Stress associated to geographic tongue transformation from passive to active during the Covid-19 pandemic: case report

Estresse associado a transformação de língua geográfica de passiva para ativa durante a pandemia da Covid-19: relato de caso

Estrés asociado a la transformación de la lengua geográfica pasiva a activa durante la pandemia de Covid-19: reporte de caso

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ABSTRACT

Objective: Report a case of passive geographic tongue that became active due to the presence of severe stress associated to the coronavirus disease 2019 (COVID-19) pandemic. **Case details:** In January 2019, a 42-years-old Caucasian female was included in a survey on geographic tongue (GT). At that time, although she reported having the condition, on intraoral examination, no atrophic areas or whitish margins were observed on her tongue (classic clinical signs of GT). In November 2020, she was contacted again and reported changes in her GT. At this time, the lateral borders of her tongue presented erythematous areas surrounded by whitish margins. The research participant also reported that she was under severe stress due to the pandemic. **Final considerations:** This case reported has demonstrated consistency with literature data regarding the onset, worsening of symptoms and changes in clinical aspects of geographic tongue associated with emotional and psychological factors. To ensure that changes in clinical aspects of GT may be related to pandemic stress, further research of oral manifestations of COVID-19 is needed.

Keywords: COVID-19, Geographic tongue, Pandemic, Stress, SARS-CoV-2.

RESUMO

Objetivo: Reportar um caso de língua geográfica passiva que se tornou ativa devido à presença de forte estresse relacionado à pandemia da doença do coronavírus 2019 (COVID-19). **Detalhamento de caso:** Em janeiro de 2019, uma participante de pesquisa do gênero feminino, caucasiana, de 42 anos de idade foi incluída em um estudo sobre língua geográfica (LG). Na ocasião, embora ela relatasse ser portadora da condição, ao exame intraoral, não foram observadas áreas atróficas ou margens esbranquiçadas em sua língua (sinais clínicos clássicos de LG). Em novembro de 2020 a mesma foi novamente contatada e relatou alterações em sua LG. Na presente data, as bordas laterais de sua língua apresentavam áreas eritematosas circundadas por margens esbranquiçadas. A participante de pesquisa também relatou que se encontrava sob forte estresse devido à pandemia. **Considerações finais:** Este relato de caso demonstrou consistência com os dados da literatura quanto ao aparecimento, piora dos sintomas e alterações nos aspectos clínicos da lingua geográfica associados a fatores emocionais e psicológicos. Para assegurar que as mudanças nos aspectos clínicos da LG podem estar relacionadas ao estresse pandêmico, pesquisas adicionais sobre as manifestações orais de COVID-19 são necessárias.

Palavras-chave: COVID-19, Língua geográfica, Pandemia, Estresse, SARS-CoV-2.

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RESUMEN

Objetivo: Informar un caso de lengua geográfica pasiva que se volvió activa debido a la presencia de estrés severo asociado a la pandemia de la enfermedad por coronavirus 2019 (COVID-19). **Detalles del caso:** En enero de 2019, una mujer caucásica de 42 años participó en una encuesta sobre lengua geográfica (LG). En ese momento, aunque informó ser portadora de la condición, en examen intraoral, no se observaron áreas atróficas ni márgenes blanquecinos en su lengua (signos clínicos clásicos de LG). En noviembre de 2010, fue nuevamente contactada y reportó cambios en su LG. En ese momento, los bordes laterales de su lengua presentaban áreas eritematosas rodeadas de márgenes blanquecinos. La participante de la investigación también informó que estaba bajo un estrés severo debido a la pandemia. **Consideraciones finales:** Este reporte de caso ha demostrado coherencia con los daos de la literatura sobre la aparición, empeoramiento de los síntomas y cambios en los aspectos clínicos de la lengua geográfica asociados a factores emocionales y psicológicos. Para asegurar que los cambios en los aspectos clínicos de la LG pueden estar relacionados con el estrés pandémico, se necesita más investigación de las manifestaciones orales de COVID-19.

Palabras clave: COVID-19, Lengua geográfica, Pandemia, Estrés, SARS-CoV-2.

INTRODUCTION

Geographic Tongue (GT) also known as glossitis migrans, erythema migrans, or benign migratory glossitis, is an inflammatory condition, generally asymptomatic and its etiology remains unknown. Although Reiter had first described GT in 1831 (GONZALEZ-ALVAREZ L, et al., 2018). It occurs mainly on the dorsum of the tongue and, sometimes its lateral borders are involved. It is observed clinically as an erythematous area surrounded by whitish and slightly elevated margins. This occurs due to the atrophy of filiform papillae, which leads to epithelial thinning (CAMPOS WG, et al., 2018). However, in this condition, the fungiform papillae remain intact (PINNA R, et al., 2019). Fissured tongue (FT) has a strong association with GT. This association has been reported in the literature describing fissured tongues as areas of stagnation on the surface of the tongue in which glossitis can start (GOSWAMI M, et al., 2012).

This condition can be classified as active or typical when surrounded by slightly elevated whitish margins; and passive, abortive or atypical when these margins are not visible or disappear before completing its formation process (GONZALEZ-ALVAREZ L, et al., 2018). Although the lesions are generally asymptomatic, some individuals can report symptoms such as tongue's burning (PINNA R, et al., 2019; PRASANTH VJ, 2021; BERNAOLA-PAREDES WE, et al., 2022). Recently Picciani BLS, et al. (2020) published a Severity Index for GT in which the lesions were classified as mild, moderate, and severe.

This lesion has been associated with some diseases such as psoriasis, allergic or atopic conditions (MAGLIOCCA KAUR, et al., 2017; OGUETA IC, et al., 2019). Psychological factors such as stress, anxiety, and depression have also been related to GT (GONZAGA HF, et al., 2015). Besides GT, other oral lesions were related to stress; (KAUR D, et al., 2016). Furthermore, some studies demonstrated the appearance of oral lesions in patients affected by COVID-19 (ANSARI M, at al., 2019; SANTOS JA, et al., 2020; ESTEBANEZ A, et al., 2020; CARRERAS-PRESAS CM, et al., 2020).

Embolism and acute thyroiditis are also included as COVID-19 manifestations (TOSCANO G, et al., 2020; LUI DTW, et al., 2021). COVID-19 is a viral infection caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). This disease may vary from mild flu-like to more severe symptoms such as myalgia, dry cough, fatigue, gastrointestinal disorders, sore throat, headache, hyposmia, hypogeusia, dyspnea and pneumonia (GUO IR, et al., 2020).

The damage caused to the organism affects practically all the vital organs where the most diverse changes occur. Non-respiratory complications of COVID-19 may include septic shock (DU Y et al, 2020), acute liver damage (XU L, et al., 2020), acute kidney injury (CHEN N, et al., 2020), ocular problems (SEAH I, et al., 2020), intravascular clots (TANG N, et al., 2020). Another extremely dangerous complication of Sars-Cov-2 infection is the formation of diffuse microvascular thrombi, being highly by the health institutions worldwide a thromboprophylaxis for all COVID-19 patients (CAMPBELL CM, et al., 2020).

At the neurological level was observed cerebrovascular disorders, corticospinal damage, meningitis/encephalitis, encephalopathy, meningoencephalitis, stroke, seizure, cognitive, and motor deficits (MALLAH SI, et al., 2021). Lymphopenia, thrombocytopenia, rhabdomyolysis, Guillain–Barré syndrome, cardiac arrhythmia or heart block, pancreatitis, Kawasaki disease, multisystem vasculitis, skin rash, thromboembolism, and acute thyroiditis also were observed as systemic manifestations related to COVID-19 (TO KK-W, et al., 2021).

The salivary glands and oral epithelium present the angiotensin-converting enzyme 2 (ACE2) receptor, the protein responsible for the attachment for SARS-CoV-2, and due to this tropism, epithelium is considered a route of viral latency and transmission. Furthermore, a high viral discharge in the saliva and nasal secretion could be a pathogenic factor involved in the development of oral manifestations related to SARS-CoV-2 infection (XU H, et al., 2020).

According to the World Health Organization (WHO), on March 11, 2020, COVID-19 pandemic started and was considered the second pandemic of the twenty-first century (WORLD HEALTH ORGANIZATION, 2020). Measures such as confinement of more than half of the world population, closure of schools and universities, social distancing was adopted in several countries to contain the spread of the disease throughout the world (JERNIGAN, 2020; PREM K, et al., 2020; QIU J, et al., 2020). This situation caused panic and brought tremendous amounts of anxiety and stress to our society (QIU J, et al., 2020).

In view of the exposure, the following question arises: are the oral manifestations related to COVID 19 or to the stress/anxiety caused by the presence of the COVID-19 pandemic? The present work aims to report the case of a patient who presented a passive GT before the pandemic which turned into active during the COVID-19 pandemic.

CASE DETAILS

This work was approved on November 2, 2020, by the Research Ethics Committee of Hospital Universitario Antonio Pedro (HUAP) under the number 4.376.011. The informed consent form was obtained and signed by the research participant of the study.

In January 2019 a forty-one-year-old Caucasian woman participated in previous research on GT. In the anamnesis, the research participant did not report any systemic disease and use of medications. The participant reported having GT, although at this time, no lesion has been detected by the intraoral examination, being her condition clinically classified as passive (**Figure 1A**).

In November 2020, the research participant was contacted by phone to new research about the worsening of GT symptoms related to pandemic stress. The same participant did not have COVID-19, but reported that her tongue presented erythematous areas on the lateral borders surrounded by a whitish margin. The patient sent us a photography of her tongue in which we were able to confirm those changes (**Figures 1B and 1C**).

Figure 1 - Tongue of the patient of this case report before and during the pandemic.

Legend: 1A. No lesion is observed on the patient´s tongue before the pandemic (passive GT). 1B. The erythematous area appeared at the right lateral border of the tongue (active GT). 1C. The erythematous area is surrounded by a whitish margin at the left lateral border of the tongue (active GT). Both, during the pandemic. **Source:** Sarruf MBJM, et al., 2022.

DISCUSION

Benign migratory glossitis or geographic tongue is a benign chronic inflammatory condition feature of Although the etiology remains unknown (GONZALEZ-ALVAREZ L, et al., 2018), the stress was considered an important factor associated with GT appearance and recurrence in adults (ALIKHANI M, et al., 2014). Therefore, this study reported a case of a patient who presented significant changes in the clinical aspect of GT. It was observed that her lesion had turned from passive into active during the COVID-19 pandemic. The lateral borders of her tongue showed atrophic and erythematous areas which were not evident by oral examination before the pandemic.

GT has been associated with psoriasis, allergic, and atopic conditions (MAGLIOCCA KR, et al., 2017). In this case report, the patient had no history of systemic disease or other factors associated with GT development. So, her GT clinical changes could be associated with the pandemic period and psychological factors such as stress and anxiety. Some patients with COVID-19 have also presented cutaneous and oral manifestations (ANSARI M, at al., 2019; SANTOS JA, et al., 2020; ESTEBANEZ A, et al., 2020; CARRERAS-PRESAS CM, et al., 2020).

GT is considered a dynamic lesion due to its morphology changes. The lesions heal spontaneously in days or weeks and present a recurrent character in variable periods (MANGOLD AR, et al., 2016). Recently Picciani BLS, et al. (2021) created a Severity Index for GT in which the condition was classified as mild, characterized by slightly erythematous lesions surrounded by a thin halo or without its presence, affecting small areas of the tongue; moderate (mild to severe) for lesions with the presence of erythema, thick whitish halo, with or without association with Fissured Tongue (FT) and of variable extension; and severe, for lesions with intense erythema, thick whitish halo, associated with (FT), affecting a large extension of the tongue, especially the dorsum (PICCIANI BLS, et al., 2019; OGUETA IC, et al., 2019).

However, the lesion can be seen on lips labial and buccal mucosa, mouth floor, gums, and uvula (CAMPANA F, et al., 2019; OGUETA IC, et al., 2019, BERNAOLA-PAREDES WE, et al., 2022). Mostly, this lesion is asymptomatic, but some patients can report a burning sensation at the site of injury (PINNA R, et al., 2019; PRASANTH VJ, 2021; BERNAOLA-PAREDES WE, et al., 2022). This work is related to a case in which the GT was classified as mild because there are small erythematous areas at the right/left lateral borders of the tongue.

Although its etiology remains unknown, studies show that genetic factors, allergic conditions, vitamin deficiency, and autoimmune diseases such as psoriasis, may be associated with GT (MAGLIOCCA KR, et al., 2017). Other factors such as stress, anxiety, and depression have also been related to GT (GONZAGA HF, et al., 2015). Furthermore, some studies demonstrated the appearance of GT in patients affected by COVID-19 (ANSARI M, at al., 2019; SANTOS JA, et al., 2020).

Alikhani M, et al. (2014) reported stress as an important factor associated with GT recurrence frequency in adults. Gonzaga HF, et al. (2015) in a study with patients with GT and others with psoriasis, highlighted the association of emotional stress in both groups. Burning Mouth Syndrome (BMS) have also shown a strong association with psychogenic factors such as stress, depression, and anxiety (SCALA A, et al., 2013). Another lesion in which exacerbation was related to stress is Lichen Planus (KAUR D, et al., 2016). Recent studies have demonstrated the association of GT to the presence of anxiety, stress, and depression, (SCARIOT R, et al., 2017) reinforcing the hypothesis of this study, where stress was related as a transformation factor of the passive to the active geographic tongue.

The COVID-19 pandemic, due to its high rate of mortality, had a huge impact upon our society. The measures to mitigate the widespread of coronavirus have generated panic, stress, anxiety, and depression in humanity (CHEVANCE A, et al., 2020, VINDEGAARD N, BENROS ME, 2020). Until now people are facing uncertainty and are suffering the impact of changes in their daily lives due to the novel coronavirus Pandemic (COVID-19). Along with its high rates of infectivity and mortality, Corona Virus Disease has caused a universal psychological damage which resulted in distress due to the economic burden and financial losses.

The quarantine imposed to the citizens to fight COVID-19 represented by blocks in all countries produced acute panic, anxiety, obsessive behaviors, accumulation, paranoia, and depression. In long term, the occurrence of post-traumatic stress disorder (PTSD) should be expected (CHEVANCE A, et al., 2020; VINDEGAARD N, BENROS ME, 2020).

Some studies showed the presence of GT lesions in patients positive and/or with symptoms of COVID-19 and considered stress as a triggering factor for GT appearance or exacerbation in some individuals (ANSARI M, at al., 2020; SANTOS JA, et al., 2020) corroborating with the findings this case report.

Till now there are few studies in the literature about COVID-19 and oral lesions, so that, further research should be carried on to clarify this relationship. Therefore, it is believed that performing the intraoral examination is extremely important for all the patients with COVID-19, so we can have more information concerning oral lesions in COVID-19 patients.

In a recent study, two cases of oral lesions were reported in patients with positive PCR for COVID-19 from nasopharyngeal swabs. Small, ulcerated lesions involving the entire hard palate and small non-hemorrhagic ulcers with irregular margins in the anterior third of the tongue were observed in the oral cavity. Histopathological examination showed identical characteristics in both lesions (ANSARI M et al., 2020). In another study, the presence of herpes simplex, candidiasis, and GT was reported in a patient who tested positive for coronavirus (SANTOS JA, et al., 2020). In this context, geographic tongue exacerbation may be associated whit both the stress/anxiety caused by the pandemic and by the COVID 19 disease itself.

FINAL CONSIDERATIONS

In this case report there is consistency with literature data regarding onset, worsening of symptoms, and changes in the clinical aspects of GT associated with psychological factors. However, the literature also showed cases of geographic language associated with COVID 19 disease. Therefore, to answer the initial question of this work: “Are the oral manifestations related to COVID 19 or to the stress/anxiety caused by the pandemic?” Further clinical research on COVID-19 oral manifestations is necessary.

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