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Management Of Recurrent Aphthosal Stomatitis (SAR) Cases Through A Communication, Information And Education (KIE) Approach

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Abstract

Recurrent aphthosis stomatitis (SAR) is a common inflammatory condition of the oral cavity characterized by a round or oval ulcer with a yellowish-white color with erythema edges and occurs repeatedly. SARs can be classified into 3 types based on their number and size, namely minor SAR, major SAR, and herpetiform SAR. Factors that can cause SAR are in the form of hematology, genetics, immunology and hormonal. To determine the management of cases of Recurrent Aphthosal Stomatitis (SAR) et causa stress and nutritional deficiency through the KIE approach. A 23-year-old man came with a complaint of canker sores on the buccal mucosa of the right upper jaw. The patient complained of canker sores since 3 days ago and the complaints recur about once every 2-3 months. On intraoral examination, there was an oval-shaped ulceration, clearly bordered, white base and surrounded by erythema halo, measuring 3x2 mm on the buccal mucosa of the right upper jaw and symptomatic. Patients are given multivitamin supplements and focus more on the provision of Communication, Information and Education (KIE). Patients are given information about the triggering factors that can cause SAR, namely due to psychological stress. Patients are also given education about oral hygiene, increasing mineral water consumption, consuming vegetables and fruits and managing stress. An approach through Communication, Information and Education (KIE) and psychological support for SAR sufferers due to stress factors is more effective, such as directing patients to manage their stress management with a healthier lifestyle and diet to accelerate the healing process of lesions. If needed, patients can be referred to a psychologist/psychiatrist for psychological support.

Keywords: ***Recurrent Aphthosis Stomatitis, SAR Minor, Stress, KIE***

INTRODUCTION

Recurrent aphthosis stomatitis (SAR) or commonly called canker sores is one of the lesions on the mouth that often occurs. Based on the results of the 2023 Indonesian Health Survey (SKI), data was obtained that 56.9% of the Indonesian population has dental and oral health problems, one of the oral diseases, namely Recurrent Aftosa Sotamtitis (SAR) which is the third largest oral disease in Indonesia after cavities and missing teeth with an average prevalence ranging from 15-25%. SAR is characterized by recurrent ulcers that are limited to patients without other signs of systemic disease. These lesions are round or oval in shape with a yellowish-white color with reddish edges and occur repeatedly. SAR often occurs in the buccal and labial mucosa, and rarely in the palatal or gingival mucosa (Stuttgart Sewow , Stuttgart , & Mintjelungan , 2016).

In the early stages, SAR is generally painful but can heal on its own within 10-14 days of treatment and can recur. Serial people must have experienced stomatitis, both mild and severe, so that it interferes with physiological function. This disorder causes sufferers to experience chewing, swallowing, and even decreasing body conditions if it occurs for a long period of time with frequent frequency.

Clinically, SARs can be differentiated into 3 based on their number and size, namely minor, major and herpetiform breeds. All types of SAR have impacts that can interfere with daily life activities. Minor SAR is a type that often appears on the non-keratin oral mucosa, namely on the lips, cheeks, base of the mouth and tongue. The size of the minor SAR is usually small with a diameter of under 1 cm with a number between 1-5. These lesions can heal in 1-2 weeks. Major SAR has similar characteristics to minor SAR, the difference is its larger size which is more than 1 cm in diameter and deeper. These lesions are usually found on the lips, tongue, palatum molle and palatum durum. Herpetiform SAR is smaller in size by about 1-2 mm, but appears simultaneously in large numbers.

These lesions usually occur on the lower and lateral tongue (Princess, Laccytarium , Pramuditya , & Silva, 2025) (Seyyedi et al., 2020)

The etiological factors of SAR are multifactorial such as hematinic deficiency (folic acid, iron, and vitamin B12), stress, hormonal and genetic. Stress is the highest predisposing factor of SAR compared to other factors, according to Abdullah (2013, in Sulistriani 2017) which is 43.3%, while other factors such as trauma (29.1%), certain food allergies (7.1%) and menstruation-related (2.48%). Stress due to psychological stressors can result in changes in the molecular level of immunocompetent cells resulting in pathological conditions in the epithelial cells of the oral cavity so that they are more sensitive to stimuli. According to Monally's research, it shows that many people who suffer from SAR have increased stress levels. With the increase in stressors, the prevalence of stomatitis related to psychological stress can be higher.

The management of SAR is divided into 2 stages, namely supportive symptomatic treatment and control of predisposing factors. The goal of symptomatic treatment is to reduce symptoms, reduce the number and size of ulcers. In addition to the pharmacological aspects that involve administering medications such as antiseptics, analgesics, or topical corticosteroids to manage symptoms, a non-pharmacological approach is also needed. Communication, Information and Education (KIE) is the key to building a fair therapeutic relationship with patients. Through KIE, dentists can provide a clear explanation of the patient's condition, as well as the procedures carried out. In addition, psychological support is also very necessary to help patients experience stress which may be a triggering factor (Surachmin , Sabila, & Ronal, 2024).

RESEARCH METHODS

This study uses a case report method with a clinical descriptive approach. The study was conducted at the Soelastri Dental and Oral Hospital (RSGM) on a 23-year-old male patient who came with complaints of recurrent aphthosal stomatitis (SAR) in the buccal mucosa of the right upper jaw. The purpose of this case report is to describe the management of SAR which is allegedly triggered by psychological stress factors and nutritional deficiencies through the Communication, Information, and Education (KIE) approach.

Data collection was carried out through anamnesis, intraoral and extraoral clinical examinations, and supporting examinations in the form of complete blood tests. The anamnesis is carried out to explore the history of the main complaints, the frequency of recurrence, predisposing factors, diet, life habits, sleep quality, activity level, psychological conditions, as well as a history of systemic diseases and allergies. Clinical examination is carried out to identify the characteristics of the lesion including the location, size, shape, basic color of the lesion, lesion border, presence of erythema halo, and symptomatic level of the lesion.

Supporting examinations in the form of complete blood are carried out to evaluate the patient's hematological condition which has the potential to be a predisposing factor for the occurrence of SAR. The data obtained were then analyzed descriptively by comparing the patient's clinical findings against the relevant literature and theories regarding the etiology, pathogenesis, diagnosis, and management of recurrent aphthosis stomatitis.

Case management is carried out through a non-pharmacological and pharmacological approach. The non-pharmacological approach is in the form of providing Communication, Information, and Education (KIE) regarding the triggering factors of SAR, the importance of maintaining oral cavity hygiene, a healthy diet, adequate water consumption, and stress management. The pharmacological approach is carried out by providing supportive therapy in the form of multivitamins containing B complex vitamins, vitamin C, vitamin E, folic acid, and zinc to help increase immunity and accelerate the healing process of lesions. Evaluation of therapy success was carried out through a control visit

one week after treatment by observing changes in the patient's clinical conditions of lesions and subjective complaints.

This research has obtained consent from patients for the use of clinical data, examination results, and case documentation as scientific publication materials while maintaining the confidentiality of the patient's identity in accordance with the principles of medical ethics and health research.

RESULTS AND DISCUSSION

Case Report

A 23-year-old man came to Soelastri Dental and Oral Hospital with complaints of canker sores in the buccal mucosa of the right upper jaw. The patient complained of canker sores since 3 days ago and had never been treated before. Patients admitted that their complaints were aggravated when drinking and eating hot food. Patients often experience recurring complaints about once every 2-3 months. The patient admitted that he had been busy undergoing professional education for the past 6 months. The patient has never been admitted to the hospital and has no systemic or allergic diseases. The patient has never been to the dentist before. Patients routinely brush their teeth 2 times a day in the morning and at night. Patients have a habit of drinking coffee almost every day and a habit of biting into clothes when there is no activity. The patient admitted that he consumed vegetables 2-3 times a week and drank 1.5 L of water per day and rarely exercised. An extraoral examination of the patient showed no abnormalities. On intraoral examination, there was an oval-shaped ulceration, clearly bounded, yellowish-white base and surrounded by a halo erythema, measuring 3x2 mm on the right upper jaw buccal gingival and symptomatic.

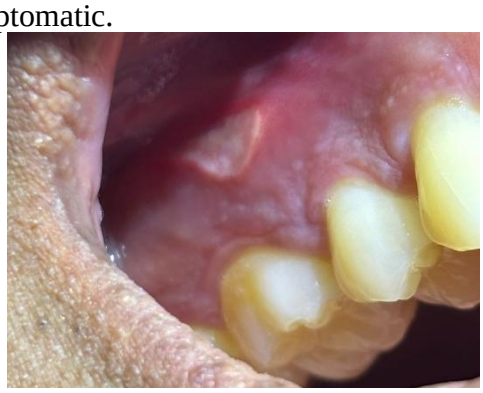

Figure 1. Clinical overview of recurrent aphthosis (SAR) at the first visit

Supporting examinations were carried out in the form of a complete blood test. A complete blood test showed that the patient's leukocytes were below normal with a number of 4.4 (normal 5.0-10.0).

Complete blood test table

Inspection	Results	Reference Value	Units
HEMATOLOGY			
1. Routine Blood			
Hemoglobin (Hb)	14.7	11.7-16.0	g/dl
Leukocytes (white blood cells)	4.4*	5.0-10.0	103/µl
Erythrocytes (red blood cells)	5.1	4.0-5.5	106/µl
Hematocrit	41.6	37-55	%
Platelet	217	150-450	103/µl
MCV	80.8	80-100	fl

MCH	28.5	27-33	pg
MCHC	35.3	32-36	g/dL
RDW	14.2	10-15	%
Lyme	31.4	17-48	%
Mxd	10.6	4-11	%
Neu	58	43-76	%

***Results above or below normal**

Governance

At the first visit, the treatment provided to the patient is in the form of Communication, Information and Education (KIE). The patient was given an explanation about the complaint suffered from Recurrent Aftosis (SAR) which is the cause of SAR which is not yet known for sure but there are several triggering factors, disease course and proper management. Patients are given education in the form of maintaining oral hygiene, maintaining a healthy lifestyle, eating vegetables and fruits and increasing water consumption every day and managing the level of stress experienced and can ask for help from psychology. In addition, patients are given supportive therapy in the form of multivitamins (becom zet) to increase immunity and help SAR recovery.

At the next visit, the patient came 1 week later for a check-up. Intraoral examination showed that the lesion had healed.

Figure 2. Clinical Overview of Recurrent Aftosal Stomatitis (SAR) after 1 week

Discussion

Recurrent Aftosal Stomatitis (SAR), commonly known as canker sores, is the most common ulcerative condition in the oral cavity. SAR is characterized by recurrent, round or oval ulcers with a yellowish-white color and surrounded by areas of reddish edges, clearly bordered and painful. SAR is mostly found in the labial mucosa, buccal mucosa of the mouth floor and ventral tongue which have a non-keratinized structure (Arms, Hasendra , & Afriza , 2023) .

Clinically, SARs can be differentiated into 3 based on their number and size, namely minor SAR, major SAR, and hepetiform SAR. Minor SAR is the type that most often appears on the non-keratin mucosa, namely the lips, cheeks, tongue and base of the mouth. These lesions are small in size with a diameter of less than 1 cm with a number of 1-5 and can heal in 1-2 weeks. Major SARs have a larger size of more than 1 cm in diameter, are deeper than minor SARs and can heal in 6 weeks. These lesions often occur on the soft palate, labial mucosa and oropharynx. SAR hepetiform is the rarest type of ulcer, the size of these lesions is very small and no more than 1 mm, but arises in groups of 10-100 pieces that combine to form ulcers (Surachmin et al., 2024)

The etiology of SAR is idiopathic, but there are several triggers for SAR such as local, systemic, immunological, genetic, allergy, nutritional and microbial factors. The pathogenesis of SAR begins with the presence of lymphocytic cells that infiltrate the oral epithelial cells causing papillar swelling. Papules undergo ulceration and are infiltrated by neutrophils, lymphocytes and plasma cells, followed by epithelial healing and regeneration. (Afifah, Herawati, & Hidayat, 2022)

In this case, an anamnesis examination, objective examination and supporting examination were carried out to determine the triggering factors for SAR. Ask the patient how often canker sores appear, whether the patient has been under work or educational stress in recent months, whether the patient has hormonal disorders or a history of thyroid disease. The patient said that he experienced complaints of canker sores that often recur about once every 2-3 months. The patient admitted that he was undergoing professional education and there were job demands that made him stressed and exhausted. The patient admitted that there were no hormonal disorders or a history of thyroid disease. Ask the patient about the food intake consumed over the past few weeks whether they regularly consume vegetables and fruits, how many liters of water per day, whether there are any previous allergies. The patient said that if he eats vegetables and fruits 2-3 times a week, he consumes 1.5 L of water per day and there are no allergies experienced. Ask the patient if the patient has trouble starting sleep and how many hours the average patient sleeps each night. Patients admitted that there were difficulties in starting sleep and on average 5-6 hours of sleep/night. Objective examination was carried out by inspection of the oral cavity and there were ulcer lesions on the buccal gingival of the upper jaw parallel to tooth 16, measuring <1 cm, yellowish-white and surrounded by reddish edges, clearly bordered, soft consistency, symptomatic. A supporting examination was also carried out in the form of a complete blood test and the results were obtained that the patient's leukocytes were below normal, namely at 4.4 with a normal value of 5.0-10.0. These results show a decrease in the immune system with a decrease in the number of leukocytes which can be influenced by the condition of patients who are experiencing stress due to educational demands. A decrease in neutrophils will cause a decrease in phagocytosis function which can lead to a decrease in the killing ability of microorganisms. Some of the examinations above, it can be concluded that the complaint experienced by the patient is Recurrent Aphthosal Stomatitis (SAR) with psychological stress triggering factors. (Purnama et al., 2021)

The treatment plan for this case can be delivered in accordance with proper communication, information and education. Communicate to patients about complaints suffered from recurrent canker sores or Recurrent Stomatitis Aftosa (SAR) caused by stress factors. This type of complaint is a type of ulcer lesion that is harmless and does not lead to malignancy but can recur in the oral cavity that looks like a small wound with a yellowish-white color surrounded by a reddish edge. These lesions can cause discomfort especially when eating and speaking because they are symptomatic. There are several factors that aggravate the condition such as poor *oral hygiene*, smoking with a lot of frequency, the presence of systemic diseases and spicy foods.

Communicate to the patient that the triggering factor for the recurrence of SAR in this case is the stress factor that is enforced, one of which is from the supporting examination, namely a complete blood test. However, it is necessary to carry out additional supporting examinations such as the Perceived Stress Scale (PSS) or MMPI to measure the emotional stability experienced by the patient to better support this triggering factor. In the examination, the leukocyte results were found at 4.4 where the normal value of leukocytes was at 5.0-10.0. One of the effects of stress on the immune system is its ability to trigger significant changes in the distribution of leukocytes in the body. Chronic stress suppresses or disrupts the innate and adaptive immune responses through mechanisms that involve suppression of leukocyte count, movement, and function or changes in the balance of type 1–type 2 cytokines. Acute stress causes an initial increase followed by a decrease in the number of leukocytes in the blood. Stressful conditions that result in the activation of the sympathetic nervous system, especially conditions that cause high norepinephrine levels, can lead to an increase in the number of circulating leukocytes. This condition can occur at the beginning of a stress response, stress of very short duration (a few minutes), mild psychological stress, or exercise. In contrast, stressful conditions that result in

activation of the HPA axis lead to a decrease in the number of circulating leukocytes. This condition often occurs in the later stages of the stress response, acute stress of a long duration (several hours), or severe psychological, physical, or physiological stress. (Dhabhar , 2008) Stress can lead to immune dysregulation. Increased levels of stress hormones, particularly cortisol, can suppress the activity of major immune cells and shift the production of cytokines, resulting in a weakened immune response. This disorder can lead to decreased antibody production and impaired T cell function, ultimately compromising the body's ability to fight infections and maintain overall health. Additionally, stress can lead to changes in the distribution and behavior of immune cells, such as a decrease in circulating natural T cells and killer cells, which are critical for recognizing and eliminating infected cells or cancer cells. This shift can reduce immune surveillance and increase susceptibility to infectious diseases and chronic inflammatory conditions (Alotiby , 2024).

Inform the patient that the stress condition will trigger the activation of the HPA to release the CRH hormone which triggers the secretion and release of other hormones, such as ACTH from the pituitary gland, which is also located in the brain. The ACTH hormone will follow the bloodstream and reach the adrenal glands and trigger the secretion of stress hormones such as catecholamines and glucocorticoids. Increased production of the hormone arenalin can lead to vasoconstriction and increase inflammation in the body. Vasoconstriction can result in reduced blood flow and cause a decrease in the supply of oxygen and nutrients in the tissues, thus causing the destruction of tissues in the oral cavity and prone to micro-lesions which can become recurrent aphthosal stomatitis (SAR). Cortisol levels can increase when a person experiences an increase as stress increases. Glucocorticoids can suppress the function of immune cells such as IgA, IgG, and neutrophils. The decrease in IgA function under stress causes the attachment of pathogenic microorganisms to the mucosa more easily so that microorganisms can invade tissues easily. Decreased IgG function facilitates pathological conditions due to decreased phagocytosis function. A decrease in neutrophils will cause decreased phagocytosis function which can lead to a decrease in the killing ability of microorganisms. If this happens, then mycoorgannism that causes recurrent aphthosis stomatitis (SAR) can develop rapidly Concern and al (2026) (Purnama et al., 2021)

Education to patients as part of treatment and to eliminate the triggers for recurrent canker sores by encouraging lifestyle changes to be healthier. Patients are advised to eat a balanced nutritious diet rich in nutrients and fiber such as vegetables, fruits, eggs, fish and meat and maintain a regular diet. In addition, patients are advised to be calmer in undergoing their education. When the patient feels tired, it is recommended to do other activities that he likes to relax more. If necessary, patients can be referred to a psychologist/psychiatrist for psychological support so that the patient can better manage stress levels and eliminate the triggers of recurrent canker sores.

In addition, SAR treatment can use topical and systemic therapies based on the severity of symptoms and frequency, size and number of lesions. The goal of therapy is to reduce pain and the size and number of ulcers, speed up healing and reduce the frequency of ulcer recurrence. In this case, the patient was given supportive therapy in the form of a multivitamin (becom-zet) with the recommendation to take 1x1 tablets a day for 10 days. Becom-zet contains Vit E 30 iu, Vit C 750 mg, Vit B1 15 mg, Vit B2 15 mg, Vit B6 20 mg, Vit B12 12 mcg, folic acid 400 mcg, pantothenic acid 20 mg, Zn 22.5 mg, niacin 100 mg. The function of each of these multivitamins and minerals is that vitamins E and C function as antioxidants, improve the immune system, accelerate wound healing and the formation of connective tissue. Vitamin B1 (thiamine), vitamin B2 (riboflavin), niacin function carbohydrate metabolism, vitamin B6 (pyridoxine) functions for protein and glycogen metabolism, vitamin B12 (cobalamin) and folic acid function for red blood cell formation and DNA synthesis, patothenic acid functions for fat synthesis, zinc functions for cell regeneration, carbohydrate metabolism, accelerates the regeneration of damaged tissues and improves the wound healing process. (Sari, Hidayanyo, Sao Paulo, Kosandi, & Fitriani, 2019).

CONCLUSIONS

Recurrent Aftosa Stomatitis is a multifactorial condition where one of the triggering factors is psychological stress and nutritional deficiencies. Stress due to psychological stressors can result in changes in the molecular level of immunocompetent cells resulting in pathological conditions in the epithelial cells of the oral cavity so that they are more sensitive to stimuli. SAR assessment is divided into two stages, namely pharmacological therapy and non-pharmacological therapy. An approach through Communication, Information and Education (KIE) and psychological support for people with SAR due to stress factors is more effective, such as directing patients to manage their stress management with a healthier lifestyle and diet to accelerate the healing process of lesions. If needed, patients can be referred to a psychologist/psychiatrist for psychological support.

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