ASSOCIATION BETWEEN RECURRENT APHTHOUS STOMATITIS AND STRESS IN ADULTS AT TERTIARY CARE HOSPITAL

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ABSTRACT

Objectives: To determine the relationship between recurrent aphthous stomatitis and stress

Methods: it was a cross-sectional comparative study conducted at Dental OPD of the Department of Operative Dentistry, LUMHS Jamshoro/ Hyderabad from April 2021 to May 2022. A total of 130 subjects using a non-probability sampling technique. All the subjects were divided into two groups. Thus, 65 patients were recruited in group A (as cases) and 65 subjects were in group B (as control). The inclusion criteria of the study were both genders, between 18 to 60 years of age, having a history of 6 months of recurrent aphthous ulcer. The subjects having history and signs suggestive of any chronic systemic disease, pregnant and lactating females and betel nut chewers were excluded from the study. After detailed history and oral examination, all the participants were psychologically evaluated on Hamilton Anxiety Scale for underlying stress.

Results: Out of all study participants, males were in majority 71.50% and females were 28.50%. with a mean age of 31.56 and a standard deviation of 10.24 years. As per the clinical presentation of RAS, buccal mucosa was involved in 20.8% of the cases, followed by the vestibule at 9.2%, tongue at 13.8%, and 6.2% at the floor of the mouth. In most of the cases, 36.9% had a size of the RAS greater than or equal to 6 mm. The severity of the stress was significantly high in patients with RAS compared to patients without RAS (p-0.001).

Conclusions: There is a significant association between stress and recurrent aphthous stomatitis.

Keywords: Anxiety Levels, Recurrent Aphthous Stomatitis, Recurrent Aphthous Ulcer, Stress

INTRODUCTION

Recurrent aphthous stomatitis (RAS) is a very painful lesion and causes severe discomfort during eating.[1] These ulcerative conditions disturb large segments of the population from 10% to 78%.[2,3] It frequently occurs in 3rd decade of life. Besides age-related variances in the prevalence of RAS lesions, there are ethnic variations too. The white race is more prone to these lesions as compared to the black race.[4] Gender correlation is also a very significant factor in RAS patients. Females are more prone to RAS lesions as compared to the male gender.[5] Clinical presentation of these lesions are round or oval superficial erosions with erythematous boundary and yellowish-gray pseudomembranous core. These lesions usually heal within two weeks but they resurface multiple times in a year. These ulcers appear on non-keratinized surfaces like lips, soft palate, labial & buccal mucosa, the floor of the mouth, and ventral and lateral boundaries of the tongue. RAS has three clinical variants like minor aphthous ulcer, major aphthous ulcer, and herpetiform aphthous ulcer.[5] Etiology of RAS is very complex with viral & bacterial infections and genetic tendencies are involved to predispose these lesions. Nutritional deficiencies, food allergies, systemic diseases like Celiac and Crohn's disease, hormonal disturbance, chemical or physical trauma, and psychosomatic disorders, like anxiety and stress, also play a significant role in RAS development.[5] Symptoms like soft tissue irritation, burning sensation, food eating inability, malnutrition leading to weight loss, and unbearable pain for days to weeks, which disturbs the patients greatly. The levels of anxiety in these patients are higher than that of healthy individuals.[6] Stress initiates the onset of the RAS episodes as psychogenic effects alter the immune reactions of the body

as with some other autoimmune disorders.[5] It is stated that there is an association between stress & psychological imbalance with recurrent aphthous ulcers. During stressful situations, the human body undergoes a series of chemical changes, and this unpleasant stimulus affects various organs. In response to sustained exposure to these biochemical events, the human body responds with disturbed metabolic, hormonal, and immunological functions.[5,6]

Although in literature it is mentioned that stress & anxiety are possible etiologic or predisposing factors in the RAS phenomenon, this correlation still is a topic of controversy in the literature.[7] Some of the researchers believe that evidence is not sufficient of a direct association between increased stress levels and RAS episodes. They suggested that emotional stress may activate or modify lesion occurrence rather than a direct causative factor in RAU lesions.[8]

Although stress is an important factor in the development of aphthous ulcers clinicians very often do not measure the stress levels or stress-related factors as an underlying cause of RAS patients. For the proper management of RAS patients, the diagnosis of RAS lesions may not be made on subjective findings i.e. history of the patient; but it may be confirmed through psychological assessment with any standard anxiety scales.[9] This study was conducted to determine the relationship between recurrent aphthous stomatitis and stress in adult patients visiting tertiary care hospitals.

MATERIAL & METHOD

This cross-sectional comparative study was conducted after the approval of the research ethics committee of Liaquat University of Medical and Health Sciences (LUMHS) at Dental OPD of the department of Operative Dentistry, LUMHS Jamshoro/ Hyderabad, from April 2021 to May 2022. The sample size of the study was calculated by taking a 10% prevalence of recurrent aphthous stomatitis[10] with a 5% margin of error at a 95% confidence interval through online Rao software. A total of 138 subjects were included and were divided into two groups. Thus 69 patients were recruited in group A (as cases) and 69 subjects were in group B (as control), through the non-probability convenience technique. The inclusion criteria for this study were both genders between 18 to 60 years of age having a history of 6 months of recurrent aphthous ulcer. We excluded the subjects having a history and signs suggestive of any chronic systemic disease, pregnant, and lactating females and, betel nut chewers.

All the patients/subjects who fulfilled the inclusion criteria were enrolled and entered into this study after written informed consent. The study participants who satisfied the inclusion criteria were divided into two groups; group 'A' having aphthous ulcers and group 'B' healthy volunteers as control. There was no financial implication for the participants of the study. The actual sample size was a total of 138 subjects, but four patients of group A dropped out from the study due to personal reasons, so four patients from the control group were also reduced. Therefore; a total of 130 patients were included in the study (65 in each group). The patient's (both groups) demographic data, detailed history, and clinical oral examination were performed by two experienced dental surgeons, and data was documented on proforma. After history and clinical examination, the

patients/participants were psychologically evaluated on "HAM-A" (Hamilton Anxiety Scale A) on proforma, which provided the measures of overall anxiety, psychic anxiety (mental agitation and psychological distress), and somatic anxiety (physical complaints related to anxiety). Hamilton Anxiety Scale comprises 14 questions, among which 7 questions addressed the psychic (anxious mood, tension, fears, insomnia, intellectual, depressed mood, behavior at interview) and the remaining questions addressed the somatic anxiety (muscular and sensory somatic complaints, cardiovascular symptoms, respiratory symptoms, gastrointestinal symptoms, genitourinary symptom, autonomic symptoms).

Each item is scored on a scale of 0-4;0 for normal; 1 for mild: having a score less than 17; 2 for moderate: having a score more than 18 to 24; 3 for severe: having a score more than 25-30; 4 for incapacitating: having scored more than 31, after replying all 14 questions. The data were recorded on a pre-designed proforma.

RESULTS

Out of all study participants, males were in majority 71.50% and females were 28.50% (Fig:1). A total of 130 cases were studied; their mean age was 31.56±10.24 years, minimum of 18 years and a maximum of 60 years (Fig: 2).

As per the clinical presentation of RAS, buccal mucosa was involved in 20.8% of the cases, followed by the vestibule at 9.2%, tongue at 13.8%, and, 6.2% at the floor of the mouth. 40.0% had a reddish presentation and 10% had a gray presentation. In most of the cases, 36.9% had a size of the RAS greater than or equal to6mm. Tenderness was in 43.8% of the cases (Table-1).

The severity of the stress was significantly high in patients with RAS compared to patients without RAS (p-0.001), results shown in Table-2.

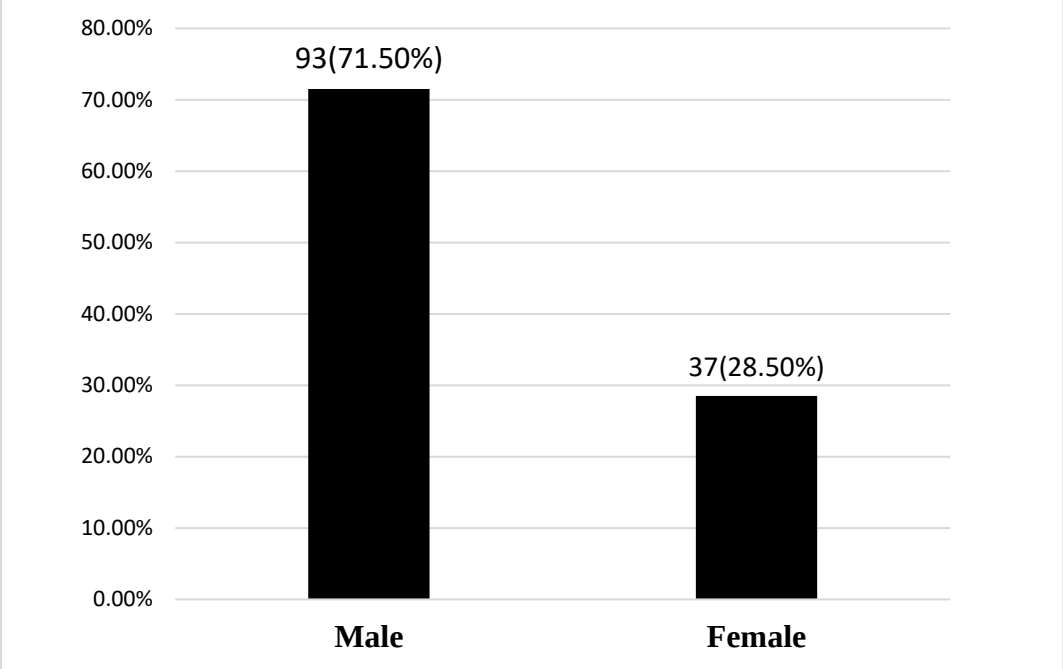
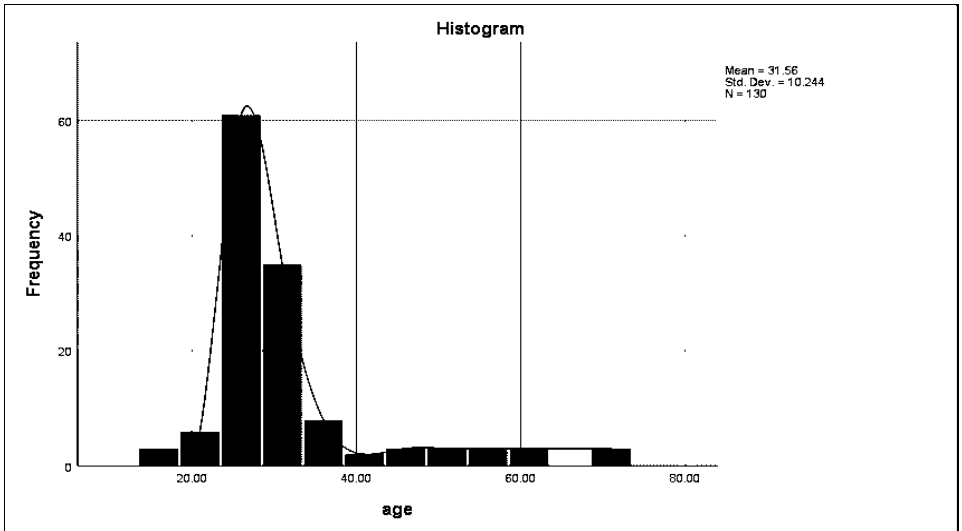


Figure 1- Gender age of the study subjects n=130



Mean	31.5615
Median	28.0000
Std. Deviation	10.24355
Minimum	18.00
Maximum	60.00

Figure 2- Average age of the study subjects n=130

Table 1- RAS clinical presentation n=65

Oral ulcer examination	Frequency	Percentage
Site of RAS		
Buccal mucosa	27	20.8
Vestibule	12	9.2
Tongue	18	13.8
Floor of mouth	8	6.2
Base of RAS		
Red	52	40
Gray	13	10
Size of RAS		
Greater than or equal to 6mm	48	36.9
Less than 6mm	17	13.1
Tenderness/Pain of RAS		
Yes	57	43.8
No	8	6.2
Induration of RAS		
Yes	22	16.9
No	43	33.1

Table 2- Patients' distribution according to stress n=130

Variables		STUDY GROUPS		Total	p-value
		Patients with RAS (n=65)	Patients without RAS (n=65)		
Severity of Stress	No Stress	10	55	65	0.001
		15.4%	84.6%	50.0%	
	Mild Stress	35	10	45	
		53.8%	15.4%	34.6%	
	Moderate Stress	13	0	13	
		20.0%	0.0%	10.0%	
	Severe Stress	7	0	7	
		10.8%	0.0%	5.4%	
	Incapacitating	--	--	--	
Total		65	65	130	
		100.0%	100.0%	100.0%	

Chi squire test applied

DISCUSSION

In this study out of 130 subjects, 71% were male and 28.5% were female. Some studies have recorded that females were more prone to RAS as compared to the opposite gender. According to these authors, this gender predilection may be because women are more vulnerable to psychological stress due to hormonal imbalances associated with pregnancy and the menstrual cycle.[11] On the contrary, studies by Bao et al. and Shahzad et al. found no gender predilection.[12,13] Results of our study are in agreement with the preceding work of Bao and Shahzad et al.

Out of 130 subjects, the mean age of the study subjects was 31.5 with a standard deviation of 10.2 (figure 2). Shabbir et al. observed that the average age of the patients with RAS was 28 years, so according to their conclusion, these lesions are more common in the third decade of life.[11] In this study the mean age of the subjects was almost identical to the results of Shabbir et al.

On clinical examination of 65 RAS patients, we found RAS was present at 20.8% on the buccal mucosa, 13.8% on the tongue, 9.2% on the vestibule, and, 6.2% on the floor of the mouth. Karthikeya et al.[14] found RAS lesions more on labial mucosa, while Michel et al.[15] detected RAS more on the tongue and labial mucosa, while on buccal mucosa they found only 3.9%. Tidgundi et al.[16] witnessed the lip area as the common site of these lesions. We observed a reddish ulcer base in 40% of patients and a grey base in 10%. The findings of this study are contrary to the findings of Nurdiana et al.[17] who observed more patients with grey-white pseudo-membranous bases. In the current study ulcer size presented as 36.9% less than 6 cm and 13.1% greater than or equal to 6 cm

(Table 1). Khan et al. found minor RAS lesions in 85%, while 11.7% of patients were seen with major RAS, and 3.3% had Herpetiform type RAS lesions.[18] We recorded tenderness and pain in 43.8% of patients and 6.2% of cases were painless. The findings of this study are similar to the study outcome of Tidgundi et al.[16] Induration was present in 16.9% of cases of group A while it was not present in the remaining 33.1% of cases (Table 1).

Hulling et al. studied RAS patients and found that underlying stress in these patients may lead to the changes that are responsible to initiate the new episodes of ulcerative lesions. They concluded that psychological stressors are more strong for RAS initiation than physical stressors.[19] High depression and high levels of stress are more marked in patients with a RAS. Study results of Rezaei et al. showed a significant relationship between stress & RAS lesions but they were unable to notice any change in cortisol levels.[20] Polat et al. (2018) also investigated stress in RAS patients and build an opinion that stress can lead to RAS lesions.[21] We assessed the association between presence of RAS and HAM-A-Scoring & found highly significant association (p=<0.001). Observations of this study are fully in agreement with all the above studies regarding the relationship between stress and RAS.

In contrast, another school of thought believes that evidence is insufficient to make any direct relation between high-stress levels and RAS episodes and suggested that emotional stress may activate or modify the lesion occurrence rather than a direct causative factor in RAS lesions. Sharma et al. state that mental stress only triggers the lesion, rather than being the sole cause of the disease.[22] Farhadmolashahi et al., evaluated RAS patients and reported that the anxiety and depression may trigger RAS lesion.[23] While Mirzae et al. concluded

that stress is not a likely causative factor for the occurrence of these ulcerative lesions.[24] Based on the conclusion of the current study, we do not agree with the observations of Mirzae et al.[24] as we have observed a highly significant relationship between stress and RAS. These variations in the RAS stress relationship may be due to the usage of different anxiety scales to measure stress levels in RAS patients and the size of the study sample. Investigators have also modified these anxiety scales following the educational and cultural background of the population they studied.

Conclusion: The current study concludes that there was a strong relationship between recurrent aphthous stomatitis and stress. In this study, we discovered that recurrent aphthous stomatitis was directly related to stress.

Limitations: We should have included a professional psychiatrist for proper stress evaluation

Conflict of interest: Authors deny any sort of conflict of interest.

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