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The Prevalence of Tongue Anomalies among Medium School Pupils at Aged 13-15 Years Old in Fallujah City, Iraq

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ABSTRACT

The tongue is an important muscular organ with different functions such as mastication, speaking, and swallowing. The tongue may be affected by internal diseases before other organs and also may be involved by other environmental, genetical, and developmental disturbances. This study has been performed to evaluate the prevalence of the more common anomalies of the tongue among medium school students with ages 13-15 years old in Fallujah city, Anbar governorate, Iraq. 1650 pupils were selected from medium schools, selected by randomized stratified clustered. The study subject was divided into 3 age groups and in each group 550 students (275 boys and 275 girls) were examined. Examination was performed in quiet condition with the natural light. Lips and cheeks were retracted with disposable mirror. The results were analyzed with chi-square statistic test in SPSS (Statistical Package for the Social Sciences) version 22. The prevalence of all tongue anomalies was 30.12% (fissured tongue 8.2%, geographic tongue 2.12%, Macroglossia 2%, tongue tie 10.9%, median rhomboid glossitis 0.42%, hairy tongue 0.2% and coated tongue 6.2%). The prevalence of tongue anomalies was more than one fourth of the total sample, with no significant relation to age and sex. The more prevalent anomalies were tongue tie, fissure tongue, and coated tongue. It is recommended to motivate optimal oral hygiene and avoid the local factors that could precipitate symptoms, such as acidic foods, spicy, irritants in mouth rinses and toothpastes.

Keywords: Fissure Tongue, Geographic Tongue, Macroglossia, Tongue Tie, Median Rhomboid Glossitis, Hairy Tongue, Coated Tongue

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INTRODUCTION

The tongue is an important muscular organ in mastication, deglutition and speech. It is also has affected growth, facial development and dental occlusion [1]. The disturbances in the development and growth of oral tissues result in some anomalies. Some of them evolve in uterus life and continue throughout life. Other anomalies may not appear for many years [2]. Tongue anomalies can be divided in to major, minor, and inherited anomalies. Systemic and Local anomalies affect the tongue and give some of narrow understanding which is usually accompanied by minimizing the function of the tongue [3].

Fissure tongue

The term of the fissure tongue (Scrotal or placated tongue) describes as deep grooves along the dorsal and lateral aspects of the tongue. These fissures can be single or multiple, shallow or deep. Also sometimes there is a clear fissure in the middle of the tongue. Most of the fissures are located on the middle one-third of the tongue. Male are affected slightly more than female. The etiology of fissured tongue is unknown. A number of researchers [1- 3] believe that fissured tongue is just a natural variation. Recent study indicated that fissured tongue affect less than 10 % of

population and is likely to be genetically determined [4].

Geographic tongue

Geographic tongue is a phenomenon that affects mainly the dorsum of the tongue characterized by irregular shape, red area of depapillation and thinning epithelium of the dorsum of the tongue that are usually surrounded by a narrow zone of regenerating papillae. It is painless map like appearance, that's why called geographic. It is a benign condition with unknown etiology [5].

Macroglossia

Macroglossia is anatomical abnormality, a large tongue due to muscle hypertrophy, endocrine disorder or tumor. Macroglossia often coexists with tooth spacing and anterior open bite. It is less common among children [6]. According to a study done on tongue anomalies among children it was found to be 24% of tongue disorders [7]. It is difficult to determine the accurate incidence of macroglossia due to many causes [8, 9].

Tongue tie

Ankyloglossia is an abnormal thick and short lingual frenulum. The degree of it vary from the very mild ,having only band of mucous membrane to those in which both the underlying fibers of the genioglossus muscle and frenulum are markedly fibroses to rare, complete tongue tie in which the tongue is actually fused to floor of the mouth [10].

Central papillary atrophy (Median Rhomboid Glossitis)

It is a roughly lozenge or rounded shaped, that occurs in the midline on the dorsum of the tongue just anteriorly to the papillae vallate. The affected area is free of papillae. In recent years there has been a long debate about the role of candidiasis in the formation of the main inflammation of the tongue [11].

Hairy tongue

The heavily keratinized surface layers of the filiform papillae are continuously desquamated through friction of the tongue with food. 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 [12].

Coated tongue

The papillary structure of dorsum of the tongue creates a unique environment which promotes the accumulation of microorganisms and oral debris [13].

Aim of the Study

The aim of this study was to evaluate the prevalence of the more common anomalies of the tongue (fissured tongue, geographic tongue, median rhomboid glossitis, coated tongue, hairy tongue and ankyloglossia) among medium school pupils with ages 13-15 years old in Fallujah city, Anbar governorate, Iraq.

MATERIALS AND METHODS

A cross sectional study was conducted in Fallujah city from October 2016 to May 2017, on 1650 students in the age range of 13-15 years old. Before scheduling the survey, the official permission was obtained from the college of dentistry, University of Anbar and Directorate of Fallujah education. The number of boys were 825(50%) and the girls were 825(50%). were selected by randomized stratified clustered sampling from medium schools. The study subject was divided into 3 age groups and in each group 550 students (275 boys and 275 girls) were examined. Examination was performed in quiet condition with the natural light. Lips and cheeks were retracted with disposable mirror. The results were analyzed with chi-square statistic test in SPSS (Statistical Package for the Social Sciences) version 22.

RESULTS

The prevalence of tongue anomalies in 1650 pupils (825 boys and 825 girls), it was total affected cases 497 (30.12%). In our study the anomalies of tongue were more prevalent among girls (31.2%) than boys (29%), though the difference was not significant (P=0.22) (P>0.05) (Table-1).

Table 1: The Prevalence of tongue anomalies according to gender

	Boys n=825		Girls N=825		Total N=1650	P Chi Square
Anomalies of tongue	No	%	No	%	No (%)	
Fissure tongue	86	10.4	50	6.1	136 (8.2)	0.001**
Geographic tongue	10	1.2	25	3.03	35 (2.12)	0.02*
Macroglossia	23	2.8	10	1.2	33 (2)	0.01*
Tongue tie	65	7.9	115	13.9	180 (10.9)	0.0001**
Median Rhomboid glossitis	3	0.4	4	0.5	7 (0.42)	0.78***
Hairy tongue	2	0.2	2	0.2	4 (0.2)	0.9***
Coated tongue	50	6.1	52	6.3	102 (6.2)	0.83***
Total	239	29	258	31.2	497 (30.12)	0.22***

**P<0.05 significant df=1 **P<0.0001 very high significant df=1 ***P>0.05 not significant df=1*

Among tongue anomalies, tongue tie was observed in 180 cases 10.9% of our subject and was more prevalent in girls 115 cases (13.9%) than boys 65 cases (7.9%). The statistical differences between them was very highly significant (P<0.001). Fissure tongue was observed in 136 cases from these we notice 86 cases 10.4% in boys, and 50 cases 6.1% in girls. The statistical differences between them was highly significant (P<0.01). Coated tongue was observed in 102 cases 6.2% of our population and was approximately equally prevalent in both boys 50 cases (6.1%) and girls 52 cases (6.3%), no significant differences between them (P>0.05). Geographic tongue was observed in 35 case 2.12 % of our subjects and more prevalent in girls 25 cases (3.03%) than boys 10 cases (1.2%). The statistical differences between them was significant (P<05). Macroglossia was observed in 33 cases 2% of our population and was more prevalent in boys 23 case 2.8%, and 10 cases 1.2% in girls. The statistical differences between them was significant (P<0.05). Median rhomboid glossitis was found only in 7 cases 0.42% of our subjects but there wasn't a significant differences (P>0.05). Hairy tongue was observed in 4 cases 0.2% of our subjects and was equally prevalent in boys and girls with no significant differences between them (P>0.05). This study revealed that tongue anomalies were more frequently increased with age in both genders, (Table-2) and (Table-3). No significant difference was found in regarding the relation between tongue anomalies with both age and genders as p value was > 0.05(Table-4). (Figures 1-6) show pictures of tongue anomalies among medium school pupils.

Table2: Distribution of tongue anomalies according to age in boys

Tongue anomalies	Age 13 years	Age 14 Years	Age 15 years	Total
Fissure tongue	27	27	32	86
Tongue tie	15	23	27	65
Coated tongue	9	12	29	50
Macroglossia	3	7	13	23
Geographic tongue	3	3	4	10
Median Rhomboid glossitis	1	1	1	3
Hairy tongue	0	1	1	2
Total	58	74	107	239

Table 3: Distribution of tongue anomalies according to age in girls

Tongue anomalies	Age 13 years	Age 14 Years	Age 15 years	Total
Fissure tongue	14	17	19	50
Tongue tie	35	38	42	115
Coated tongue	10	19	23	52
Macroglossia	2	3	5	10
Geographic tongue	4	7	14	25
Median Rhomboid glossitis	0	1	3	4
Hairy tongue	0	1	1	2
Total	65	86	107	258

Table 4: Distribution of tongue anomalies according to age and gender

Age	Tongue anomalies		Total	P (Chi square)
	Boys	Girls		
13 years	58	65	123	0.8*
14 years	74	86	160	0.57*
15 years	107	107	214	0.45*
Total	239	258	497	

** The result is not significant at p >0 .05*

DISCUSSION

Study of the more common tongue anomalies is important for effective and accurate treatment planning. These are anomalies cause different of clinical problems, so early diagnosis should be done to avoid future problems. There was a gender difference in the prevalence of some anomalies in the present study.

Figure 1: Fissure tongue

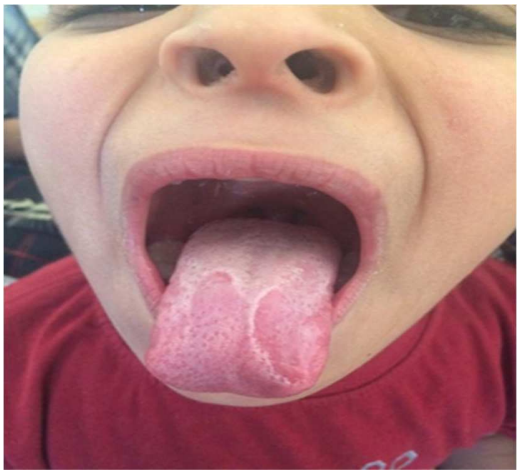

Figure 2: Geographic tongue

Figure 3: Macroglosia

Figure 4: Tongue tie

Figure 5: Median rhomboid glossitis

Figure 6: Coated tong

The higher prevalence of total anomalies in this study was tongue tie, seen with 10.9% of the total population and with 13.9% in (girls) and 7.9% in (boys), which was higher in frequency compare with study conduct by Qassim and Muhammad among school children in two areas of Baghdad district at age 6-12 years, the prevalence ankyloglossia was 8.1% [13], and study conduct on 1540 children in Iranian 7–17-year-old children the prevalence of ankyloglossia was 5% [14]. Also Voros *et al*., [15] in their studies recorded (0.88%) prevalence of ankyloglossia to the total population. This may be due to the role of the hereditary factor in such closed societies. The prevalence of fissure tongue in our study was 8.2%, this was higher than reported by Najm and Younis in Missan governorate, Al-Nori in Bagdad city and Hag-Kasim in Mousal city, Mohammed in Sulaimanyia city which were 4.9%, 4.7%, 4.04, 1.67% respectively [16-19]. Our results is less than that reported by Younis in Two Iraqi villages (Al-Qahderia and Al-Tajiat) the prevalence of fissure tongue was 31.87% [20] and by Khozeimeh and Rasti among school children in Borazjan, Iran the fissure tongue was(11.8%)[21]. The variation of the results between our study and other previous studies in different area of Iraq and the world may be due to the variation in age and size of studied sample. Coated tongue was seen in prevalence of 6.2% to the total sample. The high prevalence of coated tongue may be attributed to poor oral hygiene and low level of socio-economic status. These children belonged to the lower socio-economic strata of our city, which can be characterized by restricted access to health services as well as lacking motivation with respect to oral hygiene [22]. Geographic tongue was seen in prevalence of 2.12% to the total sample.

This is in agreement with the results reported by Rasheed and AlJubori [23] and Maweri *et al*., [24] geographic tongue was 2.6%, (2.5%) respectively. Higher prevalence of geographic tongue was noticed by other Iraqi studies and in other countries: Rabii [25], Voros *et al*., (26), Al-Dori [27], Al-Nori and Al-Talabani [17]. They found that geographic tongue in 11%, 5.7%, 3.9%, and 3.7% of their population respectively. The etiology of geographic tongue poorly understood and tends to run in families. Vitamin B deficiencies, hormonal changes, allergies, stress, diets high in sugar or processed foods may be consider as predisposing factors [28]. Macroglossia represents 2% which was higher than that found by Muhammed [13] in Baghdad and Mahmood [29] in Halabja city, Najm and Younis in Missan governorate [16] and Basalamah and Baroudi in Sana'a city [30] which were 0.8%, 0.66%, 0.07%, 0.4% respectively. These differences may be attributed to the sample size. The etiology of macroglossia may be due to muscular over development [30]. Central papillary atrophy in present study was (0.42%). This is in agreement with the results observed by Rabii (0.4%) [31]. But it is less than found by Khozeimeh and Rasti (1.75%) [32].

The lowest prevalence in our study was hairy tongue 0.2%. This is less than reported by Basalamah and Baroudi in Sana'a city (0.3%) (30). But it higher than noticed by ALjawfi in Sana'a city 2013 (0.8%) [33]. Hairy tongue may be attributed to many predisposing factors such as vitamin deficiency, use of certain oral drugs, chronic trauma or chronic dry mouth [30].

CONCLUSION

The most prevalent anomalies were tongue tie followed by fissure tongue and coated tongue tends to increase with age. There was no significant difference among tongue anomalies according to the age or gender. It is recommended to motivate optimal oral hygiene and avoid the local factors that could be precipitate disorders, such as acidic foods, spicy, irritants in mouth rinses and toothpastes. Surgical correction is the only choice for treatment of congenital tongue anomaly like tongue tie.

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