

Geographic Tongue: An Epidemiological Study

Wandering Rash - Wondering Facts

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Abstract

Background: Geographic Tongue is a benign disorder involving the dorsal surface of the tongue. There are very few epidemiological studies on this benign condition in the literature. The previous studies have reported relationship between geographic-tongue with different risk factors. This study was aimed to investigate the prevalence rate, associated symptoms, risk factors and awareness among the patients regarding the condition in the south Indian patients.

Methods: The study was conducted for a period of one year and the patients reported to the Department of Oral Medicine were selected. The age of the patients ranged from 12 - 80 years with a mean age of 36.51 years. The Data was collected by intraoral examination and recording detailed case history.

Result: The study comprised of 49,765 patients of which 2.09% (237 persons) suffered from geographic tongue. There was significant statistical relationship between the occurrence of geographic tongue and gender. The incidence among female patients was higher than in males. Among 237 patients only 64 (27%) of them were aware of the condition. In our study 19.8% were symptomatic and 86.9% of cases were associated with fissured tongue. All the patients with fissured tongue were symptomatic.

Conclusion: This is the first large scale epidemiological study done among South Indian population on geographic tongue. The prevalence is higher in this region and females were affected more frequently than males. Many of patients were not aware of this benign condition. The condition presented clinically in a variety of forms and was associated with inconsistent symptoms.

Keywords: *Geographic Tongue; Fissured Tongue; Glossodynia; Glossopyrosis*

Introduction

Geographic tongue is a benign inflammatory condition, first reported by Rayer I in 1831 [1]. It is referred by a variety of terms such as benign migratory glossitis, erythema migrans, annulus migrans, or wandering rash of the tongue [2]. It is often detected on routine examination of the oral mucosa.

It is a benign, inflammatory disorder occurring most commonly on the dorsum of the tongue, possibly extending onto the lateral borders, sometimes extending to the ventral portion as well. This lesion is rarely created in buccal and labial mucosa which is termed as geographic stomatitis. The characteristic appearance includes multifocal, circinate, irregular erythematous patches bounded by a slightly elevated, white or cream colored keratotic line. The central erythematous patch represents atrophy of the filiform papillae. Histo-pathologically the white border shows regenerating filiform papillae and a mixture of keratin and neutrophils [3].

The etiology of geographic tongue remains unknown. Several related etiologic factors have been proposed. Some investigators have classified this condition as a congenital anomaly; other researchers have discussed the role of heredity in its development. According to some studies there may be a relationship between the geographic tongue and systemic conditions such as psoriasis, diabetes mellitus, Reiter's syndrome, Down's syndrome, pregnancy, psychological factors, family history and consumption of some medicines such as oral contraceptive pills and lithium carbonate. Allergy has been suggested as a major etiologic factor in geographic tongue. A relationship has been reported between the geographic tongue and the asthma, eczema, hay fever, elevated serum immunoglobulin E (IgE) and atopic patients.

Since the condition is asymptomatic in most of the cases, no treatment is required other than patient reassurance of the benign and self-limiting nature of the disorder. If symptoms are present, the patient should be instructed to avoid any known irritants, such as hot, spicy, or acidic foods [4-7].

Purpose of this Study

The purpose of this study was to investigate the prevalence rate, associated symptoms, risk factors and awareness among the patients regarding the condition in the south Indian patients.

Materials and Methods

This cross-sectional study was conducted on the patients referred to the Department of Oral Medicine of Sibar Institute of dental sciences, Guntur; between March 2013 to December 2013. All individuals participated in the study after obtaining the informed consent from them.

The total sample comprised of 49,765 patients. After taking a complete history of the patient (including the demographic data, information related to awareness of the lesion, associated symptoms and medical history) the clinical examination were performed by oral medicine specialist. The required data were collected through oral examination and the diagnostic criteria of geographic tongue were based on the clinical examination as well as the history and characteristics of the disorder.

The collected data were analyzed using SPSS 21 software. To describe the quantitative data, the mean and standard deviation were used and to describe the qualitative data, the prevalence distribution tables were used. The P-value less than 0.01 were considered as statistically significant.

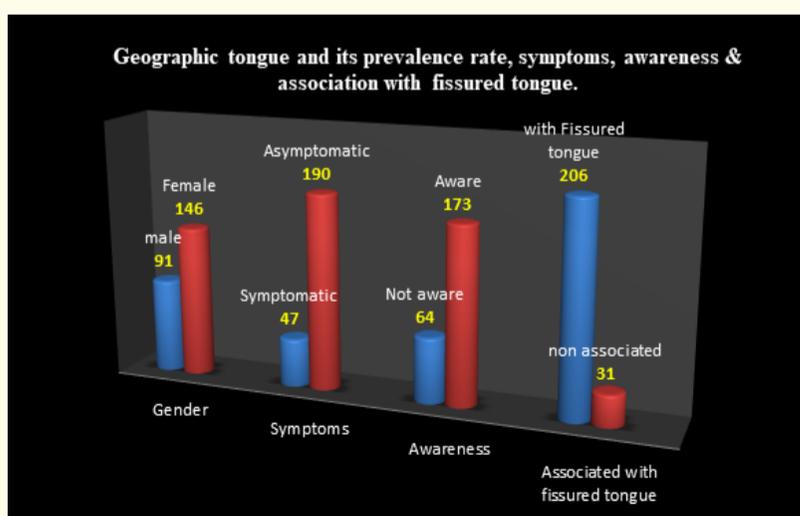
Results

The total sample comprised of 49,765 patients in which the prevalence of the geographic tongue was 2.09% (n = 237). Among these geographic tongue patients, the prevalence was 38.4% (n = 91) in males and 61.6% (n = 146) in females, which was statically significant based on the Chi-Square test (Table 1).

		Geographic tongue			Total
		Without fissure tongue	With fissure tongue		
Gender	Male	Count	26	65	91
		% within gender	28.6%	71.4%	100.0%
	Female	Count	5	141	146
		% within gender	3.4%	96.6%	100.0%
Total		Count	31	206	237
% within gender			13.1%	86.9%	100.0%

Table 1: Showing association between geographic tongue and fissures tongue in relation to gender.

In the total 237 patients with geographic tongue, only 27% (n = 64) of patients were aware of the condition and rest 73% (n = 173) were not aware of the condition. Interestingly, only 19.8% (n = 47) of patients were symptomatic and 80.2% (n = 190) were completely asymptomatic. The various symptoms associated with condition were Glossopyrosis in 10.1% (n = 24) of patients, Glossodynia in 3.4% (n = 8), altered taste sensation in 3.8% (n = 9) and multiple/combination of symptoms in 2.5% (n = 6) of patients (Table 2). In symptomatic group 28 patients were females and 19 were males, suggesting that symptoms were more prevalent in female patients compared to males. The geographic tongue was associated with fissured tongue in 86.9% (n = 206) of patients and in remaining 13.1% (n = 31) of patients it was not associated with fissured tongue. According to the Chi-Square statistical test (P < 0.001) there was a statistically significant relation between geographic tongue with gender, fissured tongue and associated symptoms (Graph 1).



Graph 1: Showing prevalence rate and its association in relation to gender, symptoms, awareness, and presence of fissured tongue.

			Gender		Total	
			Male	Female		
Related symptoms	No symptoms	Count	72	118	190	
		% within gender	79.1%	80.8%	80.2%	
	Glossopyrosis	Count	5	19	24	
		% within gender	5.5%	13.0%	10.1%	
	Glossodynia	Count	3	5	8	
		% within gender	3.3%	3.4%	3.4%	
	Altered taste sensation	Count	8	1	9	
		% within gender	8.8%	0.7%	3.8%	
	Multiple symptoms	Count	3	3	6	
		% within gender	3.3%	2.1%	2.5%	
	Total		Count	91	146	237
	% within gender			100.0%	100.0%	

Table 2: Showing prevalence rate and verities of symptoms in relation to the gender.

Discussion

Eidelman., *et al.* reported the prevalence of geographic tongue in parent and sibling combinations was significantly higher than in the general population and concluded it was familial and that heredity plays a significant etiologic role [4]. An association between geographic tongue and fissured tongue has been documented [5] and a genetic linkage between the two conditions in males has been suggested. The same genes may be responsible for both conditions [6]. Geographic tongue could arise at any age with no obvious racial predilection, but according to some investigators, the condition is more widespread in younger individuals, however, others have found the majority of the cases are noted in patients over 40 years of age [7-11], as in our study the mean age was 37 years, except in one case it was found in a 4 years old boy which was prominent and characteristic (Figure 1). The gender of affected individuals varies with different studies and it was noted more in women than in men [12] which was the similar finding in our study, that is 61.6% (n = 146) in females and 38.4% (n = 91) in males.



Figure 1: Geographic tongue in a 4-years old boy. The lesion manifest as multiple erythematous patches bounded by raised white circinate bands.

Geographic tongue is usually associated with various systemic conditions like reiter’s syndrome, psoriasis, emotional stress, anemia; allergies, diabetes, and hormonal disturbances [13]. However, in our study no attempt has been made to reveal an association between geographic tongue and other systemic and/or psychological conditions.

Study conducted by Aboyans V., *et al.* [14] on 4009 patients and concluded that there was a significant association between geographic tongue and fissured tongue (Figure 2) and a genetic linkage between the two conditions in males has been suggested. Even in our study there was a strong association between these two in 86.9% (n = 206) of patients. The majority of our study patients [80.2% (n = 190)] were asymptomatic; interestingly, only 19.8% (n = 47) of patients were symptomatic and this finding is consistent with the reports of other investigators. However, some of our patients reported with a range of symptoms that includes glossopyrosis, glossodynia, and altered taste sensation. Regezi, *et al.* confirmed that these symptoms might be more frequent when fissures were present and infected with candida organisms that might be the reason for these symptoms in our present study also. Regarding the awareness of this enigmatic oral lesion in our present study, only 27% of patients were conscious about the condition and rest 73% were not aware of the presence of this condition.



Figure 2: Image showing prominent and characteristic geographic tongue in a 27-year-old male patient.

Conclusion

Our study is considered to be a large scale epidemiological study done, principally in south Indian population and concluded with the diverse positive finding regarding its high prevalence rate in this locale, and more occurrences particularly in females with a range of symptoms. There was no attempt done to find the relationship between geographic tongue and other systemic diseases as it was found in some studies, hence further large scale studies have been suggested to rule out the association between them.

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