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Case Report: Fissured Tongue and Geographic Tongue in Diabetes Mellitus Patients

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Abstract
Introduction*. Fissure tongue and geographic tongue are normal variations found on the tongue, usually do not cause complaints. However, in certain circumstances in patients with this normal variation can cause discomfort, especially if exposed to spicy or hot food. Sometimes it can even be aggravated by poor oral hygiene or accompanied by systemic diseases, so that it can cause pain or a burning sensation such as in patients with diabetes mellitus (DM).* ***Case.*** *A 33-year-old male patient, with complaints of discomfort and thick tongue. Sometimes it hurts, hot like burning. The patient has experienced these symptoms since 1 month ago. The patient claimed to have a history of DM since 5 years ago. The results of a random blood glucose level examination were 315 mg / dL with a blood pressure of 155/93 mmHg. After the HbA1c examination, the blood glucose level showed 9.9 *%. Results of intra-oral examination: Multiple fissures accompanied by depapillation, reddish color limited by hyperkeratotic areas, clear boundaries, pain.* ***Medication****. Normal variations in the form of fissure tongue and geographic tongue can be given medication in the form of topical nonsteroidal anti-inflammatory drugs in the form of gel or spray and can be added with multivitamins orally. For accompanying systemic diseases, referrals can be made to authorized medical colleagues.* ***Conclusion****. Fissure tongue and geographic tongue are normal variations found on the tongue. The presence of complaints of pain and burning sensations can be aggravated by accompanying systemic diseases such as Diabetes Mellitus.*
Keywords: *diabetes mellitus, geographic tongue, fissured tongue*

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I. INTRODUCTION

The tongue is a part of the oral cavity that philosophically medically acts as a mirror of the health of the oral cavity and the body as a whole, and is a vital organ of the body that has various important functions such as the function of tasting, speaking, chewing and breathing. Anatomically, it consists of the radix, dorsum, ventral and lateral parts of the tongue. The dorsum of the tongue is divided into anterior and posterior areas separated by a V-shaped sulcus or sulcus terminalis.1

Geographic tongue is one of the normal variations on the dorsum of the tongue which is clinically in the form of depapilation on the tongue, red in color, bordered by a white hyperkeratotic area that is elevated, irregular in shape, usually multiple and shifting locations. Until now the etiology is unknown.Some references mention that this occurs due to growth and development abnormalities during the formation of keratinocyte cells in the papillae of the tongue, hereditary, vitamin deficiencies, allergic reactions, and systemic diseases. End-Recently, several studies have also explained that geographic tongue is related to psoriasis. Usually without complaints so that patients are not aware of the normal variation, and the condition will improve after 1 to 2 weeks.

Fissured tongue is a longitudinal crack on the dorsum of the tongue with varying directions and depths, which can be shallow or deep. This fissured tongue is also a normal variation. 1,2,3 Usually does not cause complaints, but in fissures with a depth of more than 2 mm, there is a high risk of debris accumulation, causing local inflammation. Based on research conducted by Jainkittvong et al., it was found that 60.1% of patients with geographic tongue on their tongue also had fissured tongue. This condition is suspected of having a relationship between the two conditions and has the same genetic etiology. 4

Although both of these normal variations are asymptomatic, some patients complain of pain, sensitivity and burning sensation triggered by consuming spicy and hot foods (burning mouth sensation).4,5,6 Geographic tongue and fissured tongue conditions are often found in patients with a history of systemic disease.6,7

In the study by Hamrah et al., it was stated that out of 1182 patients, there were 33% of hypertensive patients with geographic and fissured tongue, and there were 42.1% of DM patients accompanied by geographic tongue and fissured tongue. 10 Other studies also stated that DM and hypertensive patients are often

accompanied by geographic tongue, fissured tongue, and a burning sensation in the mouth when eating spicy food. 11, 12

II. CASE REPORT

A 33-year-old male patient, with complaints of discomfort and thick tongue. Sometimes it feels painful, hot like burning. The patient has experienced these symptoms since 1 month ago. The patient claimed to have a history of DM since 5 years ago. At the time of arrival, a random blood glucose level was 315 mg/dL with a blood pressure of 155/93 mmHg. Intra-oral examination results: Multiple fissures accompanied by depapillation, reddish color limited by hyperkeratotic areas, clear boundaries, painful. The patient had never visited a dentist before.

Figure 1. First visit

Figure 2. Visit during check-up

III. DISCUSSION

Diabetes mellitus (DM) is a chronic disease that can be suffered for life. DM is caused by metabolic disorders that occur in the pancreas organ which is characterized by increased blood sugar or often referred to as hyperglycemia caused by decreased insulin from the pancreas. 8,13 The etiology of DM is a combination of genetic and environmental factors. Other etiologies of DM include insulin secretion or action, metabolic abnormalities that interfere with insulin secretion, mitochondrial abnormalities, and a group of other conditions that interfere with glucose tolerance. DM can occur due to exocrine pancreatic disease when damage occurs to the majority of the islets of the pancreas. Hormones that work as insulin antagonists can also cause DM8, 13, 14 DM has 2 types, namely type 1 DM which is the result of an autoimmune reaction to pancreatic islet cell proteins, then type 2 DM which is caused by a combination of genetic factors related to impaired insulin secretion, insulin resistance and environmental factors such as obesity, overeating, undereating, exercise and stress, and aging15,16.

The results of the patient's blood glucose level examination showed an HbA1c result of 9.9 *%. From the results of the examination, the patient's blood glucose level can be said to be high. In addition, the patient's blood pressure is 155/93, which indicates an increase in the patient's blood pressure which may be a complication of DM.Patients also complained of weakness, frequent urge to urinate, drink, and red eyes.16,17

Based on several research results, it is explained that DM and hypertension are systemic diseases that have manifestations in the oral cavity, such as geographic tongue, fissured tongue, and a burning sensation in the mouth. 3,4,10 The clinical picture of geographic tongue is atrophy of the papillae or filiform depapilation of the tongue, erythromatous, irregular and limited by a whitish hyperkeratotic area that is elevated, and can move location. Geographic tongue is asymptomatic, there are active, remission and reactive periods that can recur

with different locations, shapes and sizes. This migration is evidenced by the presence of depapilation 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 surfaces. 4 During the active period, the clinical picture will appear as atrophy of the papillae, reddish in color, with a clear whitish border, while during the remission or passive period there is no elevated lesion edge but still has a depapillation area that can move from one part of the tongue to another area on the tongue. The active period is sometimes symptomatic such as symptoms of stinging, burning and pain. 3,4 This condition is the same condition in the patient in this case report where there is a clinical picture of geographic tongue during the active period with complaints of stinging and pain in the tongue. 3,4,11 The presence of this symptomatic condition is likely a disturbance in the healing process, especially in DM patients, possibly due to delayed healing and slow tissue repair due to hypoxia and oral microvascular disease in patients with DM. 18

In addition to geographic tongue, this patient also found fissure tongue, which is a condition in the form of a longitudinal gap or groove on the surface of the dorsum of the tongue with varying sizes and depths. Fissured tongue is the same as geographic tongue, included in the normal variation with a prevalence of less than 10% in the population. 18,19 Classification of fissured tongue based on the fissured pattern is divided into 5 types, namely central longitudinal type, central transverse type, lateral longitudinal type, branching type, and diffuse type. There is a strong relationship between geographic tongue and fissured tongue but the cause is not yet known. 1,2,3 Fissured tongue can be a retention of microorganisms and food debris that causes local irritation, halitosis, infection and inflammation. 3,4 Usually symptoms appear due to secondary fungal infection at the base of the fissured, so if it occurs together with geographic tongue it will create a condition that can worsen the complaint. 20

Based on the results of the anamnesis, it is known that the patient has a history of consuming spicy and hot foods almost every day, since one year ago. This can lead to the suspicion as a triggering factor because the pattern of eating spicy and hot foods that are routinely consumed can be an irritant factor on the surface of the tongue mucosa, causing a burning complaint in this patient. Filiform papillae contain a relatively thick layer of keratinized squamous epithelium that can protect against chemical, mechanical, and physical stimuli. On the geographic tongue there is an erythromatous area that describes papilla atrophy or depapillation which causes the tongue mucosa to become more sensitive to spicy and hot food stimuli.

In this case, the next step is the treatment plan stage which begins with providing Information and Education Communication (IEC) which includes diagnosis, etiology or predisposing factors, disease category and prognosis. Furthermore, medication is given for oral complaints using topical drugs. For systemic diseases and suspected hypertension, referral is made to an authorized doctor. For oral complaints, topical non-steroidal anti-inflammatory drugs can be given, in the form of gel or spray preparations and multivitamins orally. Patients are instructed to reduce high-salt foods, spicy or hot foods, reduce smoking, and use medication regularly.

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