

## Reccurent apthous with psychological stress predisposing factor – a case report

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### ABSTRACT

**Background:** Aphthous stomatitis (RAS) is a painful recurrent inflammatory process of the oral mucosa. Clinical features of inflammation in aphthous stomatitis in the form of ulcers on the oral mucosa can be single or multiple and have no relationship with a systemic disease. The etiopathogenesis of aphthous stomatitis is several predisposing factors in the manifestation of the oral cavity. This article presents case reports on RAS patients with stress-predisposing factors.

**Case:** In October 2019, A 52-year-old female patient came to RSGM complaining of canker sores in several places in her oral cavity, namely on the right inner lip, left inner lip, floor of the mouth, and under the tongue. The patient has felt this condition for the last 2 years, but the canker sores have disappeared and reappeared. The Miller and Smith test showed that the score is 42. We diagnosed the RAS patients with stress-predisposing factors. Treatment the patient was given oral methylprednisolone and becomezed tablet and counseling management stress.

**Conclusion:** cases of recurrent aphthous stomatitis are caused by psychological stress which can cause recurrent ulcers in the oral cavity. Eliminating stress-causing variables is one of the key therapies for these diseases. some patients need counseling with experts in stress management in addition to systemic treatment according to the symptoms felt by the patient.

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## INTRODUCTION

Aphthous stomatitis (RAS) is a painful recurrent inflammatory process of the oral mucosa that can occur as a secondary condition to various disease processes. Clinical features of inflammation in aphthous stomatitis in the form of ulcers on the oral mucosa can be single or multiple and have no relationship with a systemic disease.<sup>1</sup> The etiopathogenesis of aphthous stomatitis is generally caused by a family history where genetic factors cause patients to experience RAS, and more than 40% of individuals who experience the same condition have first-degree relatives with RAS. TNF- $\alpha$  cell mediation plays a major role in RAS Immunopathogenesis. In addition, various predisposing factors such as unstable hormonal conditions, psychological stress, allergic conditions, and hematinic deficiency cause tissue damage resulting in RAS lesions. The course of the disease consists of several phases, including the ulceration phase, the healing phase, and the remission phase. The ulcerative stage, where there are active RAS lesions, and the remission phase, where no lesions are found, are stages that can be evaluated more objectively in clinical trials. RAS can interfere with physiological functions such as speaking, eating, and swallowing, so it will interfere with quality of life. Quality of life is a concept related to the general well-being of a person that includes physical, emotional, and psychological parameters.<sup>2,3</sup>

This article presents case reports on RAS patients with stress-predisposing factors and how to treat them. Hopefully, this article can provide additional information for dentists about how psychological stress factors can be one of the causes of canker sores in patients.

## CASE

In October 2019, A 52-year-old female patient came to RSIGM complaining of canker sores in several places in her oral cavity, namely on the right inner lip, left inner lip, floor of the mouth, and under the tongue. The patient has felt this condition for the last 2 years, but the canker sores have disappeared and reappeared. The patient had previously checked on this situation with a general practitioner two months ago, and the general practitioner gave a prescription in the form of mouthwash. The general practitioner also gives a referral letter to the patient to see an internal medicine specialist because the patient's history of gastritis is suspected as the cause. The patient then checked the condition of his canker sores with an internal medicine specialist in his area. The patient admitted that he was given medicine in the form of Clindamycin (10 tablets) to be taken regularly three times a day. After taking the drug, the ulcer sores healed. But two weeks later, it reappeared. When the control patient returns to the internal medicine specialist, the doctor gives her a referral letter to go to the dentist. The patient then had the canker sores checked at the dentist. One month ago, the dentist gave him a prescription in the form of vitamin B complex and vitamin C. However, the canker sores still did not heal. The patient has no history of allergies, the patient has had a history of gastritis since 2 years ago. The patient has not been menstruating for the last 3 years. The patient has a history of gastritis. However, the allegation was denied.



Figure 1. At the first visit, there were several ulcer lesions in the patient's oral cavity (a) dextra superior labial mucosa (b) left superior labial mucosa (c) left inferior labial mucosa (d) ventral lingua (e) inferior lingua

Extraoral examination the face looks symmetrical, the submandibular lymph nodes enlarge, and they are painful on palpation. The intraoral examination showed Intraoral Examination. There is an ulcer-shaped lesion on the dextra superior labial mucosa, the left superior labial mucosa, the left inferior labial mucosa, yellow in color with reddish edges, and the floor of the left mouth, single in number, oval in shape, measuring 1 cm, 8 mm, 5 mm, 1.5 cm, and clearly demarcated. The lesion is painful on palpation. and There are ulcer-shaped lesions on the ventral lingula that are yellow in color with reddish edges, 2 in number, round in shape, measuring 2 mm and 3 mm, with clear boundaries. The lesion is painful on palpation. a provisional diagnosis of Recurrent aphthous stomatitis with psychological stress predisposing factors.

#### **CASE MANAGEMENT**

The patient underwent a complete blood count and was given medication in the form of 4 mg

methylprednisolone tablets taken twice a day in the morning and evening and Becomzed tablets to be taken once a day. Patients are given education on taking medication regularly, managing stress, and maintaining oral hygiene.

Complete blood count results are normal according to the reference value. The results of the Miller and Smith test showed a score of 42, which means that sufferers are quite vulnerable to psychological stress.

At the next visit after 14 days of treatment, the patient admitted that the 5 locations of canker sores he had previously had gradually improved, were not painful, and the lesions disappeared, leaving redness in his mouth, but canker sores reappeared at 2 other locations 3 days ago with smaller sizes than before. The patient admits that after medication and counseling, he is in better physical condition, becomes more open with his family, and can do stress management.



Figure 2. At the second visit, there were erythema in the patient's oral cavity (a) dextra superior labial mucosa (b) left superior labial mucosa (c) left inferior labial mucosa (d) ventral lingua (e) inferior lingua and there are new ulcer lesions on (f) dextra inferior labial mucosa.

Patients were instructed to continue treatment by taking methylprednisolone twice a day, taking becomzet tablets once a day, conducting stress management education, eating nutritious food, eating vegetables and fruits, and exercising.

On the third visit, the patient-controlled thrush was found after 2 weeks of treatment and education. The patient admitted that after being educated, she was better able to control her emotions. And calmer to face the problems it faces. The patient admitted that the drug given was in the form of metal prednisolone and becomzet was also taken regularly and had run out. The patient feels that the canker sores in his oral cavity have gradually healed themselves and are no longer painful. The patient feels very comfortable with this situation.



Figure 3. At the third visit, there were erythema's in the patient's oral cavity in dextra inferior labial mucosa.

After 1 month after the last visit, a follow-up was carried out for thrush in the oral cavity. The patient admitted that he had never complained of canker sores. Patients are more comfortable with their daily lives, are better at stress management, and are more enthusiastic about living life because they have a family that supports them.

#### DISCUSSION

The most prevalent condition affecting the oral mucosa is recurrent aphthous stomatitis (RAS). Recurrent, painful, single, or numerous ulcers with erythematous edges are its defining features.<sup>4</sup>

Aphthous ulcerations, also known as RAS-like ulcerations, have a systemic aetiology and need to be handled differently from other medical

conditions. As differential diagnoses, one should take into account autoinflammatory disorders, immunodeficiency conditions, immunological abnormalities, and neutrophil deficiencies. RAS describes ulceration that takes place without any underlying systemic illness. Premonitory, pre-ulcerative, ulcerative, healing, and remission phases represent only a few of the stages that make up the disease sequence. The stages that may be examined in the clinical examination with more objectivity are the ulcerative phase (presence of active lesions) and remission (absence of lesion evidence).<sup>4</sup>

The prevalence RAS have demonstrated that the population investigated, the diagnostic standards, and environmental variables all affect the occurrence of RAS. The existence of RAS in one or both parents can have an impact on the prevalence of RAS in offspring, which can reach 39%. Compared to children with RAS-negative parents, who have a 20% probability of having RAS, children with RAS-positive parents have a 90% chance of doing it.<sup>5</sup>

RAS is a member of the category of ulcerative, inflammatory, and chronic disorders of the oral mucosa. Although the etiopathogenesis of this illness is yet unknown, it is thought to be complex.<sup>6</sup> Previous research has found that the development of the illness is significantly influenced by genetically caused changes in innate and acquired immunity. Genetic predisposition, viral and bacterial infections, dietary allergies, vitamin and microelement deficits, systemic disorders, hormonal imbalance, mechanical traumas, and stress are examples of factors that alter the immune responses in RAS.<sup>5,6</sup>

Recurrent Aphthous Stomatitis in the patient was brought on by psychological stress situations caused by familial problems, menopause, and gastritis. These issues may affect the immune

response of an individual, making them more susceptible to diseases including inflammation of the patient's in oral cavity.

There are four phases in the development of recurrent aphthous stomatitis, the first of which takes place during the first 24 hours following the development of a RAS lesion and first manifests as a burning mouth feeling in the patient. Oedema starts to form when mononuclear cells infect the epithelium under a microscope. The pre-ulceration stage follows, and it lasts between 18 to 72 hours (3 days). During this period, discomfort will become more intense. Papules and macules with erythematous borders will form at this location. Papules and macules will ulcerate in the ulcerative stage, which lasts for 1 to 16 days, and these ulcers will be covered by a fibro membranous layer. There will then be a decrease in pain intensity. The healing stage, which starts on days 4-35, is the last touch. Typically, the lesions will heal without leaving any scars in 10 to 21 days. The epithelium will cover the ulcer.<sup>7</sup>

Stress is the outcome of troubles in one's life that might damage organ function. There are six phases of stress. The first degree of stress is the least stressful and is characterized by emotions of intense enthusiasm, excessive energy, and uneasiness as well as the capacity to accomplish more work than normal. People frequently have fun and become thrilled at this point without recognizing that their energy supplies are actually depleting.<sup>8</sup>

Level II stress: At this point, the positive effects of stress start to fade, and complaints start to surface. These complaints include feeling exhausted when you wake up in the morning, exhausted after lunch, and fatigued late in the afternoon. Sometimes, digestive function is also disrupted. This is due to the fact that daylong energy reserves are no longer enough. Level III stress is characterized by the onset of semantic

fatigue and symptoms including more significant digestive troubles, stiff muscles, and rising sensations of tension.<sup>8</sup>

Level IV stress, which is severe, is accompanied by symptoms like a fast decline in concentration, the appearance of an unexplainable fear, difficulty sleeping, and the difficulty of previously enjoyable activities. Level V stress is when symptoms like deeper exhaustion, feeling less capable of performing simple tasks, more frequent stomach problems, trouble urinating, and worsening sensations of anxiety occur.<sup>8</sup>

Level VI stress is the most extreme stage and involves emergency situations. At this stage, symptoms include a very rapid heartbeat, shortness of breath, trembling, a chilled body, and copious sweating.<sup>8</sup>

In order for the hypothalamus to release CRH (corticotropin releasing hormone), psychosocial stress might stimulate the central nervous system. The pituitary gland is then stimulated by CRH to produce the hormone ACTH (adrenocorticotropic hormone). Aldosterone is produced in the glomerular zone by the adrenal cortex when ACTH stimulates it. Aldosterone helps maintain the body's electrolyte balance by acting on  $Na^+$  and  $K^+$ , and it also causes the vascular zone to create cortisol. IgA, IgG, and neutrophil activities are suppressed by glucocorticoids found in cortisol.

IgA functions to bind viruses and bacteria, preventing them from sticking to the mucosa. Stress will cause IgA to work less effectively, which will make it easier for germs to bind to the mucosa and invade, making infection more likely. IgG may coat germs to make them more phagocytosed and is used to kill viruses and poisons. Stress impairs IgG function, making pathogenic diseases more likely to develop because toxins and viruses cannot be eliminated and phagocytosis is reduced.<sup>7,9</sup>

In order to perform phagocytosis, which involves the killing and removal of germs, neutrophils are necessary. As a result, when there is a drop in neutrophils, phagocytosis and the capacity to kill microorganisms are also reduced.<sup>7</sup>

When under stress, the adrenal cortex releases cortisol, which alters the balance of type 1/type 2 cytokines toward a type 2 response by reducing the production of IFN- (type 1 cytokines) and increasing the production of IL-10 and IL-4 (type 2 cytokines). According to recent studies, the disruption of the type 1/type 2 cytokine balance is a key factor in the relationship between stress's effects on the immune system. In RAS, there are a number of immune responses that occur in effect, including a reduction in the number of CD4 lymphocytes and a change in the CD4:CD8 ratio, a reduction in CD4-CD25 Treg regulatory activity, an increase in the number of B lymphocytes and T cells, a reduction in the expression of HSP, an increase in the complement system, a rise in the number of NK cells, a reactivation and hyperreactivity of neutrophils, pro-inflammatory cytokines generated by Th1 and IL-2, IL-12, IFN-gamma, and TNF- were expressed more frequently than anti-inflammatory cytokines produced by Th2 and TGF.<sup>10</sup>

Anamnesis, the clinical picture, and the results of the examinations are used to make the diagnosis. The patient's anamnesis acknowledges that he is extremely stressed out and worried about the problems affecting his family. The anamnesis showed that the patient had persistent canker sores ever since menopause three years ago. In addition, the patient is under pressure from their family, which takes up a lot of time and attention. The patient is an introverted person who easily hides his emotions. He constantly thinks about his own difficulties and keeps them from others out of fear of burdening others.

In these cases, corticosteroids are the first line of therapy. When patients have severe acute RAS outbreaks, they are often treated with them as the final option. In the first month of therapy, oral methylprednisolone was used at an initial dose of 8 mg/d, followed by a progressive dose reduction over 1 month, resulting in relief of pain and re-epithelialization of the lesions. Methylprednisolone used orally may decrease the number of lesions, reduce discomfort, and hasten the healing of ulcers.<sup>11</sup>

Multivitamins (Be-com-Zet) are also administered to the patients. Vitamin E 30 iu, vitamin C 750 mg, vitamin B1 15 mg, vitamin B2 15 mg, vitamin B6 20 mg, vitamin B12 12 mcg, folic acid 400 mcg, pantothenic acid 20 mg, zinc 22.5 mg, and niacin 100 mg are all included in the multivitamin (Becom-Zet). Each of these multivitamins and minerals serves a purpose by repairing the immune system, promoting faster wound healing, and forming connective tissue. Vitamins E and C also serve as antioxidants. Thiamine, riboflavin, and niacin are vitamins that help with carbohydrate metabolism. Pyridoxine, a vitamin, helps with protein and glycogen metabolism. Vitamins B12 (cobalamin), folic acid, and pantothenic acid help with red blood cell formation and DNA synthesis. Zinc has roles in

glucose metabolism, cell regeneration, accelerating the regeneration of injured tissue, and promoting wound healing.<sup>10</sup>

Reducing the degree of observable stress by counselling, psychotherapy, social support from friends or family, or psychosis can be used to treat individuals with recurrent aphthous stomatitis related with psychological stress. Eliminating the stress-causing variables is one of the key therapies for these diseases. a number of the symptoms experienced by the patient, some people require systemic therapy in addition to counselling with stress management specialists.

## CONCLUSION

Several cases of recurrent aphthous stomatitis are caused by psychological stress which can cause recurrent ulcers in the oral cavity. Eliminating the stress-causing variables is one of the key therapies for these diseases. some patients need counselling with experts in stress management in addition to systemic treatment according to the symptoms felt by the patient.

## CONFLICT OF INTEREST

All authors declare that we have no conflicts of interest.

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