



Prevalence of tongue abnormalities in dental outpatient of Shiraz dental school

Jannan Ghapanchi¹, Mostafa Rezaee^{1,*}, Bezaie Maryam² and Shabnam Kijhalili²

¹Department of Oral and Maxillofacial Medicine, Shiraz University of Medical Science, Shiraz, Iran.

²Dentist, Shiraz, Iran.

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ABSTRACT

Tongue is one of the most important organs in the oral cavity which has significant roles in different functions such as speaking, mastication, swallowing, breathing, etc. The tongue may be influenced by internal diseases sooner than other organs and also may be involved in some abnormalities such as developmental, genetical and environmental. This study has been performed to determine the frequency of seven tongue abnormal conditions in patients attended in the Screening Clinic of oral medicine department of dental school in Shiraz, Fars providence, Iran. A total of 112 adults that aged between 15-58 years old were clinically examined punctilious observation using dental mirror and proper light. The prevalence of tongue anomalies were evaluated and analyzed according to form, age, sex and systemic condition using chi-square method. Tongue lesions were seen in 19 patients (16.9%) and the most prevalent lesion was geographic tongue (5.4%) followed by fissured tongue (2.6%), combination of both (2.6%), atrophy of tongue papilla (1.7%), coated and hairy tongue (2.6%), oral lichen planus (0.89%) and finally macroglossia (0.89%). Respectively a correlation was found between the occurrence of fissured and geographic tongue. A correlation was found between hairy tongue and smoking. Familial history was also seen in some patients. Emotional stresses relate to lichen planus and geographic tongue. Tongue anomalies and abnormal conditions were more prevalent and occasionally may be related to systemic problems so complete oral and specially tongue examination is necessary.

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Introduction

"Tongue Anomalies"; included many conditions that some of them are more prevalent and have a minor clinical significance which considered as normal variations and some have major significant that, in many cases, help to define a number of inherited syndromes, and a group of miscellaneous conditions that show evidences of developmental etiology.^{1,2}

Local and systemic disorders affect the tongue and provide some understanding of the distress that usually accompanies limitation of function of this organ. The aim of this study was to determine the prevalence of common morphologic and functional anomalies of the tongue in patients attended in screening clinic of oral medicine department of Shiraz dentistry school, Fars providence, Iran.

Geographic tongue (GT) was first reported as a wandering rash of the tongue in 1831; however, its etiopathogenesis still remains an enigma.³

It is a common condition characteristically seen as an asymptomatic presentation of multiple, variably sized, well-demarcated, erythematous areas usually surrounded by a slightly elevated, yellowish-white, circulate linear border, usually occurring on the anterior two-thirds of the dorsal tongue; reminiscent of land masses and oceans on a map. However, the lesions heal and frequently develop quickly in other areas, prompting the name of benign migratory glossitis. The ventral surface and other oral mucosal surfaces may also be uncommonly affected and this has been referred to as geographic stomatitis, pityriasis of the tongue, ringworm of the tongue, psoriasis linguae, and erythema migrans.⁴

Reports of GT prevalence among adults range from 0.28% to 2.4% with most falling between 1.0% and 2.5%.³

Many risk factors have been proposed for GT: hormonal disturbances and oral contraceptive use, psychological findings; diabetes mellitus although Guggenheimer et al found no difference; allergic conditions such as atopy hay fever and rhinitis, dermatological diseases such as pustular psoriasis; seborrheic dermatitis and Reiter's Syndrome. There is also a reported correlation with Down Syndrome and fissured tongue (FT).^{5,6}

A family history has also been reported to be associated with GT which may be genetic and linked to major histocompatibility complexes.⁷

Fissured Tongue or Scrotal Tongue (FT) occurs as a normal variant characterized by numerous shallow to deep grooves or furrows on the dorsal surface of the tongue. Aging, malnutrition and local factors such as infection and may contribute to its development and symptoms. Fissured tongue may have a familial occurrence and can be associated with certain underlying syndromes. After geographic tongue, scrotal tongue is the second most frequently observed tongue disease in various studies. Prevalence ranges from 0.6% (in South Africa) to 27.7% (in Brazil). Grispan detected scrotal tongue in 2.4% of 620 children younger than 12 years old, with the highest incidence at eight and-a-half years old.^{8,9}

Coated Tongue or Hairy Tongue is a conflicting lesion which many authors have not considered it a disease. By contrast, as already mentioned the study in Oviedo included it as an oral mucosal lesion and found it to be the most frequent disease

among the six year-old population, with a percentage of 16.02%.¹⁰

The heavily keratinized surface layers of the filiform papillae are continuously desquamated through friction of the tongue with food, the palate, and the upper anterior teeth and are replaced by new epithelial cells from below. When tongue movements are limited by illness or painful oral condition, the filiform papillae lengthen and become heavily coated with bacteria and fungi. The longer papillae give the tongue a coated or hairy appearance and retain debris and pigments from substances such as food, tobacco smoke, and candy. These changes primarily affect the mid dorsum of the tongue which often becomes discolored in a startling way.¹

Atrophic tongue or smooth tongue results from atrophy of the filiform papillae, which is well known to due to nutritional deficiencies such as vitamin B₁₂, folic acid, or iron deficiencies. Etiological factors of these conditions include not only nutritional deficiencies, but also diabetes, xerostomia and candidiasis.¹¹

Traditionally, total atrophic tongue has been due to nutritional deficiencies, such as vitamin B₁₂, folic acid, or iron deficiencies, and partial atrophic tongue has been well known as median rhomboid glossitis or geographic tongue.¹²

Macroglossia is the medical term for an unusually large tongue. Severe enlargement of the tongue can cause cosmetic and functional difficulties including in speaking, eating, swallowing and sleeping. Macroglossia is uncommon, and usually occurs in children. There are many causes. Treatment is dependent upon the exact cause. Definition of macroglossia have been proposed, including "a tongue that protrudes beyond the teeth during their resting posture" and "if there is an impression of a tooth on the lingual border when the patients slightly open their mouths".¹³

Oral Lichen planus (OLP) is autoimmune, chronic, inflammatory diseases that seldom cure it. OLP is a T-cell-mediated chronic inflammatory oral mucosal disease of unknown etiology.¹⁴ OLP is relatively common, affecting approximately 1–2% of the population. OLP may be found in any location of the mouth but favored sites are the buccal mucosa, the tongue and gingiva, OLP is classified according to its clinical features as reticular, papular, plaque, bullous, atrophic, erosive and ulcerative.¹⁵

Subjects and methods

The present cross sectional study includes 112 patients (35 male and 77 female) who attended in screening clinic of oral medicine department of Shiraz dentistry school, Fars providence, Iran. This group aged between 15-58 years old and they attended our dental school during March 2007 to May 2007. Examinations were performed on dental unit with proper light in the quiet and relax condition. Lips and cheeks were retracted with tongue blade and disposable mirror. Dorsal and ventral surface of the tongue were examined completely by using dental mirror and sterile gauze. Complete history for all systemic disease and any habit were taken by two dental students and oral medicine specialist. Oral mucosal examination procedures were based on the World Health Organization's Guide to Epidemiology and Diagnosis of Oral Mucosal Diseases and Conditions.¹⁶ A lesion was classified as GT when: (1) there was localized absence of filiform papillae; (2) the affected area was irregularly shaped; and (3) the area changed location over time. A lesion was classified as FT if there were shallow or deep fissures on the dorsum of the tongue generally a central fissure from which smaller fissures radiate. Filiform papilla in atrophic

tongue and size of the tongue in cases of macroglossia were evaluated by expert oral medicine specialist. Oral lichen planus diagnosed by clinical criteria such as Wickham striae and history. All data were collected and analyzed by SPSS software version 15 and Chi square test used for data analysis.

Result

The prevalence of tongue anomalies between 112 subjects (35 male and 77 female) were 16.9 % of study population. All of this data summarize in following table. Chi square test did not define any differences between two groups according to sex distribution (P value> 0.05). Among tongue lesions, geographic tongue was observed in 5.3 % of our subjects and was the most prevalent lesion. Among patients with geographic tongue. One patient gave a history of seasonal allergy, another one suffered from paralysis and the next one had cardiac murmur.

The most prevalent typical form of fissured tongue in our study was slight grooves over anterior one third of the dorsum of the tongue.

Combination of Fissured tongue and geographic tongue was seen in 3 patients (2.6 % of all subjects). One of them complains of seasonal allergy.

A 37 years old women with multiple sclerosis showed depapillation of the tongue. One case has OLP on tongue although buccal mucosa prominently involved. Some patients without any tongue lesions also complaint of systemic problems. One of them gave history of asthma, another one gave history of hyperthyroidisms and a 48 years old lady complain of diabetes mellitus.

Hairy tongue was seen in 2 adult smoker men and coated tongue in a women with poor oral hygiene.

A 16 years old mental retarded girl showed visible macroglossia. There is no any systemic problem in other patients.

Table 1: prevalence of tongue abnormalities in this study

	Number	Percentage	Mean Age	Sex distribution	
				Male	Female
Geographic tongue	6	5.3%	38.4	2	4
Fissured Tongue	3	2.6%	37	1	2
Hairy Tongue	3	2.6%	47.2	2	1
Atrophic tongue	2	1.7%	31.3	1	1
Oral lichen planus	1	0.89%	44	0	1
Macroglossia	1	0.89%	16	0	1
Combination GT and FT	3	2.6%	43.7	1	2
Total lesion	19	16.9%	31.6	7	12

Discussion

According to pervious articles , epidemiologic data shows the frequency of tongue is a wide variability .The prevalence of geographic tongue in our study population was 5.3 % which is approximately near to the finding of Voros et al study (5.7%), among 1-14 years old Hungarian children in 2003.¹⁷ Our study evaluate tongue lesion of older patients than Voros population. Geographic tongue and fissured tongue were the most frequent lesions in our study. This finding agrees with data in the literature. According to Assimakopoulos reports, GT prevalence among adults range from 0.28% to 2.4% with most falling between 1.0% and 2.5%.³

Yarom and his associates reported prevalence of 30.5% for fissured tongue and 12.7% for geographic tongue among Israeli adults of different ethnic origins. This study includes 2464 adult patients.¹⁸ This finding differs from ours and Assimakopoulos results. There are significant differences between our results and the findings of Darwazeh. He and coworkers over a period of 10 months, checked oral cavity of 1013 consecutive dental outpatients attending the Screening Clinic in Faculty of Dentistry in Jordan. They found that Geographic tongue and fissured tongue were detected in 6.8% and 11.4% of the examined population respectively, and an association of the two conditions was observed in 2.9% of the subjects.¹⁹

Zargari in Iran studied 306 patients with psoriasis. He reported that the most common oral lesion in this group was FT which present in 25 patients (8.2%). GT was seen in 17 patients (5.6%), and 5 patients (1.6%) had both FT and GT. This result showed some differences with our result. We found that geographic tongue (5.5%) is more prevalent than fissured tongue which affect only 2.7%, and combination of both which affect 2% of our population. It is important to say that nobody in our population seek from psoriasis, but there was a history of allergy, cardiac murmur and paralysis in our study group. One patient with both fissured and geographic tongue complains of seasonal allergy.²⁰

The etiology of geographic tongue remains obscure and the existence of similar lesions in association with other dermatosis only confuses the issue.

Kavac kovacic reported prevalence of 21.1% of fissured tongue in Slovenia. In this geographic and fissured tongue together were seen in 1.1% of this group.²¹

Hairy tongue was observed in 2.7% of our subjects and this prevalence higher than prevalence reported by Marks and Simson that accounted for 0.5% of their study population.²²

Tony Axéll in 1976 in a demographic study Among 30118 Swedish people reported prevalence of OLP on tongue was 1.8%.²³

A strong correlation was found between tongue lesions and age, sex, oral hygiene and habits in Turkish dental outpatients according to Avcu and Kanli study.²⁴ This relation result by our study too.

CL Koay in Malaysia reported a significant relationship was observed between crenated tongue and race; between four types of tongue lesions (fissured tongue, geographic tongue, crenated tongue and pigmented tongue) and age; and between fissured tongue and gender.²⁵ This relationship not significant in our study due to sample size.

Conclusion

Tongue anomalies and abnormal conditions were more prevalent and occasionally may be related to systemic problems so complete oral and specially tongue examination is necessary.

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