

The Frequency of Normal Variations of Oral Mucosa in Patients Referred to Qazvin School of Dentistry, Spring, 2015

Research Article

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Abstract

Background: Oral mucosa which covers inside of the mouth is a complex structure that has been adapted for its particular function and anatomical location. Some oral conditions, despite their different physical features, are not pathological; rather, they are considered normal such as Linea Alba, Parotid Papilla, Geographic Tongue and Fissured Tongue. **Materials and Methods:** in this cross-sectional study 692 patients were registered through clinical examination and fulfillment of predesigned questionnaire. Diagnostic criteria in this study included the normal changes of the oral mucosa (including geographic tongue, fissured tongue, scalloped tongue, parotid papilla, palatal and mandibular torus, Lina Alba, frenal tag, leukoedema, Fordyce granules). **Results:** 692 people with an average age of 35years participated in this study. The overall sum of oral cavity normal variations was 806, 542 cases of which were female and 264 cases male. **Conclusion:** In this study 692 patients were examined by specialists; 494 cases, a sum of 71% had oral cavity normal variations. Linea Alba had the highest frequency among normal variations.

Keywords: Normal variation, Frequency, Oral mucosa.

Introduction

Oral mucosa, which covers inside of the mouth is a complex structure that has been adapted for its particular function and anatomical location (1). Some oral conditions despite their different physical features are not abnormal but rather as considered normal. Based on Cowson theory such condition is pseudo-pathological and not to be considered a pathological abnormality (2). It is necessary to differentiate normal conditions from pathological lesions since the normal variations do not need any medical intervention. Linea Alba (White Line). As the name implies, it refers to a common horizontal white linear raised scalloped on both sides within the buccal mucosa along the occlusal plane which extends from the corners of the mouth towards molar teeth and is directed towards pterygomandibular raphe (1, 3, 4). The most common causes for the emergence of this kind of hyperkeratosis are continuous irritation, frictional trauma, para functional habits (sucking trauma and clenching). Therefore, clinical appearance suggests a final diagnosis (5, 6). It does not need therapy and by removal of etiologic factors, spontaneous recovery can be expected.

Parotid Papilla

It refers to the pink triangular raised papules on buccal mucosa along first maxillary molars located bilaterally, which constitute Stenson' duct (7).

Geographic Tongue

Geographic tongue refers to condition with a variety of terms such as benign migratory glossitis, annulus migrans, wandering rash and erythema migrans (8). It is a common and benign inflammatory condition involving the tongue mucosa which often starts in childhood. According to some studies geographic tongue is more common in women (ratio of 2:1) (1, 2) however, some other studies show no gender predilection (3, 9). The clinical manifestation of geographic tongue varies widely and presented as a geographic configuration that tends to migrate. The clinical feature may be in the form of an irregular erythematous macule with white or yellow elevated keratotic borders or red patch areas resulting from the depilated filiform papilla located on the dorsal surface of the tongue (2,10, 11). Patients seek treatment because of unusual tongue appearance and sensitivity to spicy, salty, hot foods and consumption of alcoholic beverages. The exact etiology is unknown however some of precipitating factors are as follows: atopy, stress, and hormonal changes. Several studies have reported a correlation between geographic tongue and different types of psoriasis, diabetes mellitus, Reiter's syndrome, Down syndrome, pregnancy, psychological factors, family history of fissure tongue, and taking certain medications (lithium carbonate, oral contraceptives) (11, 12). Allergy is considered the main etiologic factor in geographic tongue; other factors include asthma, eczema, hay fever, elevated serum IgE

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and atopic disease (12, 13); however more research is needed to establish this point (4,6, 14). This situation is rarely symptomatic but sometimes a burning sensation caused by eating salty, spicy, foods and consumption of alcoholic beverage is reported. Symptomatic treatment of this condition involves the use of anesthetic mouthwash, steroid (betamethasone gel), antihistamines and zinc supplements. These drugs lead to some improvements but the exact time is unclear.

Fissured Tongue

Scrotal tongue is the other name for this condition (10). It is a common tongue surface faceomatic condition of the oral cavity in which the pattern of fissures on the dorsal tongue surface is changed. The grooves can be either shallow or deep (5, 10). Three common manifestations of this condition are clearly visible in individual middle fissure, clearly visible middle fissure with radial and lateral grooves around the central fissure and multiple pattern of the grooves in the form of irregular arcs (4). Generally, no treatment is required however, because the fissures are hives of microorganisms and debris, brushing and mechanical washing of the dorsal surface of the tongue is recommended to prevent local irritation, halitosis, infection and inflammation (4, 5). The severity and prevalence of this condition increase with aging (5). There is a very strong relationship between fissured tongue and geographic tongue and many patients suffer both abnormalities at the same time. Even though the etiology is unknown, it seems that heredity plays an important role. Fissured tongue is higher among patients with Down syndrome than the general population (5). It is also common in Malkerson Rosenthal syndrome. The clinical presentations are facial paralysis, fissured tongue and facial swelling (5, 10). Some studies have reported of relationship between fissured tongue and children with a history of allergy. Autosomal dominant the inheritance pattern has been put forward, as well (15).

Fordyce Granules

Ectopic sebaceous glands, sub-epithelial heteropic sebaceous glands discharge their sebaceous secretions into the oral cavity via a small duct (1) which are usually seen in buccal mucosa and are less common in retromolar region and on the lips, palate and gums. These conditions may be bilateral (9, 16). Clinically they are just 1-2 mm oval granules (pinhead-sized) with white or yellow tint that are sometimes confluent and form a plaque reaching several centimeters in diameter. The number and size increase after puberty due to hormonal changes; it is asymptomatic and discovered during a routine examination, is not functional and does not require treatment. Fordyce granules on the vermilion border of the upper lips may require excision for esthetic reasons (4, 5). Ectopic sebaceous glands or choristoma (abnormal tissue in place) in the oral mucosa was first reported in 1896 by Fordyce (5, 17). Normally, the sebaceous glands are present in the skin which associated with hair follicles. Clinically, maculopapular structures with a white-yellow color, slightly elevated and asymptomatic entities with the size of one to two millimeters in diameter. Studies have shown that this

abnormality has no gender and racial predilection and is not associated with smoking, and atherosclerosis diseases (5) however, some other studies consider the possibility of gender predilection orientation for this abnormality (18).

Leukoedema

It is a benign and common situation of the oral cavity in the form of white generalized plaque in the buccal mucosa which is more common in blacks than whites. The main cause is unknown but factors such as smoking and alcohol. It is asymptomatic and does not involved any form of malignant transformation. Generally, the clinical appearance is presented as a diffuse milky gray condition, which can be seen on the buccal mucosa. Leukoedema surfaces are accompanied by several mucosal folds. Occasionally it is frequently bilateral, and cannot be scraped off. For diagnosing leukoedema, buccal mucosa is stretched and the white, milky appearance fades (stretch test) (4). Though some studies give no gender predilection, other studies reported a higher proportion among men. Microscopically epithelial thickening with fluid accumulation in the epithelial cells of the buccal mucosa (intracellular edema) may occur. It usually starts at the ages of 2-5 but is not until adulthood. The most common location is the buccal mucosa but it may be observed in labial mucosa, floor of the mouth and throat areas as well (1, 5, 6). It does not require treatment, but some studies suggest consuming Retinoic acid or scraping may dissolve the condition temporarily, but may recur after discontinuing the mentioned drugs.

Torus

A common developmental benign bony condition in the oral cavity. Torus can appear as a dome-shaped mass which may vary even to a large lobular entity (2). Torus generally appears as a solitary mass in the midline of the hard palate, usually known as Palatine Torus. Mandibular Torus can occur largely bilaterally in anterior lingual mandibular and an inferior region of premolars (19). Etiological factors included genetics (the most common) and para-functional habits. Torus is often asymptomatic and appears in early childhood. It grows slowly and may emerge as a response to occlusal forces which stop growing automatically (19); it might also grow so large enough to cause problems with speech and eating or to interfere with the appliances. Patients first find out about the disease when the lining mucosa is injured. Most studies do not consider any gender predilection in the emergence of the disease, while others have reported a higher prevalence among women (20). Being benign, it does not require treatment unless it interferes with prosthetic treatment, eating or speaking (4, 5, 19).

Scalloped Tongue

This condition is associated with chronic pressure associated with the stress of the tongue muscles over lingual surface of the teeth which leave a scalloped margin in place. It might be seen on the lateral border and tip of the tongue and mainly

associated with macroglossia diseases such as acromegaly. There is no need for intervention (5).

Frenal Tag

It is a developmental condition that is evident at birth or shortly thereafter; it is asymptomatic with no size alterations. It is presented as a solitary lesion and often seen in the midline of the labial frenum.

Materials and Methods

This cross-sectional study was carried out among patients who were referred to the Oral and Maxillofacial Surgery at the Dental School, Qazvin in the spring of 2015. All 692 patients were registered through clinical examination and fulfillment of predesigned questionnaire. After collecting the full history of the patient, including demographic data, family history, history of drug use, smoking and systematic illness, clinical examination was conducted using a dental mirror, tongue blade and light of the dental unit by two specialists. Diagnostic criteria in this study included the normal changes of the oral mucosa (including geographic tongue, fissured tongue, scalloped tongue, parotid papilla, palatal and mandibular torus, Linea Alba, frenal tag, leukoedema, Fordyce granules), which were performed according to the recommendations of WHO (12) and were limited to visual examination. Visual examination of the oral cavity was performed according to WHO pattern, as represented in Figure 1(15, 22). Because of benign nature and normal changes of oral mucosal, no histopathological studies were performed to confirm the point. All participants signed informed consent.

Results

The results of frequency analysis are presented in table 1. 9 cases on normal variations of oral cavity in under-study patients were investigated. The overall sum of oral cavity normal variations was 806, 542 cases were female and 264 cases male. Linea Alba was the most prevalent variation in both sexes; Torus and geographical tongue among women and geographical tongue and Fordyce granules were the most common cases. 30-40 age group had the highest frequency. The prevalence rate is presented in tables 2 and 3 based on age.

Discussion

The present study is a cross-sectional descriptive one to assess the prevalence of Normal variation among patients who were referred to the Oral medicine department, Dental School, Qazvin. 692 patients were examined by specialists of which 71% had normal variation in their oral cavity. Linea Alba, with a frequency of 33/6%, had the highest frequency among normal variations. Several studies have been performed on normal variation of oral mucosa in different countries (23). In the study by Bessa et al in Brazil, 2004 (14), they evaluated the prevalence of mucosal change in children under the age of 12; the overall prevalence of changes was 27% and geographical tongue had the highest frequency with a rate of 30.05%. It is worth noting that the number of normal variations investigated in this study was limited, for example, Linea Alba, frenal tag and parotid papilla were not included in this study. The frequency of geographical tongue in our study was 4%. The significance difference in the results of these two studies might be due to racial differences, limited, and completely different age range in the study of Bessa when compared to ours. In a study by Fordyce (17) in India, he evaluated the oral mucosal variations in children 4-14 years old. The frequency of normal variations observed was 38.84%. Similar to our study, Linea Alba had the highest frequency of 46.8%. The frequency of geographic tongue for Iran was reported by Honarmand as 7.8%. The relative similarity between these studies might be due to relative racial similarities and study population. In a study by Jahanbani in Iran, Linea Alba was found to have a frequency rate of 7.8% with the highest frequency been between normal variations. This result was similar to finding of our study. Viera's study reported that Linea Alba is the most common form of normal variation with the frequency of 33.9%. In this study which was performed in Brazil, the changes of oral mucosa were evaluated found that 84.9% of patients were affected. The reason for the high prevalence in this study might be the fact that Viera included extra lesions like traumatic ulcers and melanotic macules in his research while this study evaluated changes limited to normal variations of

Table 1: Frequency / percentage of variable

Frequency	Percentage
*Normal variations	
Yes	806
No	198
Sex	
Male	33.5%
Female	66.5%
Age	
10-29	41.9% (290)
30-59	55.6% (385)
≥60	2.5% (17)

Table 2: Frequency of lesions, aged between 10-29

	Female		Male		Total	
	Number	Frequency	Number	Frequency	Number	Frequency
Parotid papilla	73	35.4	31	36.9	104	35.8
Linea Alba	76	36.9	25	29.7	101	34.8
torus	8	3.9	4	4.7	12	4.1
Geographic tongue	7	3.4	3	3.5	10	3.4
Fissured tongue	11	5.3	6	7.1	17	5.8
Scalloped tongue	13	6.3	3	3.5	16	5.5
leukoedema	1	0.5	1	1.2	2	0.7
Frenal tag	41	19.9	15	17.8	56	19.3
Fordyce granuloma	3	1.5	5	5.9	8	2.7
No lesions	61	29.6	24	28.5	85	29.3

Table 3: frequency of lesions, aged between 30-59

	Female		Male		Total	
	Number	Frequency	Number	Frequency	Number	Frequency
Parotid papilla	79	31.8	44	32.1	123	31.9
Linea Alba	81	32.7	23	16.8	104	27
torus	11	4.4	1	0.7	12	3.1
Geographic tongue	15	6	3	2.1	18	4.7
Fissured tongue	32	12.9	23	16.8	55	14.3
Scalloped tongue	29	11.7	14	10.2	43	11.1
leukoedema	3	1.2	12	8.7	15	3.8
Frenal tag	40	16	25	18.2	65	16.9
Fordyce granuloma	10	4	16	11.7	26	6.7
No lesions	68	27.4	43	31.4	111	28.8

oral mucosa changes. However, Linea Alba had a similar rate in both studies. The least frequency among normal variation in this study was related to leukoedema with a rate of 2.6% while in the study of Viera, a rate of 1.8%, was the least frequent normal variation and Linea Alba had a higher rate of 6.5%. In a study by Jahanbani, Fordyce granules had the least prevalence however this study did not cover normal variations similar to leukoedema. Furthermore, difference can be due to racial differences and dissimilarities of the study population. Similar to this study, Ambika and Bessa also reported that leukoedema had the least frequency between normal variation, which was 2.1%, and 0.2 respectively.

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