



# Prevalence of Geographic Tongue and Associated Factors in Asthmatic Patients in the Masih Daneshvari Hospital In 2010

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## Abstract

**Background and aim:** Geographical Tongue (GT) is a recurrent disorder in tongue with several causes and it is a common condition in patients with recurrent acute inflammatory diseases like asthma and allergic rhinitis. The Purpose of this study was to determine the prevalence of geographic tongue and associated factors in asthmatic patients referred to Masih Daneshvari Hospital in 2010

**Subjects & methods:** In this cross sectional study, 315 asthmatic patients in Masih Daneshvari Hospital were examined and evaluated. The technique was observation, examination, interview, review of medical files and complete the questionnaire.

In this study associated factors included: Age, sex, cigarette smoking, corticosteroid therapy, antibiotic use, bronchodilator use, diabetes, psoriasis, reiter's syndrome, anemia, seborrheic dermatitis, hormonal disorders, oral contraceptive use, eczema, allergic rhinitis, fissured tongue, depapillated tongue, disseminated tongue erythema, median rhomboid glossitis.

**Results:** The prevalence of geographic tongue in asthmatic patients was 31% which found to be most common between the ages: 20-29, most affected area in tongue was dorsal surface (55%). There was significant associations between geographic tongue and cigarette smoking, corticosteroid therapy, bronchodilator use, not use of antibiotics, fissured tongue, eczema, allergic rhinitis, and no presence of depapillated tongue.

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There was no significant association between geographic tongue and age, sex, median rhomboid glossitis, diabetes, psoriasis, anemia, seborrheic dermatitis, hormonal disturbances, oral contraceptive use, disseminated tongue erythema in the studied population.

**Conclusion:** Prevalence of geographic tongue amongst asthmatic patients was high. Future studies are recommended to compare this group with a control group.

**Introduction**

Geographic tongue or wandering rash of tongue is a recurrent condition characterized by loss of epithelium particularly the filiform papillae on the anterior two- third of the dorsal of tongue [1,2,3,4,5]. The appearance is multifocal, variably- sized, well-demarcated. Erythematous areas are usually surrounded by a slightly elevated, yellowish white, circinate linear border [2]. Other oral mucosal surfaces may also be uncommonly affected and this has been referred to as geographic stomatitis. Report of GT prevalence among adults ranges from 0/28 % to 2/4% [2,6], with the most falling in between 1% and 2/5% [7,8].

Asthma is a chronic inflammatory disease of respiratory tract. Allergic asthma often comes together with a personal or family history of another allergic disease like rhinitis & eczema. [9,10,11,12].

GT is a common sign to those patients who had recurrent inflammatory disease such as asthma and rhinitis [13]. Many factors have been proposed for GT: Hormonal disturbance and oral contraceptive use, diabetes mellitus, allergic condition (asthma, eczema, hay fever), dermatological disease (pustular psoriasis, Rieter’s syndrome) [2]. A family history has also been reported to be associated with GT [1,2,5].

The Prevalence of GT in the allergic patients is reported 37/5% and 40/5 % [8].

Marks and Czarney reported that Prevalence of GT in the patients with asthma and allergic rhinitis without atopy was 58% [13]. Marks and Scarff observed that GT is a common indicator among patient who have recurrent acute inflammatory disease like asthma and rhinitis [14]. Honarmand found a significant relation between incidence of GT and allergy in a group of Iranian population [15]. Jainkittivong and Langlais did not find any significant association between GT and allergy, asthma and allergic rhinitis [16] also Shulman and Carpenter did not find relation between GT and allergy [2].

As there is a lack of information on the literature about GT in asthmatic patients in Iran we decided to investigate the Prevalence of GT and related factors in asthmatic patients who were referred to Masihdaneshvari hospital in 2010.

**Methods**

In this cross sectional study 315 asthmatic patients who were referred to Masihdaneshvari hospital in tehran were examined. After the recording of related data including: Gender, age, smoking habit, medicine uptake (corticosteroid, antibiotic, bronchodilator), systemic disease (Diabetes, Rieter’s syndrome, seborrheic dermatitis, hormonal disturbance, contraceptive

use) from medical file of the patients, standard intraoral examination were made by the help of a mouth - mirror and a portable high intensity light. The identification of GT was conducted by one assistant professor of oral medicine department of faculty of dentistry of Islamic azad university.

Clinical protocol was applied in compliance with to the World Health Organization (WHO) guide line [17].

Oral examinations were performed and the presence or absence of GT was recorded. A lesion was classified as GT: 1) when there was localized absence of filiform papillae 2) when the affected area was irregularly shaped and 3) when the area was changing location over time. The variables were analyzed with chi-square and fisher exact test. A P value of less than 0/05 was considered statistically significant.

**Results**

In this 315 asthmatic patients, 140(44%) were male and 175 (56%) were female. This patients were divided by age into 7 groups: 10-19 years old, 20-29, 30-39, 40-49, 50-59, 60-69, >70

The mean age of the patients in this study was 44.

The Prevalence of GT in asthmatic patients was 31% (Table 1). The affected surfaces of the tongue were dorsal surface 55%, lateral borders 45%. No case was seen in ventral surface (Table 2). We did not find any statistical relation between age & GT (P> 0/05), but the higher incidence of GT was among the 20- 29 age group (Table 3).

In the evaluation of another related factor in asthmatic patients, there was no significant association between GT & gender, Mellitus diabetes, Psoriasis, Median rhomboid glossitis and depapillation of tongue. But there was significant relation between GT & cigarette smoking, corticosteroid use, bronchodilator use, not use of antibiotic, eczema, allergic rhinitis and fissured tongue (Table 4).

We didn’t find any case of Rieter’s syndrome, Anemia, Seborrheic dermatitis, disseminated erythema of tongue, Hormonal disturbance and oral contraceptive use.

**Table 1:** Prevalence of geographic tongue in asthmatic patients.

Prevalence Geographic tongue	Number	Percent
Yes	98	31%
No	217	69%
total	315	100

**Table 2:** Prevalence of GT by site of the tongue.

Prevalence Site	Number	Percent
Dorsal surface	53	55
ventral surface	0	0
Lateral borders	45	45
total	98	100

**Table 3:** Distribution of asthmatic patient by age.

Age	Geographic tongue		total
	Yes	No	
	Number (%)	Number (%)	
10-19	5(33.3)	10(66.7)	15 (100)
20-29	25(45.5)	30(54.5)	55 (100)
30-39	7(12.7)	48(87.3)	55 (100)
40-49	17(26.9)	46(73.1)	63 (100)
50-59	19(33.9)	37(66.1)	56 (100)
60-69	15(33.3)	30(66.7)	45 (100)
70 <	10(38.5)	16(61.5)	26 (100)
Total	98(31.1)	217(68.9)	315 (100)

**Table 4:** Distribution of asthmatic patients by related factors.

		Yes	No	P
		Number(percent)	Number(percent)	
Sex	Male	48 (34.3)	92 (65.7)	0.276
	Female	50 (28.6)	125 (71.4)	
Cigarette smoking	Smoker	9 (56.3)	7 (43.7)	0.029
	Nonsmoker	89 (29.8)	210 (70.2)	
Corticosteroid use	Yes	97 (33.3)	194 (66.7)	0.002
	No	1 (4.2)	23 (95.8)	
Antibiotic use	Yes	1 (5)	19 (95)	0.01
	No	97 (32.9)	198 (67.1)	
Bronchodilator use	Yes	97 (33.6)	192 (66.4)	0.001
	No	1 (3.8)	25(96.2)	
Diabetes	Yes	2 (25)	6 (75)	0.523
	No	96 (31.3)	211 (68.7)	
Psoriasis	Yes	2 (100)	0 (0)	0.096
	No	96 (30.7)	217 (69.3)	
Median Rhomboid Glossitis	Yes	1 (14.3)	6 (85.7)	0.442
	No	97 (31.5)	211 (68.5)	
Eczema	Yes	3 (100)	0 (0)	0.029
	No	95 (30.4)	217 (69.6)	
Allergic rhinitis	Yes	80 (50.3)	79 (49.7)	<0.001
	No	18 (11.5)	138 (88.5)	
Fissured tongue	Yes	39 (65)	21 (35)	<0.001
	No	59 (23.1)	196 (76.9)	
Depapillated tongue	Yes	5 (15.6)	27 (84.4)	0.046
	No	93 (32.9)	190 (67.1)	

## Discussion

In general population, the prevalence of GT has been reported from 1% to 2.5% [1,3,8]. In this study the prevalence of GT in the asthmatic patients was determined 31%. This frequency rate is higher than the rate of normal population and almost similar with Assimakopoulos [8], that reported the frequency rate of 35.7% and 40.5% of GT in allergic patients and also what was reported by Marks and Czarney [13] who found the prevalence of 46%, 58% of GT in asthmatic patients. Similar with our results the prevalence of GT was found 33/3% by Honarmand [15]. Similarly; Miloglu [18] found a significant relation between GT & allergic patients. In contrast with present study In the study of Chapanchi [19], the prevalence of GT was 10% in asthmatic patients and 2% in control group, also in Dick study [20] prevalence of GT was 2%. This difference may be explained by studies conducted in different cities and different populations.

We didn't find any significant relation between GT & gender, this is compatible with the result of Shulman & Carpenter [2], Miloglu [18], and Banoczy [21] that found no gender difference in the prevalence of GT. Jaikittivong [16], Darwazeh [22] and Vieri [23] reported higher rate of GT in females. The transient nature of this condition and ethnic variation may partly explain this discrepancy in results.

Jaikittivong and Langlais [16], Miloglu [18], Darwazeh [22], Campana [1] and Nandini [3] demonstrated that the higher incidence of GT occurred in the 20-29 age group, these findings confirm our results that the higher incidence of GT is in the 20-29 age group.

In this study we found a significant relation between GT and cigarette smoking ( $p=0/029$ ), this finding doesn't agree with other investigations that demonstrated reduced GT prevalence in smokers. Shulman and Carpenter [2] found lower GT prevalence in nonsmokers. Miloglu [18] reported that GT was significantly more associated with nonsmoking. As the same Honarmand found less prevalence of GT in smokers [15]. Nandini [3] has reported tobacco use has been shown to play a protective role in the pathogenesis of GT. In this study, we evaluated the asthmatic patients that cigarette smoking is very low in this population and the obtained result is not reliable.

We found a significant association between GT and corticosteroid use ( $P=0/002$ ), this finding is compatible with the result of Shulman and Carpenter [2] and vieri [23].

In the present study, we found a significant relation between GT, bronchodilator use and not use of antibiotics. We evaluated asthmatic patients and most of them used bronchodilator and corticosteroid. Our finding didn't confirm an association between GT and diabetes, Psoriasis and median rhomboid glossitis. These findings agree with the result of Shulman and Carpenter [2] and Miloglu [18] and convert with Wyscki [24] that reported diabetic patients had higher GT prevalence. In our study we examined few diabetic patients and it may explain this difference. We found a significant relation between GT and eczema ( $P=0/029$ ) and allergic rhinitis ( $P=0/001$ ). Marks and Scarff [14] observed that GT is an oral stated that is likely to be a common indicator among these patients who have a tendency to develop recurrent acute inflammatory disease like Asthma And rhinitis .miloglu [18] also found a significant relation between GT and allergies. These findings convert with Jaikittivong and Langlais [16] that they reported no statistic relation between GT and asthma. The reason of these differences are distinction be-

tween study populations, in our study we examined asthmatic patients. In our findings GT was associated with Fissured tongue ( $P=0/001$ ). It is compatible with the result of Shulman and Carpenter [2], Jaikittivong and Langlais [16] and Honarmand [15]. Also In the previous studies relation between GT and FT (6%-45%) is proved [22,24,25,26,27,28,29]. We did not examine oral cavity for existence of any allergen or filling and it was a limiting factor in our study and we suggest to attention to this in future studies.

## Conclusion

We found the prevalence of GT in asthmatic patients was higher than the frequency rate of GT in normal population and there is a significant relationship between GT and cigarette smoking ,corticosteroid use, bronchodilator use, not use of antibiotics, fissured tongue, eczema, allergic rhinitis and not existence of depapillated tongue.

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