

Frequency of Aphthous Ulcer and its Association with Stress among a Group of Students of Tikrit Medical College"

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Abstract:

Background: Aphthous ulcer or recurrent aphthous stomatitis is one of the most common mucosal disorders of the mouth. The exact etiology of aphthous ulcer is uncertain, but precipitated factors include stress, trauma, food sensitivity, and genetic predisposition. Stress and anxiety have a role in the onset and recurrence of aphthous ulcers.

Aim of study: This study aims at clarifying the association between stress and aphthous ulcer and the influence of other triggering factors.

Study design: observational cross-sectional study which was conducted on medical students of Medical College of Tikrit University (n/566), Patient age range from (19-24) years. The data were collected using questionnaires involved perceived stress scale (PSS) by Cohen.

Results: In this study the frequency (31%) (176/566) of students has aphthous ulcer, (62%) (110/176) of them were female, and (37%) (66/176) of them were male. Perceived stress scale was high among the medical students, in the male (10%) (7/66) were under mild stress and (56%) (37/66) were under moderate stress and (33%) (22/66) were under severe stress. While in female (6%) (7/110) were under mild stress and (79%) (87/110) were under moderate stress and (14%) (16/110) were under severe stress.

Conclusion: The prevalence of aphthous ulcer was high among medical students. With a highly significant association with stress.

Keywords: Recurrent, Aphthous stomatitis, Perceived stress scale.

1. Introduction:

Recurrent aphthous stomatitis (RAS; recurrent aphthous ulcers; canker sores) belongs to the group of chronic inflammatory diseases of the oral mucosa^(1, 2, 3, 4). The most characteristic symptom of the disease is the recurrent onset of single or multiple painful erosions and ulcers that appear mainly on unattached oral mucosa of the lips, cheeks and tongue. Occasionally the lesions may also be observed on strongly keratinized palatal and gingival mucosa. The eruptions are surrounded by a characteristic erythematous halo and covered with fibrous coat^(3, 5). Another described factor potentially

related with RAS exacerbations is stress^(6, 9, 10). Psychogenic effects modify the immune response also in the other conditions with a suspected autoimmune background, like lichen planus and chronic inflammatory bowel diseases⁽¹²⁾. Cortisol (21 carbons glucocorticoid), also known as the stress hormone⁽¹³⁾, is secreted by the adrenal cortex and is used to assess stress and anxiety in human beings. It also influences metabolism, immune regulation, vascular responsiveness, cognition, behavior, and pathological conditions, such as inflammatory autoimmune disorders⁽¹⁴⁾. The Etiopathogenesis of

RAS so far remains not fully understood. The potential trigger factors include: genetic predisposition, viral and bacterial infections, food allergies, vitamin and microelement deficiencies, systemic diseases e.g. (celiac disease, Crohn's disease, ulcerative colitis, AIDS) increased oxidative Genetic Predisposition stress, hormonal defects, mechanical injuries and anxiety^(7, 8, 6, 4, 2, 1).

Aim: This study clarifying the association between stress and aphthous ulcer and influence of other triggering factors.

2. Subjects and Methods:

Official permission to carry out this study was obtained from Educational Directorate of Tikrit province and the Dean of Medical College an observational cross-sectional study which was conducted on medical students of Medical College of Tikrit University. A systematic simple random sampling technique has been used. The study population was recreated from medical student from all 6 classes. Total numbers of students included in the study were 566. The patient age range from (19-24) years, and the examiner were the researchers; the data were collected using questionnaires. The questionnaire had two sections. The first section contained personal information and question related to

aphthous ulcer, such as the frequency of aphthous ulcer, number of aphthous ulcer in each episode, site of aphthous ulcer, duration of each episode, aggravating factors, any treatment taken, self-related period of stress, tobacco consumption, family history. The diagnosis supported by the clinical finding by inspection and complete medical history include serious injury or illness, allergy to foods or drugs, present medication, history of present illness include time, onset of ulceration, recurrence factors, there has been a tendency for clinicians to describe any ulcer occurring in the mouth as aphthous.

Diagnosis of Recurrent Aphthous Stomatitis (RAS)

The correct diagnosis of RAS is dependent on a detailed and accurate clinical history and examination of the ulcers. The main points to be elicited in the clinical history are shown in table (2-1)⁽²⁹⁾. Furthermore, it is necessary to carry out an external examination including palpation of the cervical lymph nodes. The important features to be noted when examining a patient with oral ulceration include family history, frequency of ulceration, duration of ulceration, number of ulcers, site of ulcers (non-keratinized or keratinized), size and shape of ulcers, associated medical conditions, genital ulceration, skin problems, gastrointestinal disturbances, drug history, edge of ulcer, base of ulcer, and surrounding tissue.

Table (2-1): Clinical characteristic of RAS according to their classification.

Type of RAS	Size mm	Type and number of Lesions	Depth	Scar	Duration (days)	Peek onset Age (decade)	Frequency compared to other RAS types (%)	Localization
MiRAS	5-10	<10	Shallow	No	10-14	2 life decade	75-90	Non-keratinized oral mucosa. Often: lips, buccal regions, tongue margins
MaRAS	>10	1-3	Deep	Yes	>14	1 and 2 life decade	10-15	Keratinized and non-keratinized oral mucosa. Often: soft palate

The second part of questionnaire dealt with 10 questions about perceived stress using a modified perceived stress scale (PSS) by Cohen ⁽¹⁶⁾. The score ranges from 0 to 40. The answers are graded on a 5 point Likert Scale ranging from never =0, almost never = 1, sometime = 2, fairly often = 3, to very often = 4, positively framed question 4, 5, 7 and 8

are reverse scored, that is never = 4 to very often = 0, and the scores are summed, with higher scores indicated more perceived stress. The level of stress was arbitrarily divided as: low perceived stress: 0-13, moderate perceived stress: 14-26, and high perceived stress: 27-40 ⁽¹⁶⁾.

3. Result:

Table (3-1): Frequency of ophthus ulcer among medical students.

Class	Positive	Negative	Total number
1 st	44 (33%)	86 (66%)	130 (22%)
2 nd	32 (48%)	34 (54%)	66 (11%)
3 rd	21 (41%)	30 (58%)	51 (9%)
4 th	29 (37%)	47 (61%)	77 (13%)
5 th	29 (38%)	75 (72%)	104 (18%)
6 th	21 (15%)	118 (84%)	139 (24%)
Total number	176 (31%)	390 (91%)	566

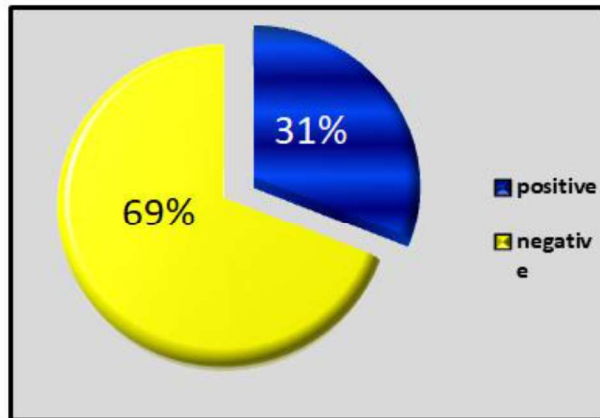


Figure (3-1): Prevalence of aphthous ulcer among medical students.

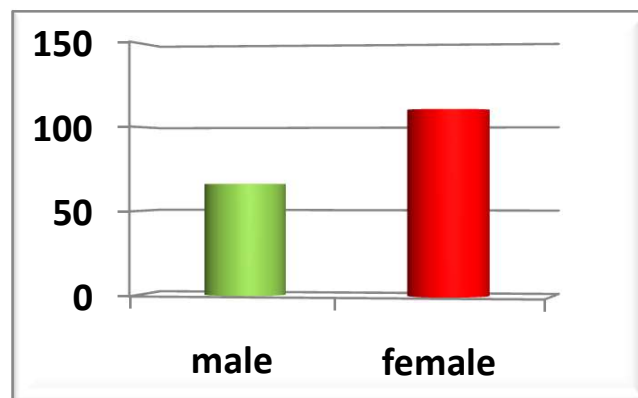


Figure (3-2): Frequency of ophthus ulcer among medical students according to gender.

Table (3-2): Frequency of ophthus ulcer according the recurrence.

Frequency	Gender		Total number
	Male	female	
6month	24 (36%)	46 (41%)	70 (39%)
3month	24 (36%)	33 (30%)	57 (32%)
1month	18 (27%)	31(28%)	49 (27%)
Total number	66 (37%)	110 (62%)	176

P value= 0.129 not significant at p- value<0.05

Table (3-3): prevalence of aphthous ulcer according to duration of remission to gender.

Sex	Duration of remission			Total
	(1 2 days)	(3 5 days)	≥6 days	
66(37%)	11(16%)	37(56%)	18(27%)	Male
110(62%)	33(30%)	62(56%)	15(13%)	Female
176	44(25%)	99(56%)	33(18%)	Total

P value=0.029 (significant at p value<0.05).

Table (3-4): Prevalence of aphthous ulcer according to triggering factors with gender.

Gender	Aphthus ulcer Related with other conditions											
	fever		Spicy food		Cheek bite		Tooth brush injury		Stress		Family history	
	yes	No	yes	No	yes	No	yes	No	yes	No	yes	No
Male	12	54	6	60	10	56	16	50	22	44	32	34
Female	20	90	12	98	27	83	21	89	17	93	64	46
P-value as significant at <0.05	1.0		0.79		0.13		0.41		0.0029		0.12	

Table (3-5): Prevalence of aphthous ulcer according to stress with gender.

Sex	Stress	No stress	Total
Male	22 (33%)	44 (66%)	66 (37%)
female	17 (15%)	93 (84%)	110 (62%)
Total	39 (21%)	137 (79%)	176

Stress p value=0.0029 (highly significant at p value<0.05).

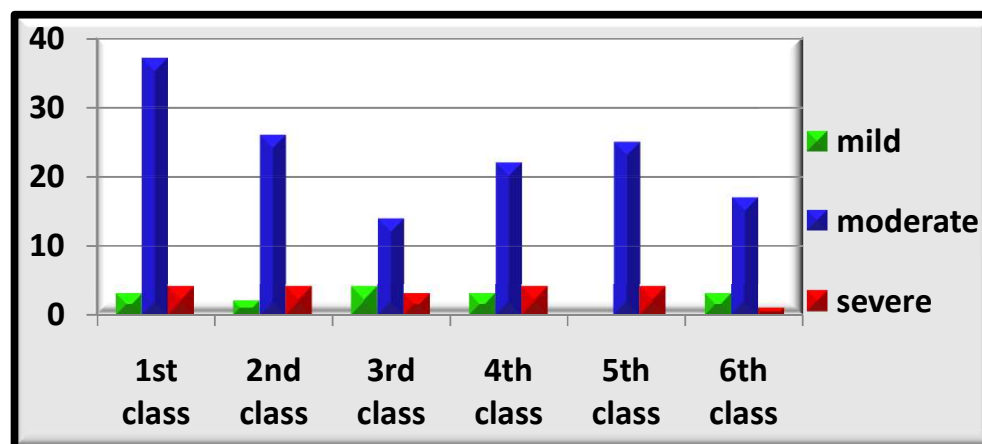


Figure (3-3): Severity of stress according to perceived stress scale.

Table (1-6): Severity of stress according to perceived stress scale to gender.

Sex	Stress score			Total
	Mild	Moderate	Sever	
Male	7 (10%)	37 (56%)	22 (33%)	66 (37%)
Female	7 (6%)	87 (79%)	16 (14%)	110 (62%)
Total	14 (8%)	124 (70%)	38 (21%)	176

P value=0.004 (significant at p value<0.05).

4. Discussion:

The study of medicine is extensive, time-consuming, and highly stressful, especially in our community. Students are subjected to endless working hours, and examination. Peer, teacher, or parental pressures add an extra burden. Iraqi students may have more stressors than other students. This may be related to their cultural aspect, learning medicine in a foreign language, extracurricular activities, transportation issues, and other special condition. Epidemiological studies performed over the past few years have shown considerable variation in the prevalence of RAS among different regions throughout the world, the prevalence range among different population has been documented as (5-66%)⁽¹⁷⁾. The current study revealed that the overall prevalence of aphthous ulcer within medical student with age of (19-24) years old was (31%), and it was higher in female (62%) then in male (37%). Thus the female to male ratio was 1:1.7. The present study finding concerning gender distribution of RAS. Similar to study reported by Hana et al., where female are more commonly affected than male⁽¹⁸⁾. Handa et al⁽¹⁹⁾, reported from India a prevalence rate of (26%) and a study of Naito et al from Japan revealed a prevalence of (31%)⁽²⁰⁾. However, this study was finding significantly lower than that Indian studies carried out by Solanky et al⁽²¹⁾ who reported a prevalence of (96.8%). Current study indicated that all study cases with (RAS) (176/566) were under stress (8%) of them under mild stress,

(9%) under moderate stress and (11%) under severe stress as reported by students. Shaikh et al⁽²²⁾ in a study at Agha Khan University, Pakistan reported that more than (90%) of students felt stressed at one time or the other during their course. One explanation to high frequency of aphthous ulcer in medical students that those group of students less physically active. Physical exercise could improve the body's immune system, which has been recognized by the fact of the medical profession. In this current study the stress more among 1st year medical students than other classes; this is contrary to the studies of Hana et al⁽¹⁸⁾ and Singh et al⁽²⁵⁾. Who reported the higher class students felt more stress when compared to juniors. The reason for increased stress among 1st year students may be because first year is a transitional period from school to professional education and they are find it difficult to cope up with the vast curriculum. A similar study from government Medical College, Maharashtra, India by Randa et al⁽²³⁾ reported that (85%) of first year medical students had stress and a study by Supa et al⁽²⁴⁾. In Seth G. S. Medical College at Mumbai showed that (73%) had perceived stress. The present study shows that medical students with aphthous ulcer were with higher Perceived Stress Scale then those without. Shah et al⁽²⁶⁾ suggested that the most significant stressors affecting medical undergraduates include high parental expectations, frequency of examination, sleeping difficulties, loneliness,

performance in examination, and becoming a doctor. In current study the majority (56%) of cases were with remission duration of 3-4 days in both genders. Similar observation was seen in the study of Safadi in 2009 in a study on Jordanian dental students who noticed that tow-third of the subject; ulcers lasted for less than a week⁽²⁷⁾. The main important finding of this study is that PSS was significantly higher in medical students. The Preceived Stress Scale mean value was 23+5.4, while it was 16.5+4.4 for general population without aphthous ulcer. In addition, (73%) (129/176) of cases with aphthous ulcer show PSS mean of more than that reported individual without aphthous ulcer. Psychological stress as a triggering factor for RAU has already been mentioned in the literature, and is typically observed during stressful situation such as school exam period, dental treatment and periods of significant change in life. The real role of stress is still unknown but it can be probably related with the modifications that affect multiple immune system components including the distribution, proliferating and activity of lymphocyte and natural killer cells, phagocytosis, and production of cytokines and antibodies. RAS has also been linked to immune system change, which may partially explain the role of stress in the etiology of RAS. Increased levels of salivary cortisol or of reactive oxegen species in the saliva have been suggested as the initiator of the lesion^(11, 12). The lesion tends to involute in 1-2 weeks, but recurrence is common. These recurrences may be induced by trauma, spicy food, emotional stress, or hormonal change in women, as in menstruation, pregnancy, menarche, and menopause⁽¹⁵⁾. Regarding family history of RAS, a genetic predisposition for the development of aphthous ulcer is suggested, as in one study about (40%) of patient have family history and these

individuals develop ulcers earlier and are more severe nature⁽²⁸⁾, in this study (54%) of patients reported that other family member suffered previously from RAS, suggesting a positive association of disease occurrence with genetic predisposing.

Conclusions:

1. Prevalence of aphthous ulcers among medical students in College of Medicine Tikrit University is (31%).
2. Aphthous ulcer prevalence in female is more frequent than male.
3. Aphthous ulcer in medical students is significantly associated with stress.

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