluate serum cortisol and hemoglobin percent and Hospital Anxiety and depression (HADS) scale was used to evaluate stress.

Results showed that 70% RAU group had anxiety and depression with increase serum cortisol and reduced hemoglobin level as compared to control group.

Conclusion This study showed that among psychosomatic factor anxiety played a major role in both major and minor types of RAS. It also showed that RAS has slight predominance in males. Understanding the patient's emotions and counseling the patients will be a major step towards the prevention of such psychosomatic disorders.

Keywords: Aphthous Stomatitis, Serum Cortisol, Stress, Hemoglobin.

INTRODUCTION

Hippocrates is credited with the first use of term 'apthae' in relation to focal painful inflammation of oral mucosa. The term "aphthous" is derived from a Greek word "apthae" which means ulceration.¹ Recurrent aphthous stomatitis (RAS) is the most common type of ulcerative disease of the oral mucosa. Several hereditary, nutritional, infectious and psychological factors have been associated with RAS¹. The etiology is unknown but evidence from studies indicates that a focal immune dysfunction associated with T lymphocytes plays a significant role. Nutritional

deficiencies and stress are one of the major factors causing RAS. It is possible that the etiology is multifactorial and may be different for different patient populations.

People who suffer from aphthous ulcers report that the appearances of their ulcers coincide with periods of psychological stress. A higher incidence of RAS episodes is also associated with patients who have been diagnosed with a psychological disorder. Camila de Barros Gallo et al (2009)³ showed different levels of psychological stress observed between the RAS and control group support the role of stress as a modifier of RAS.

Received: June. 3, 2016; Accepted: Aug. 18, 2016

*Correspondence Dr. Suman Sen.

Department of Oral Medicine and Radiology, Inderprastha Dental College & Hospital, Sahibabad, India.

Email: sumansen20@yahoo.co.in

Scully C et al (2008)⁴ suggested that stress underlies RAU, as evidenced by an exacerbation during school and university examination times.

AIM

The study was done to evaluate the impact of stress, anxiety and depression on prevalence of RAS and to compare serum cortisol level with the occurrence of RAS. The level of hemoglobin was also correlated between study group and control group.

MATERIALS AND METHODS

A total of 60 patients were selected which comprised of 40 clinically diagnosed RAS patients in

study group and 20 healthy age and sex matched individuals in the control group. Detailed case history was recorded and HAD questionnaire was used to evaluate stress, anxiety and depression in such patients. Morning serum cortisol level was evaluated in all patients after taking a written consent from the subjects. Patients having any other local or systemic diseases, any deleterious habits which could cause mucosal lesions and those who were under any medication were excluded from the study. Hemoglobin estimation was done. ECI chemiluminescence method using Vitros – ECI Ortho reagent kit was used to evaluate serum cortisol which was taken between 9 am – 10am.

RESULTS AND DISCUSSION

Table 1: Types of RAS affecting males and females in different age groups.

RAS Study group				Types	
Age Group (years)	Total	Males	Females	Major	Minor
10-19	8	4	4	6	2
20-29	20	8	12	10	10
30-39	12	12	0	4	8
40 and above	0	0	0	0	0

Table 2: Hemoglobin level in males and females of RAU study group and control group.

Hemoglobin level of RAS study group		
	Males	Females
Normal	8 (20%)	10 (25%)
Below normal	16(40%)	6(15%)
Control group		
Normal	6 (30%)	8 (40%)
Below normal	4 (20%)	2 (10%)

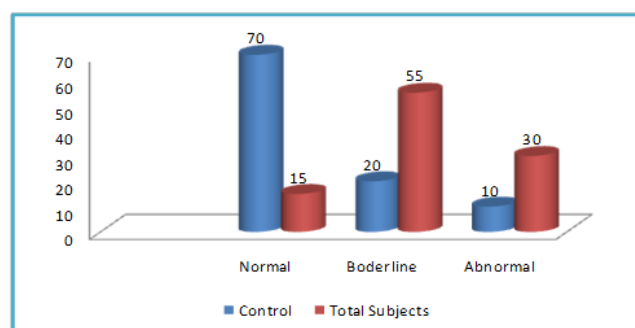
Table 3: Correlation between serum cortisol in RAS group with control group.

Stress level and serum cortisol in different type of RAS		
Type of aphthous ulcer	Serum cortisol level	HAD scale
Major	291	Borderline
Minor	385	Borderline
Control Group	211.11	Normal

Table 4: Prevalence of anxiety and depression (HAD scale) in study and control group for both the sexes in RAS patients.

Aphthous Ulcer n=40	Anxiety	Depression
Total- 28	28 (70%)	18 (45%)
Control	Anxiety	Depression
Total- 6	6 (30%)	6 (30%)

Graph 1: Comparisons between stress levels in percentage between study and control group according to HAD scale.



Among stress related disorder aphthous ulcer is one of the most prevalent.⁴ The results of this study evaluated the involvement of stress and hemoglobin level in different forms of RAS in males and females.

On evaluating stress level in RAS group 28 (70%) subjects gave history of anxiety and depression as compared to 6 (30%) in control group, (Graph1). Among 40 subjects in study group there were 24 (60%) males and 16 (40%) females (Table 1). This finding contradicts with studies which showed a slight female predominance.⁵ This may be due to increased stress and anxiety in males during their school and collage exams. Moreover the pathophysiologic consequences of stress on patients are not uniform in males and females, as the mechanisms affect individuals in different ways. The subjects may exhibit different types of manifestation associated with the same kind of emotional stress. When behavior among the RAS subjects was analyzed, we could appreciate that stress, anxiety and depression appear in subjects, obtaining significantly different in both the groups. Psychological stresses play a role in the manifestation of RAS. This result of our study is supported by reports from various authors.^{6,7}

On reviewing the literature, approximately 80% of cases reported in various studies were minor aphthous ulcerations.⁷ This is not consistent with the results of our study where there was equal number that is (20 each) of subjects having major and minor forms of RAS. There was a definite correlation of these lesions with reduced hemoglobin level. Among the study group even the males showed low levels of hemoglobin (Table 2). This may be the reason for more number of subjects having major RAS. The exact reason for this cause could not be attained.

In this study by analyzing stress by HAD scale in 40 subjects, among them 28 subjects (70%) had history of stress whereas in control group only 30% were having stress. When morning serum cortisol levels of these subjects were evaluated, it was more towards the upper limit of normal range as the levels of stress increased. In males mean serum cortisol level in aphthous ulcer patient were 351.75nmol/L and in females it was 376.87nmol/L (Table 3). Results showed that RAS study group exhibited higher levels of stress than the control group. This is consistent with previous studies.²

On analyzing the HAD scale separately for anxiety and depression in the study group of RAS 70% of cases were having anxiety while 45% cases were suffering from depression (Table 4). This study provides evidence that anxiety is more prevalent in patients of RAS. No previous studies have been reported which analyzed anxiety and depression separately in both the sexes as predisposing factor of RAS.

In our study out of 40 subject 13 i.e (65%) were school and college students who were having the history of stress due to exams. Most of the subjects were in there 2nd decade of life (Table 1).

This result is in accordance with the results of Scully C et al.^{3,10} Occupation and work environment stress also plays an important role in the occurrence of apthous ulcer.^{9,11} Previous studies also noted that the peak age of RAS onset is during childhood, with a tendency to decrease in severity and frequency with age.¹²

This study showed a positive correlation between reduced hemoglobin level and the presence of apthous ulcer with 55% of study group showing low serum hemoglobin level as compared to 30% in control group. This result correlates with previous literature. The nutritional deficiency is associated with apthous stomatitis [B12, folate, and iron] which can cause a decrease in the thickness of the oral mucosa leading to RAU formation.¹³ Though in certain studies haemoglobin levels and red blood cell indices were normal in patients with recurrent apthous stomatitis, there was still a small minority of patients with deficiencies of iron, folate, or vitamin B12.¹⁴ Haemoglobin level, in this research; is highly correlated to the aetiology of recurrent oral ulceration.

In this study apthous stomatitis appear to be influenced by psychological stress. These results showed RAS subjects showed greater propensity of having anxiety and increased stress. Thus, stress-management interventions like relaxation, meditation, yoga and counseling may be beneficial in reducing apthous ulcer.

CONCLUSION

The results of this study suggest that psychosomatic factors play an important role in the occurrence of RAS. It may be further hypothesized that this psychosomatic factor can be one of the prime causes for the initiation of various autoimmune reactions, which have been shown to be contributory to the pathogenesis of RAS. It shows a correlation in reduced hemoglobin levels in both major and minor forms of RAS having stress. In psychosomatic related factors anxiety plays a major role in the occurrence of RAS than depression as per the data. Authors emphasis the management of stress which is seldom done in schools, colleges and work place. Counseling for stress should be included in every curriculum so that it acts as prophylaxis and manage stress at the early phase

before it give rise to an era of psychosomatic disorder.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Jurge S, Kuffer R, Scully C, Porter SR. Mucosal disease series. Number VI. Recurrent apthous stomatitis. *Oral Dis*. 2006;12:1-21
2. Gallo CB, Mimura MAM, Sugaya NN. Psychological Stress and Recurrent Aphthous Stomatitis. *Clinics*. 2009;64(7): 645-8.
3. Scully C, Porter S. Oral Mucosal Disease: Recurrent Aphthous Stomatitis, *British journal of oral and maxillofacial surgery*, 2008; 198-206.
4. Porter SR, Scully C, Pedersen A. Recurrent apthous stomatitis. *Crit Rev Oral Biol Med* 1998;9:306-321.
5. Natah SS, Konttinen YT et al. recurrent Aphthous ulcer Today, Review of Growing Knowledge, *Int J Oral Maxillo Surg* 2004; 33: 221-234.
6. Soto AM, Rojas AG, Esguep A. Association Between Psychological Disorder and Presence Of Oral Lichen Planus and Recurrent Aphthous Stomatitis, *Med Oral* 2004;9:1-7.
7. Mc Cartan BE, Lamey PJ, Wallace AM. Salivary Cortisol And Anxiety in Recurrent Aphthous Stomatitis. *J Oral Patho Med* 1996; 25: 357-59.
8. Field EA, Allan RB. Oral Ulceration--Aetiopathogenesis, Clinical Diagnosis and Management In *The Gastrointestinal Clinic*. *Aliment Pharmacol Ther* 2003, 18:949-962.
9. Zain R.B. Classification, Epidemiology and etiology of Oral Recurrent Aphthous Ulceration / Stomatitis, *Annal Dent Univ Malaya* 1999; 6: 34 - 37.
10. Shiny George , Biju Baby Joseph. A Study on Aphthous Ulcer and its Association with Stress

among Medical Students of an Indian Medical Institution. June 2016, Vol 3, Issue 6: 1692-95

11. Ferguson MM, Carter J, Boyle P. An epidemiological study of factors associated with recurrent aphthae in women. J Oral Med 39: 212-7,19.
12. Field EA, Allan RB. Review article: oral ulceration--aetiopathogenesis, clinical diagnosis and management in the gastrointestinal clinic. Aliment Pharmacol Ther. 2003;18:949-62.
13. Preeti L, et al. Recurrent aphthous stomatitis. J Oral Maxillofac Pathol. 2011;15:252-256.
14. Porter SR and Leao JC. Review article: oral ulcers and its relevance to systemic disorders. Aliment Pharmacol Ther. 2005;21:295-306.