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Special Case Report of Geographic Tongue on the Dorsum of the Tongue of a 2.5-Year-Old Boy

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ABSTRACT

Background: Geographic tongue is a condition that involves the dorsal surface of the tongue. This condition is usually painless, but in some cases, it may be accompanied by pain. The cause is unknown, but it is thought to be related to heredity, hormonal imbalance, and nutritional deficiencies.

Case: A 2.5-year-old boy and his parents reported to the Department of Oral Medicine, Dental and Oral Hospital, Jember University with the chief complaints of red islands appearing on his tongue, and worse when he eats and drinks. The patient's mother admitted that her child's complaint had appeared 1 week ago and he had a fever when this condition appeared. The patient's mother also admitted that a similar condition often appeared, almost once a month, but the location was different. The patient's mother never took any action regarding her complaint.

Management: Supportive therapy, which was 60 ml of Caviplex syrup 3 times a day and 1 teaspoon after eating.

Discussion: Malnutrition in toddlers can lead to disruption of physical growth and health. Indirectly, malnutrition can cause children under the age of 5 years to experience nutritional deficiencies which affect children's health, children's growth, infectious diseases, and children's intelligence, as well as attacks by certain diseases. Nutrient deficiencies inhibit epithelial cell growth. As a result, the differentiation process into stratum corneum epithelium does not occur and the oral mucosa becomes thinner due to loss of normal

keratinization. Apart from causing papillary atrophy, substance deficiency can also cause inflammation, pain, and a burning sensation on the geographic tongue.

Conclusion: Nutritional deficiencies can trigger geographic tongue due to decreased body resistance. Multivitamins are given as supportive therapy to increase endurance and increase appetite.

Keywords: geographic tongue, nutritional deficiencies

INTRODUCTION

Geographic tongue or benign migratory glossitis or erythema migraine is an inflammatory lesion on the tongue that is benign and has no tendency to become malignant. As the name suggests, geographic tongue occurs on the tongue, especially on the dorsum or lateral part of the tongue (Musaad et al, 2015). These lesions are shaped like islands and often appear in one area and then move to a different part of the tongue, so they are often called benign migratory glossitis. Histopathologically, there is loss of filiform papillae, psoriasiform epithelial hyperplasia with spongiotic pustules involving one-third to two-thirds of the thickness of the epithelium, and the presence of variable lymphocytic infiltrates.

Geographic tongue lesions appear clinically as an irregular shape, yellow, white, or gray at the edges. These lesions also appear as

red circles with irregular white edges on the sides and middle of the tongue. Geographic tongue results from atrophy of the filiform papillae, so it appears as red dots and the white border of the red spots is the filiform papillae which are regenerating and mixed with keratin and neutrophils. These lesions usually appear in one or two weeks then disappear and reappear in different places on the tongue (Pinasthika et al, 2018).

Lesions are usually asymptomatic, but occasionally patients feel discomfort when eating spicy and sour foods. The level of discomfort varies depending on the lesion and is also felt at different times (Sari et al, 2021). The geographic tongue usually does not require any treatment, but the presence of this lesion can disrupt the sufferer's activities if it occurs too often. Geographic tongue lesions will disrupt the masticatory function and speech function, which can reduce the patient's quality of life and nutritional intake (Pinasthika et al, 2018).

The etiology of this lesion is unknown, although there are many studies and studies examining the geographic tongue. Some researchers concluded that genetic or hereditary factors play a major role in these lesions. Predisposing factors also support the occurrence of this disorder, such as nutritional deficiencies, stress, etc. (Pinasthika et al, 2018).

The nutritional status of toddlers can influence several aspects. Dental problems in children can have a significant effect on the child's growth and development in the future (Hanum et al, 2014). Malnutrition in toddlers results in disruption of physical growth and health. Indirectly, malnutrition can cause children under the age of 5 years to experience nutritional deficiencies which affect children's health, children's growth, infectious diseases, and children's intelligence, as well as attacks by certain diseases (Rilyani et al., 2021).

The problem of malnutrition in toddlers is caused by various things, both direct and indirect factors. The direct causal factor is a diet that does not meet the requirements, resulting in low energy and protein input in

daily food so it does not meet nutritional adequacy rates. Another factor is the presence of infectious diseases which can cause toddlers to have no appetite, resulting in a shortage of food and drink entering their bodies, which is the cause of toddler deaths in Indonesia. (Faridi & Sagita, 2016). Infectious diseases are disorders caused by microorganisms that cause abnormal reactions in the body. These infectious diseases can cause a decrease in appetite or difficulty in swallowing and digesting food, resulting in decreased food consumption in the body, and finally malnutrition (Auliya et al, 2015).

CASE REPORT

A 2.5-year-old boy and his parents reported to the Department of Oral Medicine, Dental and Oral Hospital, Jember University with the chief complaints of red islands appearing on his tongue and it hurt when he eats and drinks. The patient's mother admitted that her child's complaint had appeared 1 week ago and he had a fever when this condition appeared. The patient's mother also admitted that a similar condition often appeared, almost once a month, but the location was different. The patient's mother never took any action regarding her complaint and left it until the condition healed by itself. The patient has never had dental and oral care done by a dentist. Patients rarely consume fruit and vegetables but more often consume daily snacks. The patient had experienced a high fever when he was a baby and was hospitalized, the patient was not suspected of having an allergy. The patient has a habit of putting all his fingers into his mouth. The patient's family is not suspected of having a history of systemic disease.

The patient came to the RSGM showing poor physical condition because he looked weak and had a fever with a temperature measurement of 38°C and a body weight of 10 kg/ 80 cm.

On the extra-oral examination, there were no abnormalities in the patient's face, head and neck, lymph nodes, and salivary glands.

During intra-oral examination, found atrophic papillae, erythematous, round with a diameter of ± 3 cm, clear boundaries, accompanied by white plaque around them, and pain on the dorsum of the tongue (Figure 1).



Figure 1. Condition of the patient's tongue

The patient was not given any supporting examination and the patient was diagnosed with geographic tongue on the dorsum of the tongue.

CASE MANAGEMENT

Based on the results of objective and subjective examinations, the patient was diagnosed with Geographic Tongue. At the first visit, communication, information, and education (KIE) is carried out regarding diagnosis, etiology, predisposing factors, prognosis, treatment plan, therapy, and drugs. The therapy used in this case is supportive therapy, namely 60 ml of Caviplex syrup 3 times a day and 1 teaspoon after eating. Caviplex syrup contains many vitamins and nutrients such as vitamin A, vitamin D, vitamin B1, vitamin B2, vitamin B6, vitamin B12, vitamin C, nicotinamide, Ca pantothenate, Ca lactate, Ca glycerophosphate, i-glutamic acid, and zinc. Then the patient's parents are given information about the disease, the causal factors, the course of the disease or pathogenesis, management, and ways to prevent the disease. The patient's parents are instructed to maintain their child's diet by consuming lots of nutritious food and fruit and vegetables, reducing snacks for the

child, and instructing the patient's parents to provide formula milk to the child to support the child's growth and development. Apart from that, the parents were instructed to prevent the patient's habit of putting their fingers in their mouth and instructed the patient to come for control 1 week later.

Two weeks later, the patient's parents admitted that complaints of redness on their child's tongue decreased after 3 therapies, and completely recovered after 1 week of therapy, and no fever as the redness on their child's tongue healed. The patient's mother admitted that the patient diligently took the medication given according to the instructions and the patient got their appetite back. The results of the patient's intra-oral and extra-oral examinations did not show any abnormalities, so therapy was considered complete. Then instructions were given to the patient's parents to continue the child's diet, feed lots of vegetables and fruit, and give the child formula milk.



Figure 2. Condition of the patient's tongue after 2 weeks of therapy

DISCUSSION

Geographic tongue is a benign chronic condition on the tongue. It is characterized by an area of atrophy of the filiform papillae, appearing as an erythematous area with raised, yellowish-white edges and firm boundaries with an irregular pattern that looks like a map pattern, moving from place to place or migrating with periods of remission (Fitriasari et al., 2021). Geographic tongue is asymptomatic, active, remission, and reactive periods that reappear

with different locations, shapes, and sizes. This migration is evidenced by the desquamation of the epithelium in one location and proliferation in another. The lateral edge and tip of the tongue are the most common locations, followed by the dorsal and ventral of the tongue (Picciani et al., 2016). As seen in this case report, the geographic tongue appears during the active period with complaints of pain on the tongue and remission after 1 week of therapy. During the active period, atrophic filiform papillae are visible, circular in shape with a diameter of ± 3 cm, erythematous, clearly defined, accompanied by a white plaque, and painful.

Geographic tongue usually causes symptoms in children and is rarely experienced by young adults, because children are less able to tolerate pain compared to older people. Pain was aggravated by eating spicy, salty, sour, and hot foods and drinking hot and sour drinks. This is thought because of the erythematous areas which represent papilla atrophy or depapillary and become more sensitive so there may be disturbances in the taste function of several types of food and drinks such as spicy, sour, salty foods and hot and sour drinks. The filiform papillae contain a relatively thick layer of keratinized squamous epithelium which can protect against chemical, mechanical, and physical stimuli (Fitriasari et al, 2021).

In general, the pathogenesis of the geographic tongue is associated with epithelial replacement where there is a process of desquamation and keratinization. Normally the rate of epithelial cell desquamation is the same as the rate of cell replacement by the basal layer of the oral mucosal epithelium. In this case, it is estimated that the rate of epithelial desquamation occurs more quickly so the keratin maturation decreases. Geographic tongues have a defect in the mechanisms that control epithelial cell desquamation, regeneration, and keratinization (Sari et al, 2021).

Apart from several reports on the factors involved in the etiology of geographic tongue, the mechanism has not yet been determined. Several researchers have classified predisposing factors, including congenital disorders, genetics, chronic inflammation, associated with systemic diseases such as psoriasis, hormonal factors, psychological factors, drugs, vitamin deficiencies (vitamin B6, vitamin B12, folic acid, iron, and zinc), allergic reactions, and food (Fitriasari et al, 2015).

Children who experience nutritional disorders have an impact on the child's future growth and development (Hanum et al, 2014). Malnutrition in toddlers results in disruption of physical growth and health. Indirectly, malnutrition can cause children under the age of 5 years to experience nutritional deficiencies which affect children's health, children's growth, infectious diseases, and children's intelligence, as well as attacks by certain diseases. Nutrient deficiencies inhibit epithelial cell growth (Rilyani et al, 2021). Lack of nutritional intake will cause a deficit in meeting their body's needs, and becoming vulnerable to attacks of infectious diseases, which if they occur will worsen their nutritional status. On the other hand, people with infectious diseases will experience an increase in metabolism and body temperature, which causes their need for energy and nutrients to increase. Meanwhile, people with infectious diseases usually experience a decrease in appetite, so their nutritional intake is also reduced, which if it lasts for a long time will reduce their nutritional status (Laswati, 2017).

Good parenting patterns, nutritional intake, and the incidence of infectious diseases are greatly influenced by the problem, which includes social and economic factors. Parental parenting patterns are a very important factor and can be improved by conveying nutritional and health information correctly so it will change knowledge, perceptions, and parenting patterns on nutrition and health, which will have a good influence on the nutritional

status of their children. Therefore, in this case, instructions are given more emphasis to the patient's parents to pay more attention to their child's diet and provide nutritious food, increase fruit and vegetables, reduce snacks, and provide formula milk as support because the child is still in the transition period from breast milk to complementary feeding.

By using three anthropometric indicators, including indicators according to age (BW/U), TB according to Age (TB/U), and BW according to TB (BW/TB) or BMI (Body Mass Index), the characteristics of the nutritional problems faced will be known, including acute, chronic or acute-chronic nutrition. It can also be known the direction of malnutrition problems including underweight and overweight or both (Laswati, 2017). The BW/TB indicator is the best anthropometric measurement because it can sensitively and specifically describe current nutritional status or acute nutritional problems. Body weight is linearly correlated with body height, meaning that under normal circumstances the development of body weight will follow the increase in height at a certain acceleration (Septiawati et al, 2021). Based on the patient's BMI measurement, a BMI value of 15.625 was obtained, which is categorized as severe underweight according to the Ministry of Health. This is thought to be because the patient has a nutritional deficiency as can be seen from the BMI, the patient also experiences delays in speaking, and the patient often experiences fever due to infections caused by a decrease in the patient's immune system due to adequate nutrition. The patient's mother admitted that her child often experienced fever when her child's geographic tongue recurred, and this condition occurred once a month.

Nutrient deficiency inhibits the differentiation of epithelial cell growth. As a result, the differentiation process into stratum corneum epithelium does not occur and the oral mucosa becomes thinner due to loss of normal keratinization. Apart from

causing papillary atrophy, iron deficiency can also cause inflammation, pain, and a burning sensation (Fitriasari et al, 2021).

Additional vitamin therapy or supplements can be given as supportive therapy. As in this case, caviplex supplements are given which contain vitamin A, vitamin D, vitamin B1, vitamin B2, vitamin B6, vitamin B12, vitamin C, nicotinamide, Ca pantothenate, Ca lactate, Ca glycerophosphate, i-glutamic acid, and zinc. After 1 week of taking the multivitamin, the patient's mother admitted that the pain in her child's tongue had disappeared and her child's appetite had increased.

CONCLUSION

The exact etiology of geographic tongue is unknown, but there are several predisposing factors including nutritional deficiencies, stress, and others. Supportive therapy can be given to increase the body's resistance so it is not easy to get infections and help increase the child's appetite.

Declaration by Authors

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