

Geographic Tongue

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Overview

Geographic tongue, also known as benign migratory glossitis, is a moderate inflammatory disorder affecting the dorsum and lateral regions of the tongue. It causes localized atrophy of filiform papillae and the creation of spot-like alterations. This condition mostly affects filiform papillae, while fungiform papillae are unharmed. It can affect both adults and children and “recent findings suggest the involvement of certain oral bacteria.” (2. Horiuchi Y)

Etiology

Specialists have not precisely determined the causes of geographic tongue. The etiology of this condition is likely congenital – a family history of geographic tongue among close relatives increases the risk of its development. Geographic tongue is observed in individuals dealing with psoriasis, fissured tongue, and vitamin B2 deficiency. (3. Cohen-Brown)

Experts include hormonal abnormalities, SARS-CoV-2, food inadequacies, and stress exposure, as causes to the onset of geographic tongue symptoms.

Clinical Presentation

Objective Description

Geographic tongue is a minor inflammatory disorder of the oral cavity. It can be identified by irregular atrophy of the filiform papillae that are found in the largest number on the tongue.

Geographic tongue symptoms include red areas surrounded by a white, raised ring - an area of increased keratinization. These patches have a smooth surface since they lack the papillae, like a map outline of continents. These changes usually occur on the dorsal surface and sides of the tongue. They tend to vary shape, size, location, and intensity without leaving scars. This can happen over the period of a few hours or days.

Subjective Description

Patients occasionally describe temporary sensation and taste problems, a feeling of a foreign body, or tongue burning. Most of these discomforts are caused by irritation of the tongue surface, such as with mouth rinses, spicy and acidic foods or in elderly people with certain chronic conditions.

Demographic

Geographic tongue can be noticed in children; however, it is less prevalent than in adolescents and adults. It occurs more frequently in women than in men, and in white and black patients rather than Asian or Hispanic ones. (3. Cohen-Brown)

Biopsy, Histology and Radiographs

No biopsy or radiographs is mandatory for diagnosing geographic tongue. While looking at geographic tongue under the microscope, it shows a “subepithelial infiltrate with a predominance of neutrophils forming micro abscess”. (1. Shareef) Cells weaken, rete ridges expand, the outer layer thickness, abnormal keratinization occurs, some glycogen is stored by the cell, and dead

cells discharge on the surface. There are two different things that can be analyzed under the microscope with geographic tongue which are: “loss of filiform papillae can be seen under the erythematous area, while necrotic cells can be seen under the white region of geographic tongue.” (1. Shareef)

Differential Diagnosis

Due to a similar clinical presentation, this condition is sometimes confused with:

- erythroplakia,
- lichen planus,
- candidiasis,
- contact stomatitis,
- leukoplakia,
- trauma,
- aphthous ulcer.

All conditions are from: (1. Shareef)

Treatment

Mild cases of geographic tongue do not require treatment. The strategy is to educate people about oral health, explain the nature of these changes, and provide guidance on proper oral hygiene techniques, such as cleaning the tongue.

For symptomatic geographic tongue, there is no commonly acknowledged therapeutic approach.

A doctor might advise using local analgesic and anti-inflammatory medicines, including corticosteroids or antihistamines, if there is severe pain or discomfort. Mouthwashes that have coating, numbing, or analgesic properties may also be advised.

Dietary changes are also recommended by specialists. It is best to avoid acidic, spicy, and hot foods, as well as mechanically irritating elements such as sharp edges of carious lesions, fillings, and dental prosthesis. In cases where geographic tongue is a result of another underlying condition, the primary approach involves treating the cause of these changes.

Prognosis

Geographic tongue has a great prognosis. In most of the cases it will resolve on its own. When symptoms occur, they are most of the time moderate and controllable. Even without the treatment, these lesions tend to become smaller, and the patient can have long time periods of remission.

Professional Relevance

As a Dental Hygienist it is crucial to understand and recognize a geographic tongue for several reasons such as patient education and oral hygiene instructions, monitoring changes, and treatment recommendations.

Geographic tongue can affect daily oral hygiene, therefore as a Dental Hygienist we want to inform the patient about the symptoms and possible risk factors and explain how to take care of the oral cavity. We are also able to monitor the patient regularly by performing intra oral exams to track any changes. We can provide a patient with treatment and care recommendations such as avoiding using tongue scrapers to minimize the atrophy of the filiform papillae. By fully understanding this condition, we can work with the patient and other health care professionals to provide comprehensive care.

Citations

1. Shareef, Shahjahan. "Geographic Tongue." *StatPearls - NCBI Bookshelf*, 31 July 2023, www.ncbi.nlm.nih.gov/books/NBK554466.
2. Horiuchi Y. Geographic tongue: What is this disease? *J Dtsch Dermatol Ges*. 2023 Nov 20. doi: 10.1111/ddg.15226. Epub ahead of print. PMID: 37984855.
3. Cohen-Brown, Gwen, and Aida Egues. "Chaper 2." *Oral Systemic Connection: A Collaborative, Interdisciplinary Clinical Companion for the... Healthcare Provider*, KENDALL HUNT, S.I., 2020, pp. 69–70.
4. Sarruf MBJM, Quinelato V, Sarruf GJM, Oliveira HE, Calasans-Maia JA, Quinelato H, Aguiar T, Casado PL, Cavalcante LMA. Stress as worsening of the signs and symptoms of the geographic tongue during the COVID-19 pandemic: a pilot study. *BMC Oral Health*. 2022 Dec 3;22(1):565. doi: 10.1186/s12903-022-02609-0. PMID: 36463206; PMCID: PMC9719625.