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Sweta Bajarang Shinde
Intern, Bachelor of Dental
Surgery, School of Dental
Sciences, Karad. Maharashtra,
India

Nabila Naaz Sheikh
Intern, Bachelor of Dental
Surgery, School of Dental
Sciences, Karad. Maharashtra,
India

Ashwinirani SR
Reader, Department of oral
Medicine and Radiology, School
of Dental Sciences, Karad,
Maharashtra, India

Ajay Nayak
Professor, Department of Oral
Medicine and Radiology, School
of Dental Sciences, Karad,
Maharashtra, India

Kamla KA
Reader, Department of Oral
Medicine and Radiology, School
of Dental Sciences, Karad,
Maharashtra, India

Abhijeet Sande
Senior lecturer, Department of
Oral Medicine and Radiology,
School of Dental Sciences,
Karad, Maharashtra, India

Correspondence

Sweta Bajarang Shinde
Intern, Bachelor of Dental
Surgery, School of Dental
Sciences, Karad. Maharashtra,
India

Prevalence of tongue lesions in western population of Maharashtra

Sweta Bajarang Shinde, Nabila Naaz Sheikh, Ashwinirani SR, Ajay Nayak, Kamla KA and Abhijeet Sande

Abstract

Tongue is the most accessible and motile organ in the oral cavity. Data regarding prevalence of tongue lesions in Maharashtra population is sparse, so with this background the present study was designed to observe the prevalence tongue lesions in western population of Maharashtra.

Methodology: A prospective study was carried out in the Department of Oral Medicine and Radiology, School of Dental Sciences, Karad for a period of one year from July 2016-june 2017. The clinical examination of the oral cavity and tongue was done following the WHO guidelines, under artificial illumination on a dental chair, using a mouth mirror.

Result: The total number of patients reported were 31,500. Out of these patients, 896 patients were clinically diagnosed with tongue lesions. The prevalence of tongue lesions was 2.85%. The study sample consisted of 406 females (45.31%) and 490 males (54.7%). The tongue lesions were higher in males as compared to females (1.2:1). Out of 896 patients, most prevalent lesion was fissured tongue accounting for 51.56%, followed by coated tongue and geographic tongue about 14.3% and 10% respectively. The least common tongue lesion was lichen planus and lichenoid reaction accounting for 0.2%.

Conclusion: The prevalence of tongue lesions were more in males than females in western population of Maharashtra.

Keywords: Tongue, fissured tongue, geographic tongue, lichen planus

Introduction

Tongue is the most accessible and motile organ in the oral cavity. Tongue is essentially muscular complex organ covered by epithelium which performs functions like sucking, swallowing, phonation and perception of sensations including taste characteristics, thermal changes, pain stimuli and general sensations and helps in jaw development [1]. Clinical appearance of tongue conditions varies greatly, the vast majority of tongue lesions are of local etiology. The occurrence of different tongue lesions has been abundantly studied previously where it has been noticed that 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, It could be the first manifestation of the disorder [2, 3]. 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 [4, 5]. Majority of the lesions are developmental anomalies and are identified during routine dental checkup. Data regarding prevalence of tongue lesions in Maharashtra population is sparse, so with this background the present study was designed to see the prevalence tongue lesions in western population of Maharashtra.

Materials and methods

A prospective study was carried out in the Department of Oral Medicine and Radiology, School of Dental Sciences, Karad for a period of one year from July 2016- June 2017. Patients reporting to the outpatient department were included in the study. Ethical clearance was obtained from Krishna Institute of Medical Sciences Deemed University before commencing the study. A written informed consent was obtained from the patient. A detailed family and medical history were recorded. The age and gender of patient will be noted. The clinical examination of the oral cavity and tongue was done following the WHO guidelines [6].

Under artificial illumination on a dental chair, using a mouth mirror. The tongue will be examined for any surface changes, specific lesions, size and movements. The type and site of the lesions were also recorded. Biopsy were taken for doubtful cases. The data obtained will be tabulated and statistical tests will be applied to them to derive meaningful conclusions.

Results

The total number of patients reported to the Department of Oral Medicine and Radiology from July 2016 to June 2017 was 31,500. Out of these patients, 896 patients were clinically diagnosed with tongue lesions. The prevalence of tongue lesions was 2.85%. The study sample consisted of 406 females (45.31%) and 490 males (54.7%). There was higher prevalence of tongue lesions in males as compared to females. [Table 1]

Table 1: Gender wise distribution of tongue lesions

Gender	Number [%]
Male	490 [54.7]
Female	406 [45.31]
Total	896

The age of patients with tongue lesions ranged from 4 to 90 years. The mean age of the study population was 43 years. Majority of the age group were in the second and fourth decades. [Table 2]

Table 2: Age wise distribution of patients

Age Groups	No. of patients [%]
1-20 years	96 [10.71]
21-40years	350 [39.1]
41-60years	266 [29.7]
61-80years	176 [19.64]
81-100years	08 [0.9]

Out of 896 patients, most prevalent lesion was fissured tongue accounting for 51.7%, followed by coated tongue and geographic tongue about 14.3% and 10 % respectively. The least common tongue lesion was lichen planus and lichenoid reaction accounting for 0.2%. [Table 3] [Figure 1, Figure 2, Figure 3, Figure 4, Figure 5, Figure 6 and Figure 7]

Table 3: Types of tongue lesions

Type of lesion	Number of patients	Percentage
Fissured tongue	462	51.7
Coated tongue	128	14.3
Geographic tongue	90	10
Ankyloglossia	76	8.5
Crenated tongue	58	6.5
Bald tongue	20	2.2
Pigmentation	19	2.1
Macroglossia	17	1.9
Carcinoma	16	1.8
Hairy tongue	15	1.7
Ulcer	09	1
Bifid tongue	08	0.9
Irritational fibroma	06	0.7
Median rhomboid glossitis	05	0.6
Anaemic glossitis	04	0.4
Depapillated tongue	04	0.4
Atrophic tongue	04	0.4
Lingual varices	03	0.3
Lichenoid reaction	02	0.2
Lichen planus	02	0.2



Fig 1: Coated tongue



Fig 2: Fissured tongue with depapillation



Fig 3: Fissured tongue with fibroma



Fig 4: Geographic tongue



Fig 5: Fissured tongue



Fig 6: Ankyloglossia with bifid tongue



Fig 7: Ulcer at tip of the tongue

Discussion

The tongue is considered a good reflection of general health status of the human body. Tongue disorders could result from local causes or as a manifestation of systemic disease. There are variations in prevalence of tongue lesions across the world due to differences in ethnic groups, gender, age and use of different diagnostic criteria and methodology.

Age: In our study majority of tongue lesions occurred in age group of 21-40 years (39.1%) followed by 41-60 years (29.7%) and 61-80 years (19.6%). Studies conducted by Fuaod SA in UAE population reported that out of 130 patients, 75 patients were in age group of 20-39 years of age followed 40-59 years and 60-79 years with 34 and 10 patients respectively [7].

Gender: In our study the tongue lesions were higher in males as compared to females with a ratio of 1.2:1, which was in accordance with study reported by Patil S *et al.* with ratio of 4.7:1 [8]. The results of our study were contradictory to Fuaod SA study where they reported female predominance with 69

females and 61 males [7]. Similarly, Byahatti *et al.* reported female predominance with 173 females and 147 males which contradicts the present study [9].

Type of lesions

Fissured tongue: In the present study fissured tongue was reported in 462 patients with highest prevalence rate of 51.7% amongst all the tongue lesions recorded. In Libyan population the prevalence was found to be 48.4%. The prevalence of fissured tongue was quite low in Saudi population (1.4%) and Turkish populations as compared to above mentioned population [10, 3]. Patil S *et al.* reported out of 595 patients, 89 patients were diagnosed with fissured tongue with prevalence of 14.9% [8], which was second most common lesion in their study contradicting the present study. This lesion has been suggested to be genetically determined. Various contributory factors to the development of fissured tongue include hyposalivation, diabetes mellitus, candidiasis, vitamin B deficiency and lichenoid reactions [9]. With advancing age the prevalence of fissured tongue increases. This can be explained by the fact that increasing age is associated with hyposalivation, which is one of the prime contributing factors [5]. Fissured tongue is also seen in Melkersson –Rosenthal syndrome and Down's syndrome and in frequent association with benign migratory glossitis (geographic tongue). Melkersson –Rosenthal syndrome is a rare condition consisting of a triad of persistent or recurring lip or facial swelling, intermittent seventh (facial) nerve paralysis (bell's palsy), and a fissured tongue. Most of the patients with fissuring of the tongue present with no symptoms, however if the fissures are deep, symptoms such as soreness with acidic food and beverages may be present. The deep fissures act as a reservoir for food particles and accumulate bacterial and candidal organisms leading to the inflammation of the tongue. No definitive therapy or medication is required except to encourage good oral hygiene including brushing the dorsal surface of tongue to remove any food debris from the fissures.

Coated tongue: It was reported in 128 patients which was the second most common lesion in the present study with prevalence rate of 14.3%. Patil S *et al.* reported out of 595 patients, 167 patients with coated tongue with a prevalence rate of 28% [8] which was higher than the present study. The prevalence of coated tongue was reported to be 9.2% [11] and 11% [5] in studies done by Darwazeh *et al.* in the Jordanian population. Coated tongue was significantly related to smoking [5, 12] and hairy tongue [11, 13]. In Turkish population prevalence of coated tongue was 2.1% which was very low compared to present study [3].

Geographic tongue: It was reported in 90 patients with a prevalence rate of 10%. Patil S reported out of 595 patients 98 patients with geographic tongue with a prevalence rate of 16.4% [8] which was higher than the present study. The prevalence of geographic tongue in Brazilian population and Libyan population showed a prevalence of 21% and 17.4% respectively [9, 14] which was higher than the present study. The studies conducted by Jordanian population showed prevalence rate of geographic tongue as 6.8% and 4.8% [5, 11]. Studies conducted in the American population [15] and South African population showed prevalence rate of 0.6% and 1.6% respectively [16].

Benign migratory glossitis or geographic tongue is a common benign disorder of unknown etiology. Erythema migrans is a benign, red and white condition that is commonly seen affecting the tongue. Etiology of geographic tongue is not clear, but in children, it can be associated with environmental

allergies. Other conditions associated with this pathology are Vitamin B deficiency, a trigger from certain foods such as cheese, congenital anomaly, asthma, rhinitis, systemic diseases such as psoriasis, anaemia, gastrointestinal disturbances, candidiasis, lichen planus, hormonal imbalance and psychological conditions. Association with syndromes, it may be associated with Reiter's syndrome, Down syndrome, Aarskog syndrome, Foetal hydantoin syndrome and Robinow syndrome [17]. The treatment regime include Topical steroids, Vitamin A therapy, rinse with a topical anaesthetic agent, antihistamines, analgesics, steroids and sodium bicarbonate in water and diphenhydramine are helpful and reducing the symptom [18].

Ankyloglossia: Disturbance in the organogenesis of tongue might lead to some malformations like Ankyloglossia, commonly known as tongue tie, is a congenital oral anomaly which may decrease mobility of the tongue tip and is caused by an unusually short, thick lingual frenulum, a membrane connecting the underside of the tongue to the floor of the mouth. In our study it was reported in 76 patients with prevalence rate of 8.5%. The prevalence of ankyloglossia in various studies has been estimated to be 0.1%-3.7% [19], which was much less than the present study. Patil S reported out of 595 patients 21 patients were diagnosed with tongue tie with prevalence of 3.5% which was less than the present study. Morowati *et al.* reported a family with isolated ankyloglossia inherited as an autosomal dominant or autosomal recessive trait having prevalence of 4.5% with abnormally short lingual frenulum common in males [20].

Median Rhomboid Glossitis: It is a developmental and congenital defect causing a segment of tuberculum impar to persist on the dorsal surface of the tongue, instead of being buried in normal embryonic development. In the present study it was reported to be only in 5 patients with prevalence rate of 0.6%. It is caused by chronic candidal infections which plays a leading etiologic role, smoking acts as a promoter, diabetes. Infected cases may also demonstrate a midline soft palate erythema in the area of routine contact with the underlying tongue involvement; this is commonly referred to as a kissing lesion most commonly which is reported in immunocompromised patients. A prevalence of 0.6% has been reported in Jordanian and Libyan population [5, 9] which was in accordance with the present study. Patil S reported out of 595 patients 22 patients were diagnosed with median rhomboid glossitis with prevalence rate of 3.7% which was higher than the present study [8].

Hairy tongue: In present study it was reported in 15 patients with a prevalence rate of 1.7%. Patil S reported out of 595 patients 32 patients were diagnosed with hairy tongue with prevalence rate of 5.3% which was higher than the present study. The findings of the present study were less than those reported in the Jordanian population (5.8%) [5] and Libyan population, which reported a prevalence of 4.4% [9]. It is a commonly observed condition of defective desquamation of filiform papillae. The condition is frequently referred to as black hairy tongue (*lingua villosa nigra*). However this may also appear brown, white, green, pink, or any of variety of hues depending on specific etiology and secondary factors (eg use of coloured mouthwashes, breath mints, candies). The basic defect in hairy tongue is hypertrophy of filiform papillae on dorsal surface of the tongue usually due to lack of mechanical stimulation and debridement, individuals with poor oral hygiene (eg. Lack of tooth brushing, eating soft diet), tobacco use, coffee or tea drinking. The treatment of hairy tongue is variable like simply brushing the tongue with

tooth brush, tongue scraper is sufficient to remove elongated filiform papillae, surgical removal of papillae by using electrocauterization, carbon dioxide laser.

Bifid tongue: A completely cleft or bifid tongue is a rare condition that is apparently due to lack of merging of the lateral lingual swellings of this organ. A partially cleft tongue is considerably more common and is manifested simply as a deep groove in the midline of the dorsal surface. It is of little clinical significance except that food debris and microorganisms may collect in the base of the cleft and cause irritation. In present study it was reported in 8 patients with prevalence rate of 0.9%. James *et al.* describe a male infant born to a diabetic mother who in addition to other typical congenital abnormalities was born with an impressive bifid tongue [22].

Ulcers: It was reported in 9 patients with a prevalence rate of 1%. Patil S reported out of 595 patients 40 patients were diagnosed with ulcer with a prevalence rate of 6.6% which was much higher than the present study. Byahatti *et al* reported with 320 patients out of which 10 patients were diagnosed with ulcer with a prevalence rate of 3.2%. Commonly involved ulcers are traumatic and aphthous ulcers. Traumatic ulcers are caused by denture irritation are referred to as sore spots. This may be a result of over extension of flanges, sequestration of bony spicules under denture of a roughened, or 'high' spot on the inner surface of denture. Ulcerations may also result from thermal, electrical and chemical. Aphthous ulcer is a common condition characterized by recurring ulcers confined to oral mucosa in patients with no other signs of disease. There are various etiological factors such as hereditary, trauma, deficiency states, psychological factors, endocrine disorders, allergic conditions, blood dyscrasias, drugs, Gastro Intestinal diseases, urological disorders, dermatological disorders and immunologic origin etc. Aphthous ulcer respond to steroids and ulcers due to trauma etiological factors should be removed.

Bald tongue: It is a condition in which a smooth, red, painful tongue (glossitis) with atrophy of the filiform and later the fungiform papillae occurs. This condition is also called as anaemic glossitis. In the present study 24 patients were diagnosed with bald tongue with a prevalence rate of 2.67%. Majority of patients with this condition will be having burning sensation in tongue. The anaemia glossitis responds well to iron therapy and a high-protein diet.

Conclusion

Oral cavity is considered, a good reflection of general health status of the human body. Tongue disorders could result from local causes or as a manifestation of systemic disease, hence it is of great concern. The present data will provide more information regarding the tongue lesions and may alert the dental clinician regarding any associated underlying systemic conditions. Patients with lesions of unclear aetiology can be referred to a specialist and thorough knowledge of the clinical features can be lifesaving in some subjects by early diagnosis and referral.

References

1. duToit DF. The tongue: structure and function relevant to disease and oral health. *SADJ*. 2003; 58:375-6:380-3.
2. Sujata MB, Mohammed SHI. The Prevalence of Tongue Lesions in Libyan Adult Patients. *J Clin Exp Dent*. 2010; 2:163-8.
3. Ugar-Cankal D, Denizci S, Hocaoglu T. Prevalence of tongue lesions among Turkish school children. *Saudi*

- Med J. 2005, 1962-7.
4. Bánóczy J, Rigó O, Albrecht M. Prevalence study of tongue lesions in a Hungarian population. *Community Dent Oral Epidemiol.* 1993; 21:224-6.
 5. Darwazeh AM, Almelaiah AA. Tongue lesions in a Jordanian population. Prevalence, symptoms, subject's knowledge and treatment provided. *Med Oral Patol Oral Cir Bucal.* 2011; 16:745-9.
 6. Kramer IR, Pindborg JJ, Bezroukov V, Infirri JS. Guide to epidemiology and diagnosis of oral mucosal diseases and conditions. World Health Organization. *Community Dent Oral Epidemiol.* 1980; 8:1-26.
 7. Sura Ali. Fuoad College of Dentistry, Gulf Medical University, Ajman, UAE. A clinical study on tongue lesions among Iraqi dental outpatients, *GMJ, ASM.* 2013; 2:80-85.
 8. Patil S, Kaswan S, Rahman F, Doni B. Prevalence of tongue lesions in the Indian population. *J Clin Exp Dent.* 2013; 5:128-32.
 9. Byahatti SM, Ingafou MSH. The Prevalence of Tongue Lesions in Libyan Adult Patients. *J Clin Exp Dent.* 2010; 2:163-8.
 10. Al-Mobeeriek A, AlDosari AM. Prevalence of oral lesions among Saudi dental patients. *Ann Saudi Med.* 2009; 29:365-8.
 11. Darwazeh AM, Pillai K. Prevalence of tongue lesions in 1013 Jordanian dental outpatients. *Community Dent Oral Epidemiol.* 1993; 21:323-4.
 12. Campisi G, Margiotta V. Oral mucosal lesions and risk habits among men in an Italian study population. *J Oral Pathol Med.* 2001; 30:22-8.
 13. Mumcu G, Cimilli H, Sur H, Hayran O, Atalay T. Prevalence and distribution of oral lesions: a cross-sectional study in Turkey. *Oral Dis.* 2005; 11:81-7.
 14. Bezerra S, Costa Isabel. Oral conditions in childrens from birth to 5 years: the findings of a children's dental program. *J Clin Pedi Dent.* 2000; 25:79-81.
 15. Kleiman DV, Swango PA, Pndborg JJ. Epidemiology of mucosal lesions in United States school children: 1986-1987. *Community Dent Oral Epidemiol.* 1994; 22:243-53.
 16. Arendorf TM, Van der Ross R. Oral lesions in a black preschool South African population. *Community Dent Oral Epidemiol.* 1996; 24:296-7.
 17. Cerqueira DF, de Souza IP. Orofacial manifestations of Robinow's syndrome: A case report in a pediatric patient. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2008; 105:353-7.
 18. Bajaj P, Kapoor C, Garg D, Rajeesh MP, Sabharwal R, Vaidya S. Geographic tongue in a 6 year old child: A case report with review of literature. *Dent J Adv Study.* 2013; 1:112-7.
 19. Salem G, Holm SA, Fattah R, Basset S, Nasser C. Developmental oral anomalies among schoolchildren in Gizan region, Saudi Arabia. *Community Dent Oral Epidemiol.* 1987; 15:150-1.
 20. Morowati S, Yasini M, Ranjbar R, Peivandi AA, Ghadami M. Familial ankyloglossia (tongue-tie): a case report. *Acta Med Iran,* 2010; 48:123-4.
 21. James AW, Culver K, Hall B, Golabi M. Bifid tongue: a rare feature associated with infants of diabetic mother syndrome. *Am J Med Genet.* 2007; 143:2035-9.