

Prevalence of Geographic and Fissured Tongue Abnormalities and Factors Associated Among Dental Students of Tabriz Faculty of Dentistry

Masoumeh Mehdipour ¹, Ali Taghavi Zenooz ², Mina Khayamzadeh ³, Fereshte Ranjzad ⁴ and Narges Gholizadeh ^{5*}

1. Department of Oral Medicine, Faculty of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

2. Department of Oral Medicine, Faculty of Dentistry, Tabriz University of Medical Sciences, Tabriz, Iran

3. Department of Oral Medicine, Faculty of Dentistry, Tehran University of Medical Sciences, International Campus, Tehran, Iran

4. Dentist, Tehran, Iran

5. Department of Oral Medicine, Faculty of Dentistry, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Background: Geographic Tongue (GT) and Fissured Tongue (FT) are the most common abnormalities of the tongue that etiopathogenesis of them remains to be clarified. This study aims to evaluate the prevalence and the possible factors associated with GT/FT among students of Tabriz Dental School.

Methods: This descriptive-analytic study aims to identify the demographic information and clinical features of the GT/FT among 132 students that were selected by census method. Data were collected by means of a two-part questionnaire. The collected data were analyzed using SPSS software and chi-square test.

Results: Geographic tongue was found in 10 (7.58%) students (8 females and 2 males). There were no significant differences between gender and the incidence of this condition ($p=0.65$). Fissured tongue was present in 20 (15.15%) students (9 females and 11 males). No differences between the lesion and the gender distribution was observed ($p=0.132$). There was a significant correlation between not brushing teeth and fissured tongue ($p=0.034$).

Conclusion: The results revealed that the oral hygiene may reduce the incidence of FT. The occurrence of GT/FT showed no association with any other systemic conditions and habits.

Keywords: Fissured tongue, Geographic tongue, Oral hygiene, Prevalence

*Corresponding author

Narges Gholizadeh, DDS

Department of Oral and Maxillofacial Disease, Dental Research Center, Faculty of Dentistry, Tehran University of Medical Sciences, Tehran, Iran

Tel: +98 21 3377 3128

Email: n.gholizadeh88@gmail.com

Received: 20 Agu 2018

Accepted: 3 Nov 2018

Citation to this article: Mehdipour M, Taghavi Zenooz A, Khayamzadeh M, Ranjzad F, Gholizadeh N. Prevalence of Geographic and Fissured Tongue abnormalities and factors associated Among Dental Students of Tabriz Faculty of Dentistry. *JIMC*. 2018;1(2):69-74.

Introduction

Tongue is a vital organ in the mouth with important roles in different functions including mastication, speaking, breathing and swallowing. Lesions of tongue are significant part of the oral mucosal lesions ¹.

The Geographic Tongue (GT) was first described by Rayer in 1831. Several names for this problem have been mentioned such as immigrant GT, and Benign Migratory Glossitis (BMG) ². GT is characterized by an erythematous area with atrophy of the filiform papillae of the tongue which give it an irregular texture on the surface with unclear borders that sometimes causes discomfort and burning sensation. The exact etiopathogenesis is still unknown, but the condition is entirely benign. The predisposing factors of this lesion are suggested to be inheritance, allergies, medication, environmental agents, stress and consumption of spicy foods. Also, accompanied by a GT with diseases such as burners syndrome, diabetes and HIV infection is also considered ³. The mean age of patients with GT is reported to be around 30 years by several studies. Nevertheless, GT is not uncommon in children and a study on a primary school in city of Rasht, Iran reported a prevalence of 4.3 and 7.6% for GT and FT, respectively ⁴. Diagnosis of these lesions is based on oral examination and no treatment is required for asymptomatic lesions ³.

Fissured Tongue (FT) or scrotal tongue is a common variation of a normal tongue which characterized by cracks, grooves, or clefts with varying depth on the dorsal surface of the tongue. Diagnosis is made on the basis of personal history and oral examination ⁵. FT as a second complication is suggested to be associated with factors such as inheritance, malnutrition, infections such as candidiasis and diabetes, as well as developmental disorders such as Down syndrome and Melkersson Rosenthal syndrome. FT is a benign disorder and no specific intervention is indicated ⁵.

Several studies believe that FT and GT are related to each other but have different entities of the same inflammatory disease of the tongue ⁶⁻⁸. The prevalence of these abnormalities varies greatly in the literature, so far, many epidemiological studies have been carried out to determine the oc-

currence of tongue lesions and their association with possible etiologic factors ^{5,9-11}. While FT is the most common tongue disorder in the Swiss population, the GT is the commonest lesion of tongue in Swedish population ¹².

The aim of this study was to determine the prevalence of these two lesions among a group of dental students, along with the role of some of the possible factors in the development of lesions. We also recorded the details on age, gender, medical history, history of particular habits such as smoking, usage of smokeless tobacco and alcohol.

Patients and Methods

This descriptive-analytic study was conducted based on observation and interview techniques to obtain information from 132 healthy dental students aged 22-24 years old with no systemic diseases that were selected by census method. Data were collected by a two-part questionnaire; part one included demographic information and part two was for recording the details on seasonal sensitivity, spicy foods consumption, medical history, smoking, allergy to drugs and foods, and brushing of the tongue.

In this study, history taking and examination of the mouth and tongue of all samples were done by a senior dentistry student under the guidance of the specialists in Oral Medicine. All students were examined in the Department of Oral Medicine while they were seated on the dental unit under illumination with dental chair light. Tongues were examined using a mouth mirror, probe, and gauze based on guidelines provided by WHO in 1980 ¹⁰.

We used written forms to record all required data obtained from examinations. SPSS software (ver, 16) was applied for statistical analysis via chi-square test at significance level of 0.05.

Results

Of the total 132 students, 63 (47.72%) were male and 69 (52.27%) were female (Table 1) and their ages ranged from 22 to 24 years with a mean age of 23.2 years. Ten students (7.58%) had GT including 8 females and 2 males. There was no significant relationship between gender and this

Table 1. Student distribution according to gender and oral lesions

Gender	Fissured tongue		Geographic tongue	
	No.	Percentage	No.	Percentage
Girl	9	13	8	11.6
Boy	11	17.5	2	3.2
Total	20	15.15	10	7.6

condition ($p=0.65$). Of twenty students (15.15%) with FT, 9 were female and 11 were male. There was also no significant relationship between the incidence of the lesion and the gender ($p=0.132$).

Seasonal susceptibility was recorded for 3 cases with GT (11.5%) and 5 students (19.2%) with FT. There was no meaningful relationship between this variable and none of the conditions ($p=0.310$) for GT and $p=0.352$ for FT. Using spicy foods was not significantly associated with the occurrence of GT or FT ($p=0.92$) and ($p=0.270$) for GT and FT, respectively.

None of the people with the GT reported a history of cigarette smoking ($p=0.92$), while it was reported only in 3 people with FT. Therefore there was statistically no significant correlation between smoking and these two lesions ($p=0.376$).

Some students with a history of GT had history of allergy to a drug or certain foods ($p=0.089$). Also, 2 students with FT had a background of allergy ($p=0.287$). According to the Fisher test, there was no significant relationship between the sensitivity of the drug and the particular diet with these two complications.

Among students with a GT, only four of them used to brush their tongues. According to the Fisher test, no significant correlation was found between non tongue-brushing and the occurrence of GT ($p=0.484$). But in people with FT, 3 people used to brush their tongues, and 17 of them did not. Interestingly, there was a significant correlation between not brushing and the prevalence of FT ($p=0.034$).

Discussion

It is believed that the lesions of tongue can be a sign of the presence of systemic diseases such as diabetes, hematological disorders and some

digestive disorders. However other factors and environmental stimuli such as smoking, general health status and medication etc. can also contribute to the occurrence of tongue lesions¹³.

In this investigation, we found no meaningful relationship between the GT and the gender of study subjects (8 females and 2 males). This has also been confirmed by other the studies carried out by Mikkonen¹⁴ Meskin¹⁵ and Redman¹⁶, however studies by dos Santos¹⁷ and Sanei¹⁸, reported that this phenomenon was more common in women than in men¹⁹. Discrepancies in the results from different studies can be attributed to the factors like the role of hormone interference and menstrual cycle. However FT was reported to be more prevalent among men than in women; our study showed 9 females and 11 males had the condition that was in accordance with the findings of Aboyans and Ghaemmaghmi²⁰. Darwezeh and Almelaiah²¹ and Patil²² observed that it was slightly more frequent in males, whereas others found a strikingly increased frequency in females as Darwezeh and Almelaiah reported²¹. Our results were somehow similar to that from studies conducted by of Rabiei⁴ and Bhatnagar²³. Avcu²⁴ reported that men were three times more susceptible than women.

The FT in this study has the highest frequency (15.15%). Many previous studies, such as the Byahatti from Libya²⁵ reported a figure up to 4.48% and some others like Al-Mobeeriek²⁶, declared a rate of 1.4%. In the present study, we showed that the frequency of the GT was 7.58% amount study subjects that was consistent with that of Maleki's²⁷ report and with the studies conducted by Sanei¹⁸ and Delavarian²⁸. Though, it is possible to consider and compare it with the cases studied by Yarom²⁹ and Marks³⁰. Perhaps the reasons for the different results arise from the

methods, type of population and the number of cases used in each study.

There are some studies from Iran using certain age groups that found similar results to ours^{4,31}. Some other Iranian studies have shown similar male dominance^{21,32-34}, while some did not^{19,35,36}. We suggest that differences in sampling method, the study population and factors such as age, ethnicity, and diet can justify the difference between statistical results.

We did not find any association between FT and smoking. The result of our study is in accordance to other studies by Maloth³⁷ and Koay³³ where they found 81.5% of patients with FT were non-smokers. In researches by Maleki and Sanei^{18,27}, smoking had a significant relationship with the incidence of FT, however their populations were much larger than ours.

Our results show a significant relationship between non tongue-brushing and FT ($p < 0.05$). We, however, believe that brushing habits cannot be a reason for the FT and it needs more investigation. Seasonal sensitivity, spicy food and special drug also did not show a significant relationship with the GT/FT in our study, which was similar to that in Shulman's study³⁸. However, other studies by Voros-Balog¹⁹ and Marks³⁰ confirmed such a relationship.

It is often difficult to detect the association between the occurrence of a GT and seasonal aller-

gies as it is not possible to accurately determine the time interval between the consumption of the food and the generation or exacerbation of the condition. So we suggested that larger studies on families with asthma, eczema, serum IgE levels, and similar immunological conditions are required to be done.

None of the cases with the GT reported a history of smoking, which did not reveal a meaningful relationship between these two variables. Shulman and coworkers showed that the prevalence of the GT was low among smokers, while there was a statistically significant relationship with non-smokers³⁸.

Of the total number of people with a GT, six did not have the habit of brushing their tongues, so according to the Fisher test, no significant correlation was found between non tongue-brushing and the incidence of GT ($p = 0.484$).

Conclusion

The results of this study indicate that the prevalence of GT and FT lesions in our study subjects from a small population of dental students at Tabriz Dentistry Faculty is not much different from other similar studies from Iran. Although from the literature we found that there are different results from non-Iranian epidemiological studies that might be attributable to factors such as sample size, geographical area, special diet and habits, etc.

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