Original Article

Indian Journal of Dental Education
Volume 10 Number 4, October - December 2017
DOI: https://dx.doi.org/10.21088/ijde.0974.6099.10417.3

Prevalence Study of Tongue Lesions in South Indian Dental Outpatients

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Abstract

Background: Tongue lesions determine the general and oral health status of the individual. The present study aimed to describe the prevalence of the various tongue lesions in the south Indian population. *Material and Methods*: In this cross sectional study 1760 subjects, 772 females and 988 males were examined clinically for the presence of various tongue lesions. Information about patient age, gender, medical history, habits, tongue lesion and associated symptoms were obtained. *Results*: Four seventy two patients (26.82%) of 1760 subjects had tongue lesions with higher prevalence in males. The tongue lesion was more prevalent in the group of 30-49years. The lesions more frequently observed in decreasing order of prevalence were fissured tongue (30.93%), Pigmented tongue, coated tongue depapillated tongue, geographic tongue, traumatic ulcer, leukoplakia, candidiasis, oral submucous fibrosis, partial ankyloglossia, aphthous ulceration, hairy tongue, oral lichen planus, enlarged foliate papillae, traumatic fibroma and malignant lesion. The systemic disease associated with tongue lesion was diabetes mellitus followed by anaemia, hypertension and gastrointestinal disease. Prevalence of tongue lesion in patients with habit of using tobacco was 15.68 %. *Conclusion*: The results observed in this population are similar to other studies. Clinically, tongue conditions can be easily diagnosed and this necessitates familiarity and better understanding of common lesions of tongue among the general dental practitioner.

Keywords: Oral Lesions; Prevalence; Tongue Lesions; Fissured Tongue.

Introduction

Tongue is an important muscular organ that constitutes a substantial portion of the oral cavity. The importance of tongue in various diseases is considered since the period of Hippocrates and Galen [1]. Epidemiological researchers have reported varied prevalence as nearly to 18.5% of tongue lesions in different parts of the world [2]. Tongue lesions were shown to be present with wide range of pathologic situations and systemic diseases. They are often discovered incidentally during routine oral examination due to low level of awareness among patients about such lesions. Majority of the lesions are due to local factors and are easily treatable. However association of tongue lesions with pathologic conditions such diabetes, immunological disorders, nutritional disturbances require medical management. Malignant lesion of the tongue is one of the most common site of occurrence among oral malignancies. It is a clinically silent and is often unrecognised until the tumour interferes with tongue functions. Very limited studies on the prevalence of tongue lesion have been undertaken involving population of south East Asian region [3]. Hence, we aimed to determine the prevalence of varied tongue lesions in general population of Koppal district of Karnataka.

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Received on 21.10.2017, **Accepted on** 04.11.2017

Materials and Methods

About 1760 patients visiting the out-patient department of dentistry, Koppal Institute of Medical Sciences, Koppal during one year period were included in the study. Patients of different age group of both sexes visiting the dental outpatient were

examined. Patients who refused to take part in the study, limited mouth opening and mentally challenged were excluded. Patients demographic data, medical and drug history, and habits of using tobacco and alcohol were recorded. Each patient was examined clinically according to World Health Organization (WHO) guidelines for intraoral examination. Surface changes of tongue, its size and movements were documented. WHO criteria of diagnosis of oral mucosal diseases and conditions was followed to determine oral lesions.

Results

1760 dental outpatients with 772 females and 988 males were examined. Out of which 472 (26.82 %) subjects had tongue lesions, 278 males and 194 females. The subjects age ranged between eleven years and seventy years (Graph 1 & 2). The tongue lesion was more prevalent in the group of 30- 49years. The prevalence of various tongue lesions is shown in Table 1. The most prevalent tongue lesion was fissured tongue (30.93%). 110 patients had pigmented tongue, followed by coated tongue (95patients), depapillated tongue (45 patients), geographic tongue (20 patients), traumatic ulcer (12 patients), leukoplakia (10 patients), candidiasis (9 patients), oral submucous fibrosis (7 patients), partial ankyloglossia (5 patients), aphthous ulceration (4 patients), hairy tongue (3 patients), oral lichen planus (3 patients), enlarged foliate papillae (1 patient), traumatic fibroma (1 patient), and malignant lesion (1 patient). Some patients had more than one lesion. Seventy nine patients (16.74%) with tongue lesions had systemic diseases. No significant association between systemic disorder and presence of tongue lesions was found. The prevalence of systemic diseases in 79 patients with tongue lesions is shown in Table 2. The systemic disease associated with tongue lesion was diabetes mellitus (21 patients) followed by anaemia (22 patients), hypertension (17 patients), gastrointestinal disease (12 patients). We noticed that anaemia was seen predominantly present in female patients. About 15.68 % and 2.12 % of patients with tongue lesion had habit of using tobacco and alcohol respectively (Table 3). Most of male patients had habit of smoking and chewing tobacco.

Table 1: The prevalence of various tongue Lesions

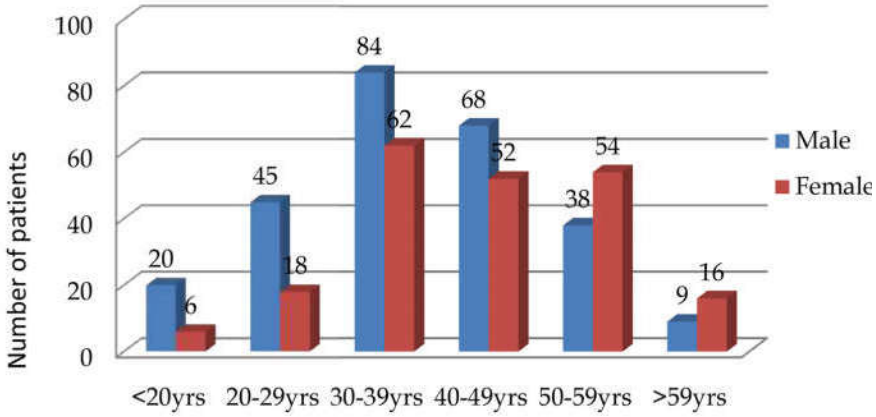
Lesions of tongue	Number of Patients	%
Absent	1288	73.18
Present	472	26.82
Fissured Tongue	146	30.93
Pigmented Tongue	110	23.31
Coated Tongue	95	20.13
Depapillation	45	9.53
Geographic Tongue	20	4.24
Traumatic Ulcer	12	2.54
Leukoplakia	10	2.12
Candidiasis	9	1.91
Oral Submucous Fibrosis	7	1.48
Partial ankyloglossia	5	1.05
Aphthous Ulceration	4	0.85
Hairy Tongue	3	0.64
Oral Lichen Planus	3	0.64
Enlarged Foliate Papilla	1	0.21
Traumatic Fibroma	1	0.21
Malignant Lesion	1	0.21

Table 2: Prevalence of systemic diseases in 79 patients with tongue lesions

Systemic disease	No of patients	%
Diabetes mellitus	21	26.58
Anaemia	22	27.85
Hypertension	17	21.51
Gastrointestinal	12	15.20
Thyroid problem	3	3.80
Asthma	2	2.53
Arthritis	2	2.53
Total	79	100

Table 3: Association of tongue lesion with habits

Habit	No of pts with tongue lesion (n=472)	Percentage
Absent	388	82.20
Present	84	17.80
Smokeless Tobacco Users	44	9.32
Smoking Tobacco Users	30	6.36
Alcohol	10	2.12



Graph 1: Tongue lesions according to different age groups and gender

Graph 2: The prevalence of tongue lesions according to gender

Discussion

Previous literatures reports high frequency of tongue lesions among oral mucosal lesions in different parts of the world [4]. Incidence of tongue lesions vary significantly, depending on the ethnic group, methodology and sampling procedures [5]. It is estimated that approximately 18.5% lesions of tongue occur in individuals of different populations [2].

In the present study, the prevalence of tongue lesions was estimated to be 26.82%. Our results are in close proximity with the study conducted by Darwazeh et al. and Voros et al [5,6]. However, the study conducted in Indian population by Patil et al estimated 9.5% [2]. Al-Mobeerick et al. estimated a very low prevalence of 3.96% [7]. In an Indian study by Raman P et al a higher prevalence of 78.4% was reported [1]. In this study 6% of the patients reported the presence of tongue lesions, and 4% of subjects complained of burning sensations, alteration in taste, discomfort or intolerance to hot and spicy food. We considered the lingual varices as normal variations similar to other studies [4]. The functional disorders of the tongue were excluded in the study. The majority of patients with tongue lesions were in middle age group. Among the patients with tongue lesions 59% of cases were males and 41% of cases were females. Similar prevalence among male subjects was observed in studies conducted by Byahatti et al. and Darwajeh et al [3].

Most authors believe that fissured tongue as a normal variant affecting less than 10% of population [4]. The prevalence of fissured tongue may be attributed to some factors such as hereditary factors, nutritional deficiency, salivary gland disorders, lichenoid lesions and candidal infections [8]. In the present study prevalence of fissured tongue (30.93%) was highest among patients with tongue lesions.The findings are similar to previous study re-ported in Brazil with prevalence of 27.3% [9]. In a study by Byahatti SM fissured tongue was most prevalent tongue lesion (48.4%) among 320 Lybian adult [10]. However fissured tongue was reported in 11.8% cases by Hozeimeh F et al and 11.5% cases by Darwazeh AM [6,11] . Very low prevalence (1.4%) was estimated among Saudi population [7] and Turkish population [12]. Prevalence of fissured tongue with increasing

age has been reported [13]. Hyposalivation in advanced age group may contribute to the development of fissured tongue in advanced age.[14] In this study 3% of the subjects with fissured tongue presented with symptoms. Typically the patients with fissured tongue are asymptomatic but may manifest as soreness when the fissures are deep to aggregate food leading to bacterial growth and subsequently inflammation.

The prevalence of coated tongue was 20.13%. High prevalence rate of 28.0% was observed in a study by Patil S et al [2]. However, in other studies varied prevalence of 9.2% [5] in the Jordanian population and much lower prevalence of 2.1% [15] in the Turkish population has also been reported. In our study coated tongue was commonly noticed among tobacco smokers similar to other studies [15,16]. Compromised general health and poor oral hygiene among low income group could be attributed to prevalence of coated tongue.

The prevalence of geographic tongue was 4.24%, similar to studies conducted among Jordanian population [5,10]. Compared to our study, the prevalence was found to be lower in American population (0.6%) [17] and South African population (1.6%) [18]. In the study done in the Brazilian population and Libyan population there was a higher prevalence of geographic tongue at 21% and 17.4% [19,20]. The wide variation in prevalence may be due to transient nature of geographic tongue and ethnic variation. Often geographic tongue is strongly associated with fissured tongue. Hereditary basis has been linked to both the condition [21]. The lesions are usually asymptomatic although burning sensation or sensitive to acidic foods and drinks may be noted in active lesions. Previous studies reported in Thailand [22] and by Kulla Mikonen et al [23] among young Finns suggests female predominance. In our study increased frequency was seen among females. Hypersensitivity to environmental factors and probable hormonal factors raises the possibility of higher occurrence among female individuals [21]. But no gender preferences to geographic tongue was reported in some studies [10].

Prevalence of hairy tongue *varies* in different population, typically *ranging* from 0% to 11.3% [6,15]. In the present study hairy tongue was seen in 0.64% patients. The prevalence is low when compared to other population studies such as, Jordanian population (5.8%) [10], the Libyan population (4.4%) [19] and adult Turkish population (11.3%) [12]. Hairy tongue is manifested due to defective desquamation of filiform papillae in response to variety of precipitating factors and overuse of broad spectrum antibiotics. Most patients are asymptomatic but may give rise to gagging sensation, halitosis or altered taste perception [2]. It is seen frequently in tobacco users in males similar to our study [24].

Physiologic pigmentation of tongue is *probably genetically determined* Inflammation associated with pigmentation occurs due to various stimuli, such as trauma, hormonal changes, medication, and radiation resulting in an increased production of melanin [25]. Post-inflammatory pigmentation of oral mucosa is a common presentation of Lichen planus. In the study done by Koay et al [26] the prevalence of pigmented tongue was 6.2%, Preeti Tomar Bhattacharya [3] had higher prevalence of 12.9% in Indian population. In our study pigmented tongue was seen in 23.31% and was more in males. The high prevalence in males could be attributed to higher prevalence of tobacco smoking by males.

Depapillation of tongue is characterized by loss of papillae of the dorsal surface of the tongue. In our study, the prevalence of tongue depapillation was 9.53%. While in the study done by Byahatti SM [19] the prevalence was 25.6% among Libyan population and 11.5% by Patil S [2] in Indian population. We found only three patients with oral lichen planus of tongue.

The prevalence rate of ankyloglossia ranges from 0.1% and 3.7% [27]. Partial ankyloglossia (tongue-tie) was seen in five young patients with tongue lesions. This congenital developmental condition may be the result of either ignorant parents or low socioeconomic status. It can be complete or partial. Mild cases of ankyloglossia may go unnoticed until the speech is impaired. Therefore, treatment of this condition at an early age is strongly recommended [12].

In our study leukoplakia was seen in 2.12% cases. Leukoplakia occurring on tongue along with floor of the mouth is considered as high risk sites of squamous cell carcinoma [24]. About 1.48% of oral submucous fibrosis was present in subjects studied. Impairment of tongue movements and atrophy of papilla on tongue are seen in advanced cases of oral submucous fibrosis [28]. In the present study twelve patients had ulceration of the tongue due to trauma, four patients had aphthous ulceration and one patients had fibrous hyperplasia of the tongue due to chronic irritation to sharp edge of attrited tooth. Only one patient presented with malignant lesion of tongue. Tongue lesions have been reported to be associated with systemic conditions such as blood disorders, diabetes, gastrointestinal diseases and der-matological diseases [6].

Many research studies have been done reporting prevalence rates of common tongue lesions in different parts of the world. But the published data vary considerably probably due to variations in diagnostic methodology, ethnicity, geographical location and gender in the studied samples. The occurrence of tongue lesions in systemic conditions usually goes unnoticed. In our study not many patients were aware of tongue changes and underlying systemic illness. Due to high prevalence of tongue lesions among general population, early identification of such lesions in preliminary phase and prompt treatment can reduce the severity of underlying pathologic condition.

We aimed to provide information on the prevalence of the most frequently encountered tongue lesions in small set of population. Further studies involving larger population is recommended.

Conclusion

The prevalence of tongue lesions among this sample of the south Indian population was 26.82%, similar to other research studies. Dental clinicians should be fully aware of clinical presentation of common tongue lesions, its association with underlying systemic conditions for early diagnosis and better management.

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