EVALUATION OF PATIENTS WITH RECURRENT APHTHOUS STOMATITIS IN A HOSPITAL SETTING

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Abstract
Recurrent aphthous stomatitis is one of the most common oral lesions. It is a lesion with a multifactorial etiology and it occurs in a broad spectrum of people. These are lesions where no etiology can be identified and a diagnosis of exclusion must be made. It is usually seen in three forms: minor, major and herpetiform which differ in morphology, distribution, severity and prognosis. This study focuses on understanding the incidence rate of RAS and to try to find a prominent prevalence. The aim of this study is to analyze the incidence of RAS in a hospital setup. A retrospective descriptive study was conducted using patient records from Saveetha Dental College and Hospitals, Chennai from June 2019-March 2020. Patients who were diagnosed with recurrent aphthous stomatitis by simple random sampling. Data was collected and subjected to statistical analysis. Recurrent Aphthous Stomatitis was most commonly seen in young males in the labial mucosa, who did not have any habits. This group constituted 23.6% of the total population of 72 participants. In 39.5% of the cases in males, the lesion was seen in the labial mucosa while in 41.6% of the cases in females, the lesion was seen in the buccal mucosa. The age group of 0-30 years which comprised 55.5% of the total population were the most affected. Smoking or tobacco chewing did not affect the findings.

The study showed a significant difference in the incidence of RAS in different age groups. But there was no significant difference seen in other fields. Considering the limitations of the limited number of samples which did not include many alcohol or tobacco users, extensive research needs to be done to know about the incidence of RAS and to find a definite etiological factor.

Keywords: Age, mucosa, prevalence, smoking, ulcer

Introduction

Recurrent Aphthous Stomatitis (Canker sores) is characterised by recurrent ulceration of the oral mucosa on various sites. The term aphthous is derived from ‘aphthi’ which in Greek means ‘to set ablaze’ and is thought to be first used by Hippocrates to describe pain which was associated with the lesion.[1] It presents as an oval, round, single or multiple ulcer with a circumscribed margin and erythematous haloes seen around the margin.[2] The ulcers are painful and they come in contact with foreign bodies.

RAS is seen in up to 25% population worldwide. [3, 4] Very few studies are done to check the prevalence of RAS in India but a study showed 21.7% to be affected by this lesion. [5] The prevalence rate of oral lesions in South India is 4.1% [6] with the incidence of squamous cell carcinoma being as high as 30 to 40%. [7, 8]

The exact etiological agent is still under study. In the histopathological view, changes in the preulcerative stages include lymphocytic infiltration in the epithelium. [9] Cell mediated immune response is seen which involves T cells with TNF □ being generated from macrophages and mast cells. [10] This drives the acute inflammation and expression of MHC molecules which results in the epithelial cells of the oral mucosa to be targeted by cytotoxic cells. [11] Ulcerations are seen in many conditions like oral MMP [12], oral squamous cell carcinoma [13, 14][15] (Sometimes ulcerations are not seen as the mucosa looks normal)[16], metastatic hepatocellular carcinoma [17–19], mucoepidermoid carcinoma[20] but the diagnosis of recurrent aphthous ulcer is not given until no other diagnosis is achieved. Dental photography can help with proper diagnosis and record creation of oral lesions as shown by Hannah et al. [21] Recurrent aphthous ulcers are not malignant and do not show any difference in salivary miRNA of normal patients and patients with RAS. [22] Salivary is an essential diagnostic tool as its contents can lead to many oral conditions. [23][24] RAS is also shown to form in people having pericoronitis [25] and another study showed an increased prevalence of mandibular third molar impaction [26] which may cause an increase in prevalence of RAS. Similarly, various pulpal conditions can also lead to formation of lesions in the oral cavity. [27]

There are many causes of RAS, many of which overlap and the etiology unclear. It has been associated with multiple causes like trauma, stress, infection, allergy, genetic predisposition and nutritional deficiencies. Microbes like Candida sp have been found to predispose ulcers. [28] Conditions like ankyloglossia lead to poor maintenance of oral hygiene [29] which may lead to formation of oral ulcers. Oral habits like smoking and tobacco chewing have been associated with the formation of aphthous ulcers, since they are painful and have a high chance of recurrence and they have a negative impact on oral health, it is important to know the prevalence of these ulcers. The literature reported on the incidence of RAS in the South Indian population is very minimal. Hence, this study aims to find the prevalence of recurrent aphthous stomatitis among the patients diagnosed with this condition in Chennai in a hospital setting.

Materials and Methods

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Study Design and Setting
This pilot descriptive study examined the records of 86000 patients from June 2019-March 2020 undergoing treatment at Saveetha Dental College, Chennai. Ethical approval was taken from the Institutional Research Board. The study population included patients who were diagnosed with recurrent aphthous stomatitis by the means of simple random sampling. The data collected was verified by another examination.

Data Collection
Patient records of 86000 patients who visited the hospital from June 2019 to March 2020 were used to identify 73 patients in the hospital database diagnosed with recurrent aphthous stomatitis. Required data like site of ulcer, type of ulcer, age, and gender was recorded. Repeated patient records and incomplete records were excluded.

Statistical Analysis
Data was recorded in Microsoft Excel 2016(Microsoft Office 10) and later exported to the Statistical Package for Social Science for Windows (Version 20.0, SPSS Inc., Chicago, Illinois, USA ) and subjected to statistical analysis. Chi square test was employed to compare variables between groups. p<0.05 was considered statistically significant.

Results and Discussion
The final dataset consisted of 72 patients of Indian origin diagnosed with recurrent aphthous ulcers. The mean age for the population was 32.45 years. The age group associated with the highest prevalence of RAS was 0-30 years [55.5%], followed by 31-50 [30%] [Table 1].

23.6% of the population had the highest prevalence of RAS who were young males in the labial mucosa who had no habits.

In the male patients [66.66% of the total], the most common site on which recurrent aphthous stomatitis were seen was the labial mucosa (p=4.84, hence, not significant)[Table 4], the prevalence was 39.5%. In the female patients [33.33% of the total], the most common site on which recurrent aphthous stomatitis was seen was the buccal mucosa (p=4.84, hence, not significant), the prevalence was 41.6% [Figure 4].

The age group of 0-30 years was the most prevalent age group showing incidences of RAS in both males and females. [Figure 1] The prevalence is 55.5%. There were only three people who had habits like smoking and chewing tobacco. This led to habits not having an influence on the incidence of RAS in our population [Figure 2] [Figure 3]. Recurrent aphthous ulcers are so common; it is not usually reported until the recurrence hinders the normal functioning of an individual. Out of the 72 participants studied in this study, RAS was most common in young males. A study performed by Maheshwaran et al in Chennai showed females to have a greater prevalence than males. [30] This difference could be due to the sample size of the two studies.

The current study showed the age group of 0-30 years to have more numbers of cases of RAS(p=0.05, hence it is significant)[Table 2] which is in direct correlation with a study done by Ship et al which showed peak onset at 10-19 years. [31] Another study done by McCullen et al also showed younger patients to frequently show cases of RAS. [32] The same study showed a higher incidence in non smokers when compared to smokers. But another study showed smoking to not be an etiological factor and not affect the number of cases of RAS. [33] However since the number of articles stating that smoking has a negative relation to RAS are present, the former claims can be
overruled. [34–36] Another study found reduced healing in smokers which shows reduced healing of ulcers which have less prevalence due to smoking. [37]

In males, the most common site was the labial mucosa- 39.5% and in females, the most common site was the buccal mucosa-55.5%, which is in agreement with another study, which showed the labial mucosa and the buccal mucosa to be the most common sites to be affected by RAS. [38] The second most common site was the tongue where males showed 16.6% prevalence and females showed 8.3%. The least common sites were the hard palate and the floor of the mouth. [4.1% and 6.9% respectively] [Figure 4]

Treatment for RAS is usually via pharmacological aids. Natural remedies have been shown to have a better effect on the healing of the ulcers. [39] This is due to the fact that they have wide biological activity, higher safety margin, and lower costs when compared to conventional drugs. [40] Aloe vera is also used to treat oral lesions and can be used to treat aphthous stomatitis. [41] Similarly, vitamin C has also been found to heal oral ulcers. [42] As Vitamin C is known to have a rich antioxidant activity under physiological conditions. [43] and Fluoride regiments have been known to accelerate the healing [44] but there is not enough evidence to support these claims. Antimicrobial mouthwash like chlorhexidine has been prescribed by certain practitioners to prevent any infections which can worsen the condition of the ulceration. [37]

Although this study showed many findings which were supported by other articles, the limit of the sample size along other articles, the limit of the sample size along with not having smokers may hold the results to scrutiny. Recurrent aphthous stomatitis is a very common finding so it is imperative to know the prevalence and the etiological agent to try and prevent this condition.

### Table 1: Table describing the habits in different age groups of patient selected for the study

<table>
<thead>
<tr>
<th>Age</th>
<th>Habits</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30</td>
<td>38[55.8%]</td>
<td>40[55.5%]</td>
</tr>
<tr>
<td>31-50</td>
<td>21[30.8%]</td>
<td>22[30.5%]</td>
</tr>
<tr>
<td>51-80</td>
<td>9[13.2%]</td>
<td>10[13.8%]</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>72</td>
</tr>
</tbody>
</table>
Figure 1: Bar graph showing the association between different sites of ulcers and different age groups. X axis represents the various age groups of the participants included in the study and Y axis the count of the patients showing an ulcer in the particular region. It was found that labial mucosa was the most common site of occurrence of RAS in the age group of 0-30 years. This was found to be statistically significant. Pearson Chi-Square test, $p=0.05 (p<0.05)$.

Figure 2: Bar graph showing the association between habits among patients in different age groups. X axis represents the various age groups of the participants and Y axis the count of the patients showing an ulcer. There was no significant association between habits and RAS. Pearson Chi-Square test, $P=0.32 (p>0.05)$, statistically not significant. Habits are not associated with the development of RAS.

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Figure 3: Bar graph showing the association between habits and gender in RAS patients. X axis represents the gender of the participants and Y axis the count of the patients showing an ulcer. There was no significant difference in the habits between males and females affected by RAS. Pearson Chi Square, \( P=0.34(p>0.05) \), implying that habits are not associated with RAS in both males and females.

Figure 4: Bar graph showing association between the site of ulcers and gender. X axis represents the gender of the participants, Y axis the count of the patients showing an ulcer. Labial mucosa was the most common site of occurrence of RAS. There was no significant difference in the sites between males and females. Pearson Chi-Square test \( P=0.48(p>0.05) \), statistically not significant, implying that there is no variation in the site of occurrence of RAS in males and females. Labial mucosa is the most commonly affected site in both males and females.

Conclusion
From the results, it can be concluded other than a significant difference in the incidence of RAS in different age groups, the study did not show any difference in the incidence of RAS in other fields. The prevalence of recurrent
aphthous stomatitis was 23.6%. This could have been due to lack of diversity of the samples. A greater number of diverse samples may yield new results.

References


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