



RESEARCH ARTICLE

A STUDY ON APHTHOUS ULCER AND ITS ASSOCIATION WITH STRESS AMONG MEDICAL STUDENTS – A CROSS SECTIONAL, QUESTIONNAIRE BASED STUDY

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ABSTRACT

Background: The term “aphthous” is derived from a Greek word “aphtha” which means ulceration. Recurrent aphthous stomatitis (RAS) is one of the most common painful oral mucosal conditions seen among patients. These present as recurrent, multiple, small, round, or ovoid ulcers, with circumscribed margins, having yellow or gray floors and are surrounded by erythematous haloes, present first in childhood or adolescence. Many studies have reported that stress and anxiety have a role in the onset and recurrence of aphthous ulcers. We aimed to do a study on association between aphthous ulcer and stress.s

Material and Methods: A cross sectional study was done on 100 medical students in Hamdard Institute of Medical sciences, New Delhi. Questionnaire contained questions about aphthous ulcers and questions on perceived stress by modified perceived stress scale. Statistical analysis was done using SPSS 20. Student t test and chi square test were used and a p value of <0.05 was taken as significant.

Result: The prevalence of aphthous ulcers among medical students was high (60%). Majority participants (81.6%) showed high level of stress due to exams or some other reasons. Only 26.6% of participants showed positive history.

Conclusion: The study revealed that there was a significant association between stress and aphthous ulcer as was observed in medical students who are under constant pressure as compared to other professional students.

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INTRODUCTION

The term “aphthous” is derived from a Greek word “aphtha” which means ulceration. Recurrent aphthous stomatitis (RAS) is one of the most common painful oral mucosal conditions seen among patients. These present as recurrent, multiple, small, round, or ovoid ulcers, with circumscribed margins, having yellow or gray floors and are surrounded by erythematous haloes, present first in childhood or adolescence. (Jurge et al., 2006) The estimated prevalence of oral ulcers worldwide is 4%, with aphthous ulcers being the most common, affecting as many as 25% of the population worldwide. (Shulman et al., 2004) RAS is characterized by recurrent bouts of solitary or multiple shallow painful ulcers, at intervals of few months to few days in patients who are otherwise well. (Scully and Porter, 2008) RAS has been described under three different clinical variants as classified by Stanley in 1972. (Stanley, 1972)

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1. Minor RAS is also known as Miculiz's apthae or mild aphthous ulcers. It is the most common variant, constituting 80% of RAS. Ulcers vary from 8 to 10 mm in size. It is most commonly seen in the nonkeratinized mucosal surfaces like labial mucosa, buccal mucosa, and floor of the mouth. Ulcers heal within 10–14 days without scarring.
2. Major RAS is also known as periadenitis mucosa necrotica recurrens or Sutton's disease. It affects about 10–15% of patients. Ulcers exceed 1 cm in diameter. Most common sites of involvement are lips, soft palate, and fauces. Masticatory mucosa like dorsum of tongue or gingiva may be occasionally involved. (Cawson and Odell, 2008) The ulcers persist for up to 6 weeks and heal with scarring.
3. Herpetiform ulceration is characterized by recurrent crops of multiple ulcers; may be up to 100 in number. These are small in size, measure 2–3 mm in diameter. Lesions may coalesce to form large irregular ulcers. These ulcers last for about 10–14 days. Unlike herpetic

ulcers, these are not preceded by vesicles and do not contain viral infected cells. These are more common in women and have a later age of onset than other clinical variants of RAS. (Scully and Porter, 1989)

The etiology of RAS is uncertain, and both environmental and genetic factors are indicated. The precipitating factors include stress, physical or chemical trauma, infection, allergy, genetic predisposition, or nutritional deficiencies (Natah *et al.*, 2004; Gallo *et al.*, 2009) Studies of Ship *et al.* (1996) and Miller *et al.* (1977) showed association between RAS and stress whereas studies of Ferguson *et al.* (2008) and Heft and Wray (1982) did not show any association between them. Studies reveal an increased prevalence of RAS in students and also with higher level of education. This finding supports the role of stress and anxiety in occurrence of RAS among educated patients, especially during the time of examination. Stress has been emphasized as a causative factor in RAU. It has been proposed that stress may induce trauma to oral soft tissues by parafunctional habits such as lip or cheek biting and this trauma may predispose to ulceration. A more recent study shows lack of direct correlation between levels of stress and severity of RAS episodes and suggests that psychological stress may act as a triggering or modifying factor rather than etiological factor in susceptible RAS patients. (Gallo *et al.*, 2009)

MATERIALS AND METHODS

A cross - sectional study was carried out on 100 medical students of Hamdard Institute of Medical Sciences and Research, New Delhi. Ethical committee clearance, an informed consent was taken from the participants and sampling was done using systematic random sampling method. The questionnaires had two sections. The first section contained personal information and questions related to aphthous ulcers, such as ulcer experience, number of episodes in the last 1 year, number of ulcers in each episode, duration of each episode, site of ulcer, symptoms and remedial measures, associated conditions, self-reported periods of stress, and family history. The second part dealt with 10 questions about perceived stress using a modified perceived stress scale (PSS) by Cohen. It consists of four positively stated items (items 4, 5, 7, and 8), the responses of which are reversed (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 and 4 = 0) and they are added to the responses of the rest of the items which gives an overall stress score.

Inclusion criteria: Participants who signed the consent form. Medical students of the same institution only.

Exclusion criteria: Serious systemic illnesses. Medication causing immunosuppression.

Statistical analysis: Was done using student t test and Chi square test with the SPSS 20 version software.

RESULTS

100 medical students were taken into study, out of which 60% (60 students) reported that they had experienced oral ulceration. 13 participants were suffering at the time of study, 10 had an ulcer 1 month back, 8 had experienced 3 months back, 9 had 6 months back and 20 participants had more than 6 months back. Frequency of ulceration once in a month was seen in 14 participants, once in a 3 months for 12 and majority 34 participants had experienced it one in a month. The most

commonly area involved was cheek/buccal mucosa constituting 41.6%, followed by lips (21.6%), gums (20%) multiple areas (13.3%) and least involved was tongue (3.33%). Majority of ulcer lasted for 3-5 days (73.3%), 0-2 days in 21.6% and 6-10 days in 10% of participants. Majority of participants presented (80 %) with 1 ulcer, 3-6 ulcers were presented in 16.6% and more than 6 ulcers were present in 3.3% of participants. (Table 1)

Table 1. Factors associated with aphthous ulcers

Aphthous	Ulcer experience	Number	%
Time of last ulcer	Experiencing presently	13	21.6
	1 Month	10	16.6
	3 Months	8	13.3
	6 Months	9	15
	>than 6 Months	20	33.3
Frequency of ulceration	Once in a Month	14	23.3
	Once in 3 Months	12	20
	Once in 6 Months	34	56.6
No. in each episode	1	48	80
	3-6	10	16.6
	>6	2	3.3
Duration of the ulcer	0-2 Days	10	16.6
	3-5 Days	44	73.3
	6-10 Days	6	10
Area of occurrence	lip	13	21.6
	cheeks	25	41.6
	Gums	12	20
	Tongue	2	3.33
	Multiple Areas	8	13.3
Medication	Vitamins/topical gels	22	36.6
	Home remedy	6	10
	No medication	32	53.3
Associated with any condition	Fever	3	5
	Cutaneous problems	1	1.66
	Gastric ulcer	3	5
	Recurrent infections	0	
	Vitamin deficiency	23	38.3
	Diabetes mellitus	0	
	Other conditions	0	
	Trauma	0	
	none	30	50
Family history	Yes	16	26.6
	No	44	73.3
Associated with stress	Yes	49	81.66
	No	11	18.33
Form of stress	exam	20	33.3
	Loss/Separation of near one	3	5
	Change in food	6	10
	others	10	16.66
	Multiple reasons	21	35

Majority of the participants did not take any medication (53.3%) whereas a good proportion (36.6%) had used vitamins (B complex) and topical gels (Tosti gel) and very few (10%) had sought some home remedies (turmeric). None of them were exposed to tobacco in any form. Positive family history was reported by about 26.6%. Out of the 60 participants who experienced ulcer, 41 were females and 19 were males. Majority of students (81.66%) had stress which was associated with exams and other issues like food change, separation from loved ones.

DISCUSSION

In our study aphthous ulcers were present in 60 % of patients. (Figure-1) Studies similar to our study have been reported. A study done by Shiny and Biju (2016) on medical students alike ours showed prevalence of 62.3% whilst our study showed prevalence in 60%. Other studies by Handa *et al* from Jaipur showed prevalence of 26% and other study by Naito *et al* from

Japan revealed a prevalence of 31%. (Handa *et al.*, 2012; Naito *et al.*, 2014) In our study the prevalence of the ulcer is higher as compared to others which is high likely that our study population was included medical students who are under constant pressure as compared to other professional courses. Our data showed that majority of students (81.66%). There are studies that have shown association of anxiety, depression, and psychological stress with recurrent aphthous stomatitis. (Miller and Ship, 1977; Gavic *et al.*, 2014; Ship *et al.*, 1967) Daily stress of events was recorded telephonically in 160 cases of recurrent aphthous ulcers by Huling *et al.* (2012) and reported stressful events involved in initiation of new recurrent aphthous stomatitis. Many studies showed that stress played a role in the development of RAS especially in those who have an underlying anxiety trait. (Albanidou- Farmaki *et al.*, 2008; McCartan *et al.*, 1996; Soto – Araya *et al.*, 2004) A report by Kasi PM *et al* in 2007 showed that significant levels of stress were identified among medical graduates, which led to their management of stress using negative coping mechanisms. (Kasi *et al.*, 2007) In our study females showed higher prevalence in comparison to males which was seen in a study reported by Handa *et al.*, where females are more commonly affected than males. (Handa *et al.*, 2012) Our study showed that there was increased stress among medical students and higher stress was found in senior batches which was similar to the study done by Handa *et al.* (2012) and Singh *et al.* (2013) In our study majority of participants (41.6%) had ulcer on buccal mucosa/cheeks followed by lips (21.6%). The commonly involved areas where aphthous ulcers occur are buccal mucosa and labial mucosa, floor of the mouth, ventral surface of the tongue and soft palate. (1998) Majority of patients (80%) had single ulcer lasted for 3-5 days similar to the study done by Safadi in 2009 on Jordanian dental students and it was observed that in two – thirds of the subjects, ulcers lasted for less than a week. (Safadi, 2009) In our study 32 (53.3%) participants did not take medication, 22 (36.6%) took vitamins and topical gel (b complex, Tosti gel) 6 (10%) participants were using home remedy (turmeric powder). A study done by Ship (1965) showed that patients with a positive family history of RAS may develop oral ulcers at an earlier age and have more severe symptoms than those with no such history. Other study by Neelam *et al.* (2016) also showed similar results. Our study showed contrary results were majority of patients 73.3% had no family history which was also demonstrated by a study done by Shiny and Biju (2016). It is important to advice maintenance of good oral hygiene to all patients. The aim should be reduce the stress levels of medical students. It is important to reduce severity of symptoms and also prolong duration of ulcer free periods.

Conclusion

The study revealed that there was a significant association between stress and aphthous ulcer as was observed in medical students who are under constant pressure as compared to other professional students.

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