

The Occurrence of Tongue Lesions among Dental Outpatients Attending Khanzad Dental Polyclinics Center in Erbil City

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Abstract

Background: The tongue can be targeted by a wide range of pathological conditions; the recognition of tongue lesions may be helpful in the early diagnosis of some systemic disorders.

Objective: To determine the frequency and relation of the tongue conditions with risk factors among a group of dental outpatients attending a specialized dental polyclinics center in Erbil city, for individuals who are aware of their tongue lesion when to exist, and to estimate the possible coincidence between some of the tongue lesions with age, gender, smoking, alcohol drinking habit, allergic reactions, and systemic diseases.

Patients and Methods: 1100 patients were examined for a period of 3 months from October 1st, 2019 – December 31st, 2019.

Results: The frequency of tongue conditions was 52.8%, the study sample consists of 520 males 47.3%, and 580 females 52.7%. The age range was from 0.58 to 85 years, and 112 patients had one or more systemic diseases 92 of them were on regular medications. The most common frequent condition was fissured tongue diagnosed in 420 patients 38.2%.

Conclusion: The common risk factors for tongue conditions in this study were old age, male gender, smoking, alcohol consumption, and medication intake, around one quarter (25.6%) of the sample has a family history of tongue condition.

Keywords: Tongue conditions, fissured tongue, clinical study, coated tongue

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Introduction

The human tongue as a part of oral tissue is considered the strongest and highly muscular complex organ anatomically located in the oropharynx, with extremely dense and complex innervation [1, 2]. It is obvious that

the tongue is one of the most crucial organs in the body since it is engaged in swallowing, tasting, speech, and respiration [3,4]. Clinical appearance of tongue lesions varies greatly; the vast majorities are of local etiology. The

occurrence of different tongue lesions has been abundantly studied previously where it has been noticed that the tongue can be targeted by a wide range of pathological conditions, the recognition of tongue lesions may be helpful in the early diagnosis of some hormonal, allergic or systemic disorders, and it could be the first manifestation of the disorder [5, 6]. The tongue is, in fact, commonly affected by non-neoplastic and neoplastic lesions, the latter usually being characterized by a progressive growth that can be either benign or malignant. Non-neoplastic lesions are either inflammatory or represent a reaction to diverse types of irritative stimuli and are often discovered accidentally during the routine oral examination [7]. Thus as it has been considered a good indicator of systemic diseases, tongue lesions were classified into: injury (physical, chemical and thermal), infections (bacterial, viral, and fungal), developmental disturbances (geographic tongue, hairy tongue, fissured tongue, median rhomboid glossitis and macroglossia), nutritional deficiency, premalignant tumors, immunological, and miscellaneous. Differences in lesions have been reported due to variations in the ethnicity, geographical differences, design of the study, diagnostic criteria used for the study, and gender variations in the study samples [8, 9]. The aims of this study were to determine the frequency of the tongue conditions in different age groups among outpatients attending Khanzad dental polyclinics center in Erbil city, for individuals who are aware of their tongue lesion when exist, and to estimate the possible coincidence between

some of the tongue lesions with age, gender, smoking, alcohol drinking habit, allergic reactions, and systemic diseases.

Patients and Methods

A cross-sectional clinical study design for an evaluated sample size of 1100 patients pursuing routine dental checkup or dental treatment visiting outpatient's diagnostic department in Khanzad dental polyclinics center which is the largest and main specialized dental center in Erbil city were collected from October 1st, 2019 to December 31st, 2019. All patients accepted to participate included in this study with no exclusion criteria. An appropriate questionnaire comprises detailed information including age, gender, with family, social and medical histories recorded associated with varieties of pointed out tongue abnormalities after obtaining written consent form patients or their parents which was approved by the Institutional ethics committee at the Kurdistan Board of Medical Specialties. Subjects who are younger than 14 years old (1-13 years old) were not asked about alcohol drinking, smoking habits, and marital status. The clinical examination of the oral cavity was performed following the WHO guideline [10] under artificial illumination on a dental chair, using a disposable mouth mirror together with sterile gauze and examination gloves to held the tip of the tongue. The tongue inspected for having any epithelial changes, size, disorders, and movements, associated with complete head and neck examination including a careful examination of lymph nodes.

Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 22). Chi-square test of association was used to compare proportions. Fisher's exact test was used when the expected count of more than 20% of the cells of the table was less than 5. A p-value of ≤ 0.05 was considered statistically significant.

Results

The total number of patients was 1100. The mean age \pm SD was 28.32 ± 17.13 years, and

the median was 28 years. The age range was wide, ranging from 0.58 to 85 years. Table (1) show that the highest proportion of the sample (21.9%) aged 20-29 years, and 19% aged 30-39 years. More than half (52.7%) of the sample were females, and the majority of the sample (71.9%) were married. The frequency of smoking was 20.7% and that of alcohol was 3.2%. Around one quarter (25.6%) of the sample has a family history of tongue condition, as presented in Table (1).

Table (1): Basic characteristics of the studied sample

	No.	(%)
Age (years)		
< 10	200	(18.2)
10-19	169	(15.4)
20-29	241	(21.9)
30-39	209	(19.0)
40-49	131	(11.9)
≥ 50	150	(13.6)
Total	1100	(100.0)
Gender		
Males	520	(47.3)
Females	580	(52.7)
Total	1100	(100.0)
Marital status		
Single	191	(23.6)
Married	579	(71.7)
Divorced	8	(1.0)
Widowed	30	(3.7)
Total	808	(100.0)
Smoking		
Current smoker	167	(20.7)
Ex-smoker	69	(8.5)
Non-smoker	572	(70.8)
Total	808	(100.0)
Alcohol drinking		
Yes	26	(3.2)
No	782	(96.8)
Total	808	(100.0)
Family history of tongue condition		
Yes	150	(25.8)
No	431	(74.2)
Total	581	(100.0)

It is shown in Table (2) that 10.2% of the sample (112 patients) had systemic diseases. Out of those patients, 47.3% had hypertension, 26.8% had diabetes, 6.3% had asthma, and another 6.3% had heart diseases. The other diseases are presented in the

mentioned table, which shows that 8.4% were taking medications. The most common medications were antihypertensive drugs (48.9%), metformin (28.3%), and steroids (10.9%). Finally, the table shows that 3.2% of the patients had allergic diseases.

Table (2): History of diseases and drug intake

	No.	(%)
Systemic disease		
Yes	112	(10.2)
No	988	(89.8)
Total	1100	(100.0)
Type of disease		
Hypertension	53	(47.3)
Diabetes	30	(26.8)
Asthma	7	(6.3)
Heart disease	7	(6.3)
RA	4	(3.6)
Cancer	3	(2.7)
Hyperthyroidism	2	(1.8)
Psychological disorder	1	(0.9)
Psoriasis	1	(0.9)
Others	4	(3.6)
Total	112	(100.0)
Medication		
Yes	92	(8.4)
No	1008	(91.6)
Total	1100	(100.0)
Type of medications		
Antihypertensive	45	(48.9)
Metformin	26	(28.3)
Steroid	10	(10.9)
Aspirin	4	(4.3)
Cytotoxic drugs	2	(2.2)
Carbimazole	2	(2.2)
Methotrexate	2	(2.2)
Anti-depressant	1	(1.1)
Total	92	(100.0)
Allergy		
Yes	35	(3.2)
No	1065	(96.8)
Total	1100	(100.0)

Results showed that 581 patients (52.8%) had tongue conditions. Regarding the

frequency of each type of condition; it is shown in Table(3).

Table (3): Frequency of types of tongue condition

Tongue conditions	No.	(%) n = 1100
Fissured tongue	420	(38.2)
Crenated tongue	101	(9.2)
Coated tongue	64	(5.8)
Geographic tongue	42	(3.8)
Ulceration	24	(2.2)
Glossitis	8	(0.7)
Lobulated tongue	4	(0.4)
Taste disturbance	4	(0.4)
Median rhomboid glossitis	3	(0.3)
Dry tongue as a part of dry mouth	3	(0.3)
Ankyloglossia	2	(0.2)
Candidiasis	2	(0.2)
Varicosities	2	(0.2)
Sore tongue	2	(0.2)
Tumor	1	(0.1)
Black hairy tongue	1	(0.1)
Viral papilloma	1	(0.1)

Only 16 patients (1.5%) mentioned that the reason behind their visiting the clinic is a condition in their tongue, while the others had attended the clinic for other reasons that

26.8% of the patients were aware of their tongue conditions which are shown in Table (4).

Table (4): Cause of consultation and awareness about the tongue conditions

	No.	(%)
Cause of consultation		
Tongue conditions	16	(1.5)
Others	1084	(98.5)
Total	1100	(100.0)
Awareness (means patients have tongue conditions but had visited the center for other reasons)		
Yes	155	(26.7)
No	426	(73.3)
Total	581	(100.0)

Regarding the locations of the tongue conditions, the majority (89.7%) were located on the dorsal side of the tongue, 22.9% on the lateral side, and 1.3% on the ventral side. As shown in Table 5, in general, the more the age, the higher the frequency of tongue conditions, starting from 35.5% among those aged less than 10 years to 65.3% among

those aged 50 years or more ($p < 0.001$). The frequency of tongue conditions among males (58.1%) was significantly higher than the frequency (48.1%) among females ($p = 0.001$). The significantly high frequency was detected among smokers (70.7%) compared with 55.2% among non-smokers ($p = 0.001$). The same pattern can be observed among

alcohol drinkers where the frequency was 80.8% compared with 58.7% among the non-drinkers ($p = 0.024$). The frequency was also significantly high (64.3%) among those with the systemic disease compared with 51.6% among those with no disease ($p = 0.011$). The frequency of tongue conditions among those

who take medications (67.4%) was significantly higher than the rate (51.5%) among those who don't take medications (0.004). No significant association was detected between tongue conditions with allergy ($p = 0.121$).

Table (5): Frequency of tongue conditions by the studied factors

	Tongue conditions						P*
	Present		Absent		Total		
	No.	(%)	No.	(%)	No.	(%)	
Age (years)							
< 10	71	(35.5)	129	(64.5)	200	(100.0)	
10-19	56	(33.1)	113	(66.9)	169	(100.0)	
20-29	133	(55.2)	108	(44.8)	241	(100.0)	
30-39	133	(63.6)	76	(36.4)	209	(100.0)	
40-49	90	(68.7)	41	(31.3)	131	(100.0)	
≥ 50	98	(65.3)	52	(34.7)	150	(100.0)	< 0.001
Gender							
Males	302	(58.1)	218	(41.9)	520	(100.0)	
Females	279	(48.1)	301	(51.9)	580	(100.0)	0.001
Smoking							
Current smoker	118	(70.7)	49	(29.3)	167	(100.0)	
Ex-smoker	46	(66.7)	23	(33.3)	69	(100.0)	
Non-smoker	316	(55.2)	256	(44.8)	572	(100.0)	0.001
Drinking alcohol							
Yes	21	(80.8)	5	(19.2)	26	(100.0)	
No	459	(58.7)	323	(41.3)	782	(100.0)	0.024
Systemic disease							
Yes	72	(64.3)	40	(35.7)	112	(100.0)	
No	509	(51.6)	478	(48.4)	987	(100.0)	0.011
Medications							
Yes	62	(67.4)	30	(32.6)	92	(100.0)	
No	519	(51.5)	488	(48.5)	1007	(100.0)	0.004
Allergy							
Yes	23	(65.7)	12	(34.3)	35	(100.0)	
No	557	(52.4)	506	(47.6)	1063	(100.0)	0.121

*By Chi square test.

Table (6) shows the first four tongue conditions are significantly associated with age, fissured tongue ($p < 0.001$), crenated tongue ($p < 0.001$), coated tongue ($p = 0.007$), and geographic tongue ($p = 0.030$). In general, the incidence of these conditions is

higher among old than young patients. The male gender was associated with a fissured tongue ($p < 0.001$), and a coated tongue ($p < 0.001$). The female gender was associated with the crenated tongue ($p = 0.025$). No significant association was detected between

gender and geographic tongue ($p = 0.718$). Smoking was associated with a fissured tongue, but the least frequency of fissured tongue (10.8%) was among smokers ($p = 0.018$). No significant association was detected between smoking and crenated tongue ($p = 0.826$), and geographic tongue ($p = 0.883$), while the frequency of coated tongue was significantly high (23.4%) among the smokers ($p < 0.001$). No significant association was detected between drinking alcohol with the frequency of fissured tongue

($p = 0.140$), crenated tongue ($p = 0.116$), and geographic tongue ($p = 1.000$), while the association was significant with the frequency of coated tongue ($p = 0.007$). Regarding the systemic diseases, the frequency of fissured tongue was high (51.8%) among those with systemic disease ($p = 0.003$), while no significant association was detected with the other types of tongue lesions. Table (6) shows no significant association between allergy and the frequency of the main tongue conditions.

Table (6): Frequency of the most four common tongue conditions by age, gender, smoking, and systemic diseases

	N	Tongue conditions			
		Fissured No. (%)	Crenated No. (%)	Coated No. (%)	Geographic No. (%)
Age (years)					
< 10	200	49 (24.5%)	0 (0.0%)	7 (3.5%)	14 (7.0%)
10-19	169	45 (26.6%)	7 (4.1%)	1 (0.6%)	3 (1.8%)
20-29	241	91 (37.8%)	22 (9.1%)	16 (6.6%)	13 (5.4%)
30-39	209	96 (45.9%)	35 (16.7%)	17 (8.1%)	7 (3.3%)
40-49	131	66 (50.4%)	20 (15.3%)	12 (9.2%)	2 (1.5%)
≥ 50	150	80 (53.3%)	17 (11.3%)	11 (7.3%)	3 (2.0%)
P		< 0.001	< 0.001	0.007	0.030
Gender					
Males	520	233 (44.8%)	37 (7.1%)	50 (9.6%)	21 (4.0%)
Females	580	194 (33.4%)	64 (11.0%)	14 (2.4%)	21 (3.6%)
P		< 0.001	0.025	< 0.001	0.718
Smoking					
Current smoker	167	18 (10.8%)	18 (10.8%)	39 (23.4%)	5 (3.0%)
Ex-smoker	69	9 (13.0%)	9 (13.0%)	4 (5.8%)	2 (2.9%)

Non-smoker	572	71	71	14	21
		(12.4%)	(12.4%)	(2.4%)	(3.7%)
p		0.018	0.826	< 0.001	0.883
Drinking alcohol					
Yes	26	15	6	6	0
		(57.7%)	(23.1%)	(23.1%)	(0.0%)
No	782	337	92	51	28
		(43.1%)	(11.8%)	(6.5%)	(3.6%)
P		0.140	0.116*	0.007*	1.00*
Systemic diseases					
Yes	112	58	11	8	1
		(51.8%)	(9.8%)	(7.1%)	(0.9%)
No	988	369	90	56	41
		(37.4%)	(9.1%)	(5.7%)	(4.2%)
P		0.003	0.807	0.529	0.115*
Allergy					
Yes	35	14	6	4	0
		(40.0%)	(17.1%)	(11.4%)	(0.0%)
No	1065	412	95	60	42
		(38.8%)	(8.9%)	(5.6%)	(4.0%)
P		0.882	0.126*	0.142*	0.641*

*By Fisher's exact test. The other p values by the Chi square test.

Discussion

Many surveys were implemented globally to estimate the prevalence of tongue conditions [11,13], which are commonly related to local etiological factors, and for that, they are mainly accompanying other pathological conditions and systemic diseases. The screening of these conditions is essential in identifying them and other abnormalities which are either localized to the tongue or spread to neighboring oral mucosa [6]. The most four frequent tongue conditions in the current study are fissured tongue (38.2%), crenated tongue (9.2%), coated tongue (5.8%), and geographic tongue (3.8%). These findings are similar to results of Al-Mobeeriek and Aldosari study in Saudi Arabia [14] which reported that tongue conditions were detected in 4% of Saudi dental patients and the most frequent tongue

condition was fissured tongue, followed by crenated tongue and coated tongue. Frequency of fissured tongue in this study is significantly related to older age patients as (53.3%) of patients aging 50 years and above. This finding coincides with the results of Al-Maweri et al [15] study in Yemen which found a higher incidence of fissured tongue among older age patients. Additionally, another study carried out by Feil and Filippi in Switzerland detected that not only fissured tongue was frequent with advancing age, but the severity of tongue fissures also was related to older age patients [16]. Systemic diseases in the current study are significantly related to the fissured tongue. It was found that many systemic diseases are risk factors for tongue condition specifically fissured tongue [18]. In the present study, the frequency of tongue conditions was (52.8%)

which is higher than the results of Avcu and Kanli cross-sectional study in Turkey [19] that included 5150 dental outpatients and found that the frequency of tongue lesions was (44.2%). Also higher than the results of Koay et al [20] study in Malaysia which revealed that among 600 Malaysian dental outpatients, 181 (30.2%) patients were diagnosed with at least one tongue condition. However, the frequency of the current study is lower than results of Al-Wesabi et al [21] in Yemen which examined 713 dental patients and found that the frequency of tongue conditions was (76.5%). The frequency of tongue conditions among American adults was (15.5%) as reported by the National Health and Nutrition Examination Survey [22]. The discrepancies between different studies might be attributed to variances in ethnicity, geographical reasons, methodology, and inclusion criteria applied by each study in addition to differences in risk factors related to tongue lesions such as age and gender [9]. A high proportion of tongue conditions are affected by anomalies that are found during incidental examination [7]. In the current study which shows that only 1.5% of patients attended for tongue conditions. Unfortunately, the awareness of dental patients in the present study regarding tongue conditions is low (26.8%). This finding is inconsistent with the results of Bhattacharya et al [23] study in India which found that the prevalence of tongue lesions was 13.75% and a considerable number of patients had enough awareness regarding tongue lesions [8]. This inconsistency might be due to differences in health education and oral hygiene care

motivation between communities in addition to a different cultures and nutritional habits. The common location of tongue conditions in the present study detected is the dorsum of the tongue. Consistently, Fuoad study [24] found that the dorsum of the tongue was the common site tongue lesion among samples of Iraqi dental outpatients. The present study revealed that old aged patients are significantly related to most types of tongue conditions, while the male gender is mostly associated with fissured and coated tongue while females are significantly related to the crenated tongue. These findings are close to results of Patil et al [25] study in India. In the current study, significant demographic risk factors for tongue conditions are old aged and male gender. These findings are also results of other kinds of literature [8, 23]. The current study also shows that the frequency of tongue conditions is significantly related to smoking and alcohol drinking. Similarly, Gönül et al [17] study in Turkey reported that alcohol is a significant risk factor for oral mucosal lesions and smoking is a common risk factor for coated tongue and linea alba. Taking medications is a significant risk factor for tongue conditions in the current study which also shows that coated tongue was significantly related to smoking and alcohol drinking. Other authors confirmed the relationship between coated tongue and both smoking and alcohol consumption [27, 28].

Conclusions

This study has concluded that more than half of the patients examined have tongue conditions. Also made out common risk factors for tongue conditions which are old

age, male gender, smoking, alcohol consumption and medication intake, in this regard tongue conditions needs great efforts from dentists toward screening of these conditions during the examination and high awareness from peoples towards these lesions.

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