



Fissured geographic tongue evolving in the COVID-19 process: A case report

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ABSTRACT

The mechanisms involved in the pathogenesis of SARS-CoV-2 affect different organs and systems, resulting in different clinical manifestations. Geographic tongue (benign migratory glossitis) is an oral lesion of immunological origin, the etiology of which is not known exactly, and occurs as a result of desquamation of the filiform papillae on the dorsal surface of the tongue. Oral involvement may accompany the current clinical manifestations in COVID-19 patients. In this article, a case of fissured geographic tongue evolving during the COVID-19 process is presented.

Keywords: COVID-19; fissured tongue; geographic tongue; SARS-CoV-2.

INTRODUCTION

The clinical spectrum of COVID-19 is expanding with the increase in the number of people suffering from the disease, new symptoms are added to the existing symptoms. The mechanisms defined in viral pathogenesis affect different organs and systems, resulting in different clinical presentations. The basis of these mechanisms is the binding of SARS-COV-2 virus to the Angiotensin Converting Enzyme-2 (ACE-2) receptor and cytokine increase.^{1,2} When the virus binds to this receptor, it enters the cell and inflammatory reactions begin, which makes cells containing the ACE-2 receptor a target for the virus. The ACE-2 receptor is mainly found in type 2 alveolar epithelial cells. Other cells that contain ACE-2 receptors include myocardial cells, kidney proximal tubule cells, bladder urothelial cells, enterocytes of the small intestine, sweat glands, and tongue.³

Geographic tongue (benign migratory glossitis) is defined as an inflammatory, benign oral lesion of immunological origin, the etiology of which is not known exactly. Lesions usually result from desquamation of the filiform papillae on the dorsal surface of the tongue. It has been noted that hypertrophic white lines can be seen around these erythematous patches and thin, erythematous areas on the outside of this line. Fissured tongue can also be called lingua fissurata, lingua plicata, scrotal tongue and grooved tongue. Clinically, there are multiple branched fissures that extend laterally with an anteroposterior orientation.⁴

In COVID-19 patients, it has been shown that the current clinical picture is accompanied by oral involvement. It has been stated that these involvements can be seen on the palate, gingiva, tongue and lips. Oral lesions seen in COVID-19 patients prove that the tissues in the mouth are among the targets of SARS-CoV-2. Studies have reported that the ACE-2 receptor is

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found in high amounts, especially in the tongue.⁵

In this article, a case of fissured geographic tongue developed during the COVID-19 process is presented.

CASE REPORT

A twenty-seven-year-old male patient presented with the complaint of swelling and grooves on his tongue. He stated that the swelling and groove in his tongue started two days ago. In the patient's history, he applied to the emergency department due to loss of taste, cough and fever four days ago, and as a result of the anamnesis and examinations taken here, the nasopharyngeal swab sample was evaluated as COVID-19 suspect and the polymerase chain reaction (PCR) analysis was positive. It was learned that the favipiravir 200 miligram (mg) tablet treatment was started for one day at the 2x8 loading dose and four days at the 2x3 maintenance dose.

In the vital signs of the patient whose general condition is good, oriented and cooperative; fever was 36.5 degrees Celsius, arterial blood pressure was 110/70 mmHg, heart rate was 75 beats/minute, respiratory rate was 18/minute, and oxygen saturation (in room air) was 99%.

There was no feature in her medical history and family history. There was no smoking or alcohol use. On physical examination, geographic appearance of tongue, fissuring and edema were detected. (Figure-1) On the respiratory system auscultation, thin rales were detected in the middle zones of lungs.



Figure-1. Geographic and fissuring appearance of tongue

In laboratory examinations; white blood cell: 6.7 (4.60-10.20) K/uL, hemoglobin: 14.4 (12.20-18.10) g/dl, lymphocyte: 1.65 (0.60-3.40) K/uL eosinophil: 0.004 (0.0-0.7) K/uL platelet: 186000 (100000-450000) K/uL, LDH: 190 (0-247) U/L, sodium: 140 (136-146) mmol/L, potassium: 3.6 (3.5-5.1) mmol/L, calcium: 9.3 (8.8-10.6) mg/dL, urea: 34 (17-43) mg/dL, creatinine: 0.9 (0.67-1.17) mg/dL, D-dimer: 640 (0-500) ugFEU/L, C-reactive protein (CRP): 19.2 (0-5) mg/dL, iron (Fe): 115 (37-158) ug/dL, ferritin: 86 (4.63-204) ug/L, Thyroid Stimulating Hormone (TSH): 3.16 (0.35-4.94) uIU/mL, free T4: 1.14 (0.7-1.48) ng/dL.

Considering that the patient's existing tongue edema and fissured structure developed due to COVID-19 after other preliminary diagnoses were excluded, it was recommended to continue favipiravir treatment. Symptomatically, benzydamine HCl mouthwash treatment was started in the oral 3x1 posology, and he was called for control.

In the control examination performed 14 days later, it was observed that the tongue edema and fissured structure disappeared. (Figure-2) The polymerase chain reaction (PCR) analysis of the nasopharyngeal swab sample was found to be negative.



Figure-2. Normal tongue appearance after treatment

DISCUSSION

Geographic language was first described by Reiter in 1831.⁶ Although the etiology is not known exactly, it has been stated that it can be seen together with many systemic diseases. These diseases include psoriasis, allergy, malnutrition, iron deficiency anemia, thyroid dysfunction

and stress.⁷ As a result of the examinations performed in our case, these diagnoses were ruled out.

COVID-19-related oral involvement was first reported by Chaux-Bodard et al. It has been reported as tongue ulcer that may be caused by vasculitis.⁸ In many studies, ulcer formation has been described as the most common oral lesion. It has been reported that oral lesions such as necrotizing ulcerative gingivitis, papillary hyperplasia, geographic tongue, fissured tongue, and candidiasis can be seen in addition to the ulcer.⁹

Alikhani et al. found that the salivary fluids of patients with geographic tongue had high levels of interleukin 6 and tumor necrosis factor alpha, and that this appearance was caused by inflammation.⁷ Leisman et al. stated that there is a cytokine storm in COVID-19 patients and that their cytokine values, including interleukin 6 and tumor necrosis factor alpha, are high.¹ Both of these conditions show that this tongue appearance seen in our case may be related to increased cytokines in COVID-19.

Xu et al. evaluated the density of the ACE-2 receptor used by SARS-CoV-2 to enter the cell in various tissues. According to this study, it has been shown that the ACE-2 receptor is found extensively in the tongue.¹⁵ This receptor density explains the involvement of the tongue in the involvement of SARS-CoV-2 and the lesions seen in the tongue. One of the reasons for the geographic language in our case may be due to the SARS-CoV-2 ACE-2 receptor relationship. We think that the attachment of the virus to the cells in the tongue with this receptor caused the tongue appearance in our case.

Fissured tongue and geographic tongue are asymptomatic and benign, and it has been observed that they disappear with the disappearance of the underlying cause.¹⁰ The disappearance of tongue lesions after COVID-19 treatment in our case indicates that these lesions are associated with COVID-19.

CONCLUSION

As oral lesions can be seen in COVID-19 patients, the COVID-19 picture may also present with oral lesions. Oropharyngeal examination is very important in patients

with suspected COVID-19, and clinicians must keep in mind all oral involvement, including the geographic tongue. We believe that more comprehensive studies and case series are needed to clarify the relationship between fissured geographic tongue and COVID-19.

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Ethical Declaration: Written informed consent was obtained from the patient.

Conflict of Interest: The authors have no conflict of interest to declare.

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