

Incidence of Recurrent Aphthous Stomatitis in students of Krishna Institute of Medical Sciences

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Abstract:

Introduction: Recurrent aphthous stomatitis is also known as “canker sores”. It is characterized by discrete, painful ulcers which have repeated development of benign and non-contagious one to many mouth ulcers and it usually heals within 7-14 days. With this background, the present study was designed to assess the incidence of RAS among students of KIMS. **Methodology:** A sample size of 450 students were included in the study. Questionnaire consisting of 6 questions mentioned below was sent and the responses were collected through Google forms and percentage were entered. Out of 450 patients, 350 were having Recurrent aphthous stomatitis and there was female predominance. Lower lip was the most common site which accounted for about 66% of patients. 76% of patients didn't have any family history related to ulcer. Stress was the triggering factor for 56% of the patients. 81% of patients had previous history of ulcer. In most of the cases, duration of ulcer was less than 7 days. And in 80% of cases, ulcer was painful.

Keywords: Recurrent aphthous stomatitis, labial mucosa, buccal mucosa, stress.

I. Introduction :

Recurrent aphthous stomatitis, colloquially known as "canker sores," represents a prevalent oral mucosal condition characterized by the recurring development of discrete, painful ulcers within the oral cavity. These ulcers, though benign and non-contagious, can cause considerable discomfort to individuals affected by this condition. The healing process typically spans a duration of 7-14 days, making it a recurring challenge for those experiencing these oral lesions. The present study aims to shed light on the incidence of recurrent aphthous stomatitis (RAS) among students at Krishna Institute of Medical Sciences (KIMS), providing valuable insights into the prevalence, characteristics, and potential contributing factors within this specific demographic. Before delving into the specifics of the study, it's essential to understand the broader context of recurrent aphthous stomatitis. The etiological factors contributing to the manifestation of canker sores involve a complex interplay of T cell-mediated immune responses triggered by various elements. These factors include nutritional considerations, local trauma, stress, hormonal fluctuations, allergies, genetic predisposition, dehydration, or exposure to certain chemicals. This multifaceted etiology underscores the intricate nature of RAS, necessitating a comprehensive approach to its study and management.

RAS commonly manifests on non-keratinizing epithelial surfaces in the oral cavity, with prominent sites being the lips, floor of the mouth, cheeks, and the ventral surface of the tongue. The signs and symptoms associated with recurrent aphthous stomatitis often begin with itching and a burning sensation, eventually leading to the development of painful ulcers. These ulcers, though non-contagious, can significantly impact an individual's quality of life due to the discomfort and pain they induce. One intriguing aspect of RAS is its classification into three distinct variants, each distinguished by the size, number, and location of the lesions, as well as the healing

time and potential scarring if left untreated. The variants include Minor Aphthous Ulceration, Major Aphthous Ulceration, and Herpetiform Ulceration. Understanding these classifications is crucial for clinicians in tailoring appropriate treatment strategies based on the specific characteristics of the lesions observed in a given patient.

Against this backdrop, the current study at KIMS endeavors to explore the incidence of RAS among the student population. The methodology employed in this research involved a sample size of 450 students, carefully selected based on inclusion and exclusion criteria. The questionnaire distributed to the participants aimed to gather pertinent information regarding the site of ulcers, family history, triggering factors, previous history of recurrent ulcers, duration of ulcers, and the presence of pain. The results of the study paint a vivid picture of the prevalence of recurrent aphthous stomatitis among the students at KIMS. Out of the 450 participants, a substantial 350 were identified as having RAS, highlighting the significance of this oral mucosal condition within the student community. Further analysis of the demographic distribution revealed a notable female predominance, with 66% of the affected individuals being female students. This gender-specific prevalence raises intriguing questions about potential hormonal influences on the development of RAS, warranting deeper exploration in future research endeavors.

The distribution of affected sites is another noteworthy finding, with the lower lip emerging as the most common location, accounting for approximately 66% of the cases. This specific site predilection adds a layer of complexity to our understanding of RAS and prompts considerations regarding potential anatomical and physiological factors contributing to its occurrence. Moreover, the absence of a family history related to ulcers in 76% of the cases challenges conventional notions about the hereditary nature of certain oral conditions, signaling the need for a nuanced understanding of the genetic factors influencing RAS. Stress, a well-established trigger for various health conditions, emerged as a significant factor in the context of RAS, with 56% of the participants identifying stress, particularly exam-related stress, as a triggering factor. This finding aligns with existing literature on the relationship between stress and oral health, emphasizing the importance of stress management strategies in the comprehensive care of individuals prone to recurrent aphthous stomatitis.

Furthermore, the high percentage (81%) of participants reporting a previous history of ulcers underscores the recurrent nature of this condition. This insight informs healthcare providers about the chronicity of RAS in certain individuals, necessitating long-term management approaches to alleviate symptoms and improve the overall oral health and well-being of affected individuals.

The duration of ulcers, a critical parameter in assessing the impact of RAS on individuals, revealed that in most cases, the ulcers persisted for less than 7 days. This relatively short duration of individual ulcer episodes provides a glimmer of relief for those experiencing RAS, as it suggests a self-limiting nature that, with appropriate management, can lead to relatively quick resolution of symptoms. Pain, a subjective yet crucial aspect of RAS, was reported by 80% of the participants, underscoring the considerable discomfort associated with this condition. This high prevalence of pain emphasizes the importance of incorporating pain management strategies into the overall treatment plan for individuals with RAS, ensuring a holistic approach to care.

In conclusion, the study at KIMS offers valuable insights into the incidence and characteristics of recurrent aphthous stomatitis among students. The findings contribute to the existing body of knowledge surrounding RAS, paving the way for future research endeavors aimed at elucidating the intricate factors influencing the development, recurrence, and management of canker sores. The gender-specific prevalence, site distribution, and identification of stress as a significant trigger highlight the multifaceted nature of RAS, urging healthcare professionals to adopt a comprehensive and individualized approach to its diagnosis and management. As we delve deeper into the complexities of recurrent aphthous stomatitis, the ultimate goal remains the enhancement of oral health outcomes and the alleviation of the burden imposed by this common yet often underestimated oral mucosal condition.

Recurrent aphthous stomatitis is also known as “canker sores”. It is characterized by discrete, painful ulcers which have repeated development of benign and non-contagious one to many mouth ulcers and it usually heals within 7-14 days. The etiological factors involves T cell-mediated immune response triggered by various

factors as nutritional factors, local trauma, stress, hormones, allergies, genetics, dehydration, or some chemicals.

It mostly appears on non-keratinizing epithelial surfaces in mouth as lips, floor of mouth, cheeks, ventral surface of tongue. Signs and symptoms can be itching, burning sensation followed by ulcers which are painful.

It is classified into 3 variants which is distinguished by the size, number and location of lesion, healing time and scar if left:

- A) Minor Aphthous Ulceration.
- B) Major Aphthous Ulceration.
- C) Herpetiform Ulceration.

With this background, the present study is designed to assess the incidence of RAS among students of KIMS.

II. Background

The background of recurrent aphthous stomatitis (RAS) unfolds as a complex narrative intertwining various factors that contribute to the manifestation and recurrence of these painful oral ulcers. Understanding the background is crucial for contextualizing the significance of studies, such as the one conducted at Krishna Institute of Medical Sciences (KIMS), and for advancing our comprehension of this common yet often perplexing oral mucosal condition. RAS, commonly referred to as "canker sores," stands out as a prevalent affliction affecting a substantial portion of the global population. These recurrent, painful ulcers present a clinical challenge and can significantly impact the quality of life for those experiencing them. To comprehend the background of RAS, it is imperative to explore the etiological factors that underlie its development.

The multifaceted etiology of recurrent aphthous stomatitis involves a delicate interplay of immunological, genetic, environmental, and lifestyle factors. T cell-mediated immune responses play a pivotal role in the initiation and perpetuation of RAS. Various triggers can set off these immune responses, including nutritional deficiencies, local trauma to the oral mucosa, stress, hormonal fluctuations, allergies, genetic predisposition, dehydration, and exposure to certain chemicals. The intricate web of these factors underscores the challenge in pinpointing a singular cause for RAS and emphasizes the need for a holistic understanding of its background. Nutritional factors, encompassing deficiencies in vitamins such as B12, folic acid, and iron, have been implicated in the development of RAS. These deficiencies can compromise the immune system's ability to maintain oral mucosal integrity, rendering individuals more susceptible to the formation of painful ulcers. Local trauma, whether from accidental biting, dental procedures, or abrasive substances, can serve as a precipitating factor, initiating the cascade of events leading to the development of canker sores.

Stress, a ubiquitous component of modern life, emerges as a significant contributor to RAS. The intricate connection between stress and oral health has been well-documented, with stress serving as a trigger for various oral conditions, including canker sores. Exam-related stress, in particular, has been identified as a notable precipitating factor, as evidenced by the findings of studies like the one conducted at KIMS. Genetic predisposition introduces another layer of complexity to the background of RAS. While family history may not be present in a significant proportion of cases, the hereditary component cannot be discounted. Genetic factors likely contribute to an individual's susceptibility to RAS, influencing the immune response and other mechanisms involved in the development of these recurrent ulcers.

The anatomical distribution of RAS further adds nuance to its background. The predilection for non-keratinizing epithelial surfaces in the oral cavity, such as the lips, floor of the mouth, cheeks, and ventral surface of the tongue, highlights the specific environmental conditions conducive to the development of canker sores. This distribution pattern influences the signs and symptoms experienced by individuals, including itching, burning sensations, and the subsequent formation of painful ulcers. The classification of RAS into three variants—Minor Aphthous Ulceration, Major Aphthous Ulceration, and Herpetiform Ulceration—adds granularity to our

understanding of the condition. Each variant is distinguished by the size, number, and location of lesions, as well as the healing time and potential scarring. This classification system aids clinicians in tailoring their approach to the management of RAS based on the specific characteristics observed in a given patient.

In the context of the study conducted at KIMS, the background extends to the student population, providing insights into the prevalence and characteristics of RAS within this specific demographic. The focus on students is particularly relevant, considering the potential impact of academic stress and lifestyle factors on the development of canker sores. In conclusion, the background of recurrent aphthous stomatitis is a tapestry woven with immunological, genetic, environmental, and lifestyle threads. Understanding the intricate factors contributing to the development and recurrence of RAS is paramount for advancing research, refining diagnostic approaches, and tailoring effective management strategies. As studies like the one at KIMS illuminate different facets of this complex condition, the collective knowledge deepens, bringing us closer to unraveling the mysteries of recurrent aphthous stomatitis and improving the lives of those affected by it.

III. Methodology:

A sample size of 450 was recorded.

Selection criteria-

- 1) Inclusion criteria – All students of KIMS who are willing to participate
- 2) Exclusion criteria – Students who are not willing to participate and who are with systemic disorders.

Questionnaire consisting of 6 questions mentioned below was sent through Google forms and responses were collected.

- 1) What is the site of ulcer ?
 - a) Upper lip
 - b) Lower lip
 - c) Floor of mouth
- 2) Is there any family history about ulcers ?
 - a) Yes
 - b) No
- 3) What is the triggering factor ?
 - a) Stress/exam stress
 - b) During menstruation
 - c) Smoking
- 4) Do you have any previous history of recurrent ulcers ?
 - a) Yes
 - b) No
- 5) What is duration of ulcers ?
 - a) 7-14 days
 - b) Less than 7 days
 - c) More than 14 days
- 6) Is the ulcer painful ?
 - a) Yes
 - b) No

The responses were collected through Google forms and percentage were entered.

IV. Results :

Table 2. Out of 450 patients, 350 were having Recurrent aphthous stomatitis.

Number of males	120 (34%)
Number of females	230 (66%)

Table 2. showing answers with percentage:

1) What is site of ulcer ?	Lower lip	66%
	Upper lip	7.5%
	Buccal mucosa	26.5%
2) Is there any family history about ulcers ?	No	76%
	Yes	24%
3) What is the triggering factor ?	Stress	56%
	Menstruation	4%
	Smoking	40%
4) Do you have any previous history of ulcers ?	No	19%
	Yes	81%
5) What is duration of ulcer ?	Less than 7 days	53%
	7-14 days	43%
	More than 14 days	4%
6) Is the ulcer painful ?	Yes	80%
	No	20%

V. Discussion :

RAS is defined as a well-circumscribed ulcer sometimes depressed lesion with an epithelial defect covered by fibrin clot, resulting in yellow-white appearance. It is recurrent type of ulcer which heals and reappears after period of time.

Minor ulcer was termed as “Mikulicz’s aphthae” and Major ulcer was termed as “Sutton’s aphthae ” or “peradenitis mucosa necrotica recurrens”.

Difference between minor, major and herpetiform ulcer:

- Minor ulcer is most common variant constituting about 80% of RAS. Its size varies from 8-10mm. Most commonly seen on surfaces like labial mucosa, buccal mucosa and floor of mouth and it heals within 10-14 days without scarring.
- Major ulcer affects 10-15% of patients. Its size exceeds 1cm in diameter. Most commonly seen on lips, soft palate and fauces. It can persist for upto 6 weeks and heals with scarring.

- Herpetiform ulcer for 5-10% of all rare cases. These are small (1-2mm) and many in number (5-100). It mainly affects lateral and ventral surface of tongue and floor of mouth. These are painful and it aggravates on eating and speaking. It lasts for 10-14 days. It has marked erythema. Females are more dominantly affected.
- Female predominance is more compared to males in the ratio of 2:1 which is in accordance with Rajmane et al study¹. 2nd decade was most commonly affected.
- Lower lip was most common which accounted for 68%. The results are in accordance with Manoj MA² study (61%). The study conducted by Rajmane et al¹ showed buccal mucosa as the most commonly involved site (30.2%).

In our study, 87.5% of the participants were positive for RAS, which was higher than Ziaei S³ (54%), Davatchi F⁴ (54%).

In our study, 24% of the patients were having family history, associated with ulcer but in Preeti et al⁵ study showed higher percentage 40% and Rajmane et al¹ study had 37.2% of patients with family history. Ship et al⁶, study showed 90% of family history with ulcers.

Stress as triggering factor in our study (56%), also the results were in accordance with Taheri et al⁷, Huling et al⁸ and Nurdiana et al⁹

In our study, the majority of ulcers healed within 7 days. The results were in accordance with Bhargava et al¹⁰ and Nurdiana et al⁹ study.

Various syndromes like Behcet's syndrome and MAGIC syndrome are associated with RAS. Behcet's syndrome is characterized by recurring oral and genital ulcers. MAGIC syndrome includes relapsing polychondritis characterized by oral and genital ulcers with inflamed cartilage.

VI. Conclusion

In conclusion, the study conducted at Krishna Institute of Medical Sciences (KIMS) offers valuable insights into the incidence and characteristics of recurrent aphthous stomatitis (RAS) among students. The multifaceted nature of this oral mucosal condition, known colloquially as "canker sores," is illuminated through a comprehensive examination of demographic distribution, site prevalence, triggering factors, and other crucial parameters. The findings of the study, with a substantial sample size of 450 students, reveal a noteworthy prevalence of RAS within the student community. The identification of 350 students with RAS underscores the significance of this condition among the younger demographic, prompting further exploration into the factors contributing to its occurrence in this specific age group. A striking observation in the study is the female predominance, with 66% of the affected individuals being female students. This gender-specific prevalence raises intriguing questions about the potential influence of hormonal factors on the development of RAS. While the study doesn't delve deeply into hormonal considerations, it opens a pathway for future research to explore the interplay between hormonal fluctuations and the occurrence of canker sores among young adults. The distribution of affected sites is another noteworthy aspect, with the lower lip emerging as the most common location for RAS. This specific site predilection adds complexity to our understanding of the condition and prompts considerations about the anatomical and physiological factors contributing to its occurrence. Further studies could delve into the molecular and cellular mechanisms that make certain sites more susceptible to the development of canker sores. Stress, identified as a triggering factor in 56% of the cases, aligns with existing literature on the intricate relationship between stress and oral health. The prevalence of exam-related stress as a trigger emphasizes the need for stress management strategies within educational institutions. Incorporating stress reduction techniques and mental health support could potentially contribute to mitigating the impact of stress on the occurrence of RAS among students. The absence of a family history related to ulcers in 76% of the cases challenges conventional notions about the hereditary nature of certain oral conditions. While genetic predisposition is

acknowledged as a contributing factor, the study suggests that other environmental and lifestyle factors play a substantial role in the manifestation of RAS. Future research could delve into the genetic markers associated with RAS and explore gene-environment interactions to unravel the complexities of its heritability. The study's exploration of the duration of ulcers, with most cases resolving in less than 7 days, provides a positive outlook for individuals experiencing RAS. This relatively short duration suggests a self-limiting nature of individual ulcer episodes, offering reassurance to those grappling with the recurrent nature of canker sores. The high prevalence of pain reported by 80% of the participants underscores the considerable discomfort associated with RAS. This finding emphasizes the importance of incorporating pain management strategies into the overall treatment plan for individuals with canker sores. Holistic care that addresses both the physical and psychological aspects of pain can significantly enhance the well-being of individuals affected by RAS.

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