

PREVALENCE OF RECURRENT APHTHOUS ULCERATION IN GIZAN

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وجد ترافق القرحة القلاعية مع القرحة الحالية بنسبة ١,٥٩% لدى المرضى السعوديين الذين تم فحصهم في قسم الأسنان بمستشفى الملك فهد المركزي في جيزان بين عامي ١٩٨٤ و ١٩٨٩م وإن جميع المرضى الذين تم فحصهم إضافة إلى هؤلاء المصابين بالقرحة العادية تبين من كل ذلك أن ١٦,٤% من مجموع المرضى تتكرر لديهم الإصابة بالقرحة القلاعية على الأقل مرة كل عامين قبل مراجعتهم للمستشفى وتبين أن أعلى نسبة لحدوث القرحة كانت بين المرضى الصغار. ولكن لم نجد بالدراسة فرقاً واضحاً في نسبة حدوث القرحة بين الجنسين ولم تكن هناك أسباب واضحة لذلك. كما وجدت الدراسة أنه لا يوجد علاقة بين التدخين وحدث القرحة.

Among present ulcers, recurrent aphthous ulceration (RAU) was found in 1.59% of 4,255 adult Saudi patients seen in the Dental Department, King Fahd Central Hospital, Gizan, between 1984-1989. Of all the patients examined including those with ulcers, 16.4% gave positive history of developing aphthous ulcers at least once during the two years previous to the time of examination. The highest prevalence for both present ulcers and history of ulcers was among the younger age-groups. No significant difference was found between the prevalence figures of RAU in the two sexes. None of the common triggering factors were contributory, nor there has been any correlation between smoking and RAU in this study.

Introduction

Recurrent aphthous ulceration (RAU) is the most common oral ulcerative disease affecting man, characterized by recurrent episodes of painful ulceration of the oral mucosa. Aphthous ulcers most commonly develop on the labial and buccal mucosa, tongue and less frequently on the mucobuccal folds, floor of mouth and soft palate.¹⁻⁵ Involvement of keratinized mucosa bound to periosteum is generally considered uncommon.^{6,7}

The ulcers are well demarcated; fibrin-covered and surrounded by a bright red inflammatory halo. The number of ulcers varies from a single lesion to 5-10 ulcers. The ulcers vary in diameter from 1-2 mm but rarely exceed 1 cm. The labial and buccal lesions are usually rounded, whereas in the sulci they tend to be oblong.⁴ The ulcers will most often heal within one to three weeks. Recurrence may take place at intervals of several years, whereas some patients had ulcerations almost constantly with healing times that exceeded one month.⁶

The disease has been classified in three different clinical forms: minor, major and herpetiform.^{1,5} The herpetiform type is characterized by recurrent crops of ulcers, 10 to 100 in number, involving the oral mucosa. The ulcers usually have a diameter of 1 to 2 mm. In these features, they resemble herpetic lesion.² The major aphthous ulcers are larger in size, deep, crateriform, and may be accompanied by considerable induration, and characteristically heal with scar formation.² The prevalence of RAU varied in different parts of the world and in different samples of population (Table 1). Donatsky¹² in a study of 512 dental students in Denmark, reported a prevalence of 56% for RAU. Fahmy¹⁴ reported a 5-year incidence of 27% among Arabs of various nationalities living in Kuwait, who also reported a low incidence of 5% in a sub group of Bedouins. Prevalence as high as 54% among health students⁸ and 66.2% among dental students has been reported in U.S.A. by Ship *et al.*¹⁰ Axell¹⁶ found a prevalence of 17.7% in the general Swedish population. No studies were done so far on the prevalence of RAU in Saudi Arabia.

The aim of the present investigation was to study the prevalence of RAU in an adult Saudi Arabian population from Gizan Region.

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Materials and Methods

The material of this study comprised 4,257 Saudi patients (63% males and 39% females) aged 20 to 72 years, seen in the Dental Department, King Fahd Central Hospital, Gizan between 1984 and 1989. All patients were examined clinically for oral mucosal lesions, including RAU. The clinical criteria for the diagnosis of RAU^{1,2,5} were:

1. The presence of one or more well demarcated, painful ulcers on a nonkeratinized mucosa, fibrin covered and surrounded by an inflammatory halo.

2. Positive history of developing similar ulcers. The anatomic location of the ulcers was recorded for each patient with the aid of the diagram presented by Roed-Petersen and Renstrup¹⁶ for the topographic classification of the oral mucosa.

History of RAU was recorded as positive when the patient was able to identify the lesion of RAU on colored photographs helped by verbal explanation; and that he/she had experienced this lesion at least once during the past two years. The criteria used in this study for the diagnosis and in obtaining the history of RAU were those described in the early studies.^{8,10,15} All patients

were inquired about the frequency of the ulcers, the healing period, consumption of drugs, triggering factors and tobacco habits. Healing period was assessed as days of symptoms associated with individual ulcers as referred to by the patient.

Results

The age and sex distribution of the individuals examined are shown in Table 2. The prevalence of RAU among patients with present ulcers was 1.59% as shown in Table 3. History of RAU was recorded among 14.8% of the population as shown in Table 4. Thus, the total prevalence of RAU, including present lesions and those with history of ulcers during the past 2 years was 16.4%. The frequency of ulcers as extracted from the history of RAU was more encountered in the age-groups 30-39 years and 20-29, respectively. As shown in Table 4, the prevalence then steadily decreased through the age strata. There was no significant difference in the prevalence of RAU between males and females in this study ($P > 0.01$). The anatomic distribution of the present lesions are

Table 1. Literature reported on the prevalence of RAU

Author	Year	Country	Type of Sample	Prevalence of RAU(%)	Age in years*
Sireus et al ⁵	1957	UK	Dental patients	19	All
Ship et al ⁸	1960	USA	Health students	54	\bar{x} = 22
Spouge & Diamond ⁹	1963	Canada	Dental patients	20	All
Ship et al ¹⁰	1967	USA	Hospitalized pts.	13.2	=37
Ship et al ¹⁰	1967	USA	Dental students	66.2	= 22
Shapiro ⁷	1970	USA	Students	38	-
Donatsky ¹²	1973	Denmark	Dental students	56	-
Embil et al ¹¹	1975	Canada	Dental patients	44	All
Fahmy ¹⁴	1976	Kuwait	General population	27	All
Axell & Henricsson ¹⁵	1985	Sweden	General population	17.7	All

* = mean

Table 2. Age and sex distribution of 4257 Saudis from the general population of Gizan region examined between the years 1984-1989 for RAU.

	Age in years						Total
	20-29	30-39	40-49	50-59	60-69	70	
Males	612	514	523	616	232	198	2695
Females	344	296	292	368	160	102	1562
Total	956	810	815	984	392	300	4257

Table 3. Prevalence of RAU among 4257 Saudi individuals from Gizan with present ulcers at the time of examination in relation to age and sex.

	Age in years													
	20-29		30-39		40-49		50-59		60-69		70		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Males	16	2.61	14	2.72	8	1.52	3	0.50	1	0.43	1	0.50	43	1.59
Females	9	2.62	8	2.70	5	1.71	2	0.54	1	0.62	0	0.00	25	1.60
Total	25	2.6	22	2.7	13	1.6	5	0.5	2	0.5	1	0.25	68	1.59
Significance	NS*		NS*		NS*		NS*		NS*		NS*		NS*	

* Not significant P > 0.01

Table 4. History of RAU in relation to age and sex among 4257 Saudi individuals from the general population of Gizan area between the years of 1984 - 1989.

	Age in years													
	20-29		30-39		40-49		50-59		60-69		70		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Males	147	24.0	134	26.0	63	12.0	40	6.5	10	4.3	4	2.0	398	14.7
Females	93	24.1	77	26.0	38	13.0	26	7.0	7	4.4	2	2.0	233	14.9
Significance	NS*		NS*		NS*		NS*		NS*		NS*		NS*	
Total	240	24	211	26	101	12.5	66	6.7	17	4.4	6	2	631	14.8

* Not significant P > 0.01

Table 5. Anatomical distribution in percent of present RAU among 68 male and female patients affected at the time of examination between the year 1984-1989

Check Mucosa	Site of Lesion*									
	Labial Mucosa Upper	Labial Mucosa Lower	Vestibular Mucosa Upper	Vestibular Mucosa Lower	Tip	Tongue Margins	Inferior Surface	Floor of Mouth	Soft Palate	
	20%	12%	17%	13%	12%	9%	8%	4%	5%	0

* Since many patients exhibited lesions in more than one site, the frequency of the site involved exceeds the number of patients.

shown in Table 5. The locations most often affected were the labial mucosa (upper and lower), the cheek mucosa, the vestibular mucosa, the tongue, and the floor of the mouth. No lesions were detected on the soft palate in this study.

Of the patients with present ulcers, 80% had lesions of the minor type [Fig. 11, 12% had lesions of the herpetiform type [Fig. 2], and 8% had lesions of the major type [Fig. 3]. No specific triggering factor or factors could be obtained in this study. No correlation was evident between smoking and RAU, since none of the females with RAU smoked. The frequency of the episodes of RAU is shown in Table 6. Most of the affected individuals had 2-4 episodes of RAU per year.

Table 6. Frequency of recurrence among 631 individuals with history of RAU.

Frequency (No. of times per month or year)	Individuals with history of RAU	
	N	%
Constantly	6	1.0
1 month	125	4.0
5-11 years	50	8.0
2-4 years	334	53.0
1 year	102	16.0
< 1 year	114	18.0
Total	631	100

The healing period varied between 2 and 21 days. Symptoms lasting 3-8 days were reported by 79% of the individuals, Table 7.



Figure 1. Aphthous minor on the mucosa of lower labial ves-tibule in a 23-year-old female (arrows).

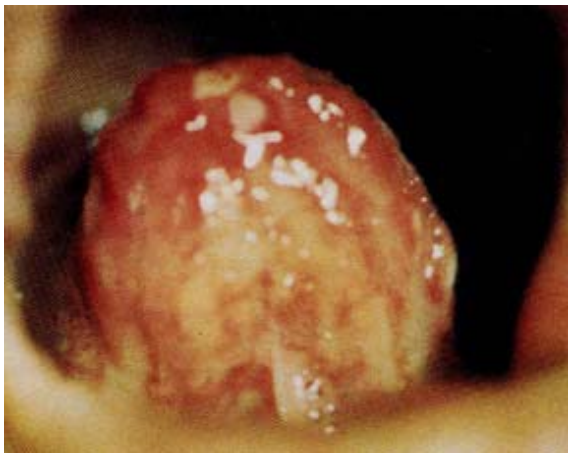


Figure 2. Aphthous ulcers of the herpetiform type on the inferior surface of the tongue in a 34-years-old male.



Figure 3a. Aphthous major on the mucosa of the lower 30-year-old female.



Figure 3b. Healing with scar formation, characteristics for this lesion.

Table 7. Individuals with RAU (%) referring to days of symptoms associated to ulcers.

Days of symptoms	%
1 - 2	10
3 - 4	37
5 - 8	42
9 - 13	8
14 - 21	3

Discussion

In the present study the diagnosis of "History of RAU" has included episodes during the past 2 years. This is in accordance with the criteria used by Ship et al.¹⁰This delineation is considered more valid for screening RAU in the population than life-time experience with RAU, which would, of course, yield higher prevalence figures.

The prevalence of RAU in this study for both present ulcers and history of ulcers during the past 2 years was 16.4%. This value is in accordance with that given by Axell and Henricsson¹⁵ who used the same criteria and reported a prevalence of 17.7% for RAU among the general population in Sweden. Fahmy¹⁴ however, reported a 5-year incidence of 27% for RAU among Arabs of different nationalities living in Kuwait. No other studies on the prevalence of RAU in Saudi Arabia are available for comparison.

The variation in the prevalence figures of RAU in the different studies might be due to the fact that these studies have been carried out on various population samples which differed in many

respects (Table 1). Considering both type of population and age, Ship et al¹⁰ showed a prevalence of 66.2% among students and only 13.2% among hospitalized patients.

In the previous studies,^{8,10-12} the highest prevalence of RAU was found among students. The special features of student's life pattern may predispose the disease as suggested by Miller et al¹⁷ who pointed out the possibility of stress generated by the pressure of academic achievement as a triggering factor. In this study, 60% of the individuals examined were school teachers and Government officials, all being beyond school age. However, the prevalence of RAU in this study was higher among the younger age-groups (Tables 3 & 4) in accordance with earlier studies.^{5,9,13-15} A study sample including younger age-groups would have probably yielded different results.

The locations most often affected were the labial mucosa, the vestibular mucosa, the cheek mucosa, and the tip and margins of the tongue (Table 5). No lesions were detected on the soft palate in this study. With the exception of the absence of palatal lesions, the anatomic locations of present ulcers in this study were in accordance with those reported in earlier studies.¹³⁻¹⁶ However, approximately 6% of the aphthous ulcers described by Ship et al⁸ were located on gingiva.

Among the triggering factors mentioned in the previous studies^{5,6,9-13,15} were catching cold, menstruation, trauma, and food allergy. In this study the triggering factors were not specified by the patients or expressed in vague terms as "fatigue". Obviously, the exacerbations of RAU are linked to general physiologic factors in the body. The mechanism behind such association is not known, but may be possibly mediated through the immunologic system. In such a case, oral epithelium or some cross-reacting antigen stimulates cell-mediated and humoral immune responses to induce epithelial damage.

Immunocytochemical studies using monoclonal antibodies against T-lymphocyte surface antigens showed consistent changes in the T4/T8 ratio extending from the preulcerative to the ulcerative and healing phases, which support an altered delayed hypersensitivity reaction.^{18,19}

Further studies are needed, however, to elucidate the prevalence of RAU in the general population of Saudi Arabia.

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