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Retrospective Review of Tongue Lesions in Agbor, Delta State, Nigeria

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Abstract

Introduction: Tongue lesions consist of abnormal alterations of color, texture, surface aspect, or loss of integrity of the tongue. The organ is associated with a wide variety of local and systemic diseases. This study was designed to determine the prevalence, pattern of presentations and distribution of various tongue lesions in Central Hospital, Agbor.
Methods: A retrospective study of records of all patients that presented with lesions of the tongue at the Dental Centre, Central Hospital, Agbor between January 2015 to December 2020 was carried out. Data collected and analysed included the age, sex, nature of lesion, site of lesion and the histopathologic diagnosis.
Results: A total of 229 patients presented with tongue lesions within the years reviewed, with 151(65.9%) males and 78(34.1%) females giving a male to female ratio of 1.9:1. Traumatic injuries of the tongue were the commonest lesions accounting for 39(17.03%) of all the cases. This was followed by coated tongue (15.3%) and squamous cell carcinoma 28(12.2%). Other lesions appeared with lesser frequencies.
Conclusion: This study revealed that tongue lesions were found among the different age groups in both males and females. These findings were not considerably different from the results of other previous studies, but it provided more information regarding tongue lesions in our locality.

Keywords: Tongue lesions, traumatic, carcinoma

Introduction

The tongue is an important mobile organ composed of muscle groups (intrinsic and extrinsic) with dorsal fibrous scaffolding of hypoglossal membrane and midline lingual septum, situated in the floor of the mouth, and can assume a variety of shapes and positions in the oral cavity [1-3]. The tongue performs a host of diverse important functions such as perception of taste, pain and thermal sensation, mastication, deglutition, suckling, phonation, maintenance of oral hygiene, protection of deeper oral structures, as well as facilitation of orofacial growth which may be affected by changes in the oral cavity or by disorders affecting the tongue impacting immensely on the patients' life [2-4]. Specialized epithelial structures, known as the papillae found on the dorsum of the tongue, makes the tongue peculiar, with many of the tongue lesions thought to arise from these papillae [4]. Also, the extreme mobility of the tongue, the attachment to the lower jaw, the rich supply of sensory nerve endings makes the tongue particularly liable to trauma and functional damage [2,4]. Tongue lesions constitute a variety of abnormal alterations of color, texture, surface aspect, swelling or loss of integrity of the tongue which are of prime concern when considering the oral and general health of an individual [5-7].

The tongue is not only the site of a wide variety of local diseases, but it also reflects the presence of a number of systemic diseases [8]. The dentist is often the first to observe these conditions; it is therefore necessary that he or she be acquainted with their diagnosis. This is particularly important because some of these

conditions can have serious consequences and the prognosis is greatly improved by early recognition and prompt treatment [8].

Majority of the lesions affecting the tongue are thought to be developmental in nature, rarely discovered by the patients and are often discovered during routine dental check-up [9]. Though they have also been shown to occur in association with other pathologic conditions and systemic diseases, many of the lesions are due to local environmental etiologic factors [10]. Hence, early diagnosis can aid in the identification of these underlying conditions.

Developing and augmenting research aptitude in public health are highly encourage and recommended by the World Health Organization for effective surveillance and control of diseases and the socioeconomic development of any given population [11]. Several epidemiological studies performed in different localities have highlighted the importance of tongue lesions especially with regards to its association with underlying systemic diseases, however review of the literature did not reveal any of such studies done in the southern part of Nigeria, and in particular Agbor, Delta state. Working with a hypothesis that a large variety of tongue lesions exist in this study population, this study was designed to determine the prevalence, pattern of presentations and distribution of various tongue lesions in a population of low social and economic status.

Methods

This retrospective study was carried out on records of all consecutive patients who attended the Dental Centre, Central Hospital, Agbor between the period of January 2015 to December 2020, and were clinically examined for the presence of various tongue lesions. Institutional ethical approval for the study was obtained prior to the commencement of the study. The study population consists of 229 patients (age range: 6 months to 85 years) attending for various oro-dental complaints. Case notes of these patients were retrieved and data collected included the age, sex, nature of lesion, site of lesion and the histopathologic diagnosis. Records of medical history, oral and general physical examinations, histopathology results (where applicable) were documented. The presence of different tongue lesions was recorded during the review of the records.

The data were compiled and subjected to statistical analysis using the statistical package for social sciences (SPSS) software version 23.0 (SPSS Inc., IL, USA). Data were tabulated and presented using descriptive statistics.

Results

All 229 patients presented with tongue lesions within the years reviewed. Males accounted for 151(65.9%) while female are 78(34.1%) giving a male to female ratio of 1.9:1. Higher number of the patients were between the ages 20-29 years and they accounted for 39(17%), followed by those in the ages 60-69 years were36(15.72%). The mean age of the patients was 38.02±21.72 years. Patients within the 1st and 5th decades of life accounted for 13.97% of them (Table 1).

Traumatic injuries to the tongue secondary to road traffic accidents were the commonest lesions accounting for 39(17.03%) of all the cases. This was followed by coated tongue (15.3%) and squamous cell carcinoma 28(12.2%). Syphilitic ulcer, varicose veins, fibroma, and dermoid cysts had the least frequency of 1 (0.43%) each (Table 2).

Squamous cell carcinoma constitutes majority of the tongue neoplasms biopsied. It accounted for 28(12.2%) and were all seen in the males. Similarly, developmental lesions and candidiasis were more frequently observed in males than in females. In contrast, coated tongue and aphthous ulcers were slightly more in females (51.4%) than in males (48.6%, Table 2).

Trauma-induced tongue lesions due to falls had its highest occurrence in children (first decade), while squamous cell carcinoma involving the tongue occurred more frequently in adult patients (5^{th} decades and above) (Table 3). All the cases of ankyloglosia presented in children (first decade of life). The presentations of the other tongue lesions according to age are shown in Table 3.

Table 1: Age and gender distribution of study population

Age group	Male n (%)	Female n (%)	Total n (%)
0 – 9 years	21 (65.6)	11 (34.4)	32 (100.0)
10 – 19 years	9 (50.0)	9 (50.0)	18 (100.0)
20 – 29 years	21 (53.8)	18 (46.2)	39 (100.0)
30 – 39 years	12 (40.0)	18 (60.0)	30 (100.0)
40 – 49 years	21 (65.6)	11 (34.4)	32 (100.0)
50 – 59 years	31 (88.6)	4 (11.4)	35 (100.0)
60 – 69 years	19 (73.1)	7 (26.9)	36 (100.0)
70 – 79 years	15 (100.0)	0 (0.0)	15 (100.0)
80 – 83 years	2 (100.0)	0 (0.0)	2 (100.0)
Total	151 (65.9)	78 (34.1)	229 (100.0)

Table 2: Prevalence and sex distribution of the various tongue lesions

Lesion sources	Male	Females	Total n (%)
Traumatic lesions			
Road traffic accident	33 (84.6)	6 (15.4)	39 (100.0)
Falls	8 (88.9)	1 (11.1)	9 (100.0)
Assault	5 (100.0)	0 (0.0)	5 (100.0)
Seizures	2 (100.0)	0 (0.0)	2 (100.0)
Eclampsia	0 (0.0)	12 (100.0)	12 (100.0)
Developmental disturbances			
Ankyloglossia	8 (66.7)	4 (33.3)	12 (100.0)
Macroglossia	5 (83.3)	1 (16.7)	6 (100.0)
Microglossia	2 (100.0)	0 (0.0)	2 (100.0)
Fissured tongue	5 (71.4)	2 (28.6)	7 (100.0)
Coated tongue	25 (63)	10(37.0)	35 (100.0)
Median rhomboid glossitis	9 (100.0)	0 (0.0)	9 (100.0)
Geographic tongue	4 (80.0)	1 (20.0)	5 (100.0)
Varicose veins	0 (0.0)	1 (100.0)	1 (100.0)
Hairy/Fur tongue	0 (0.0)	2 (100.0)	2 (100.0)
Benign neoplasms			
Papilloma	3 (100.0)	0 (0.0)	3 (100.0)
Fibroma	1 (100.0)	0 (0.0)	1 (100.0)
Malignant neoplasms			
Squamous cell carcinoma	28 (100.0)	0 (0.0)	28 (100.0)
Immunologic lesions			
Aphthous /herpetic ulcers	6 (28.6)	15 (71.4)	21 (100.0)
Depapillation	0 (0.0)	3 (100.0)	3 (100.0)
Erythema multiforme	0 (0.0)	2 (100.0)	2 (100.0)
Cystic lesions			
Mucocele	2(66.7)	1(33.3)	3(100.0)
Dermoid cyst	1 (100.0)	0 (0.0)	1 (100.0)
Infective lesions			
Candidiasis	15 (62.5)	9 (37.5)	24 (100.0)
Syphilitic ulcer	1 (100.0)	0 (0.0)	1 (100.0)
Miscellaneous			
Pyogenic granuloma	2 (100.0)	0 (0.0)	2 (100.0)
Neurological deviation due to stroke	2 (100.0)	0 (0.0)	2 (100.0)
Total	151(65.9)	78(34.1)	229 (100)

Considering the site of tongue lesions, majority of the cases involved the dorsum of the tongue 96 (42.92%) followed by multiple sites involving the dorsum, the tip and the edges,68 (29.69%) and least by lesions on the tip of the tongue only 7 (3.06%) (Table 4).

Discussion

This study has revealed that tongue lesions were found among the different age groups in both males and females. In previous studies, coated tongue [5,12,13], carcinoma of the tongue,[4] fissured tongue [14], geographic tongue [10], were reported as the most common lesions of the tongue encountered which are at variance with this present study which showed that traumatic tongue injuries (Figure 1) was most common (29.3%) and this was followed by coated tongue (15.3%) and carcinoma of the tongue (12.2%). In an Iraqi study [2], ulcers were reported to be more common, while vascular/lymphatic lesions dominated in America [15].

The prevalence of trauma in this study (29.3%) was

Figure 1: Traumatic laceration of the anterior dorsal surface/tip of the tongue

significantly higher than 12.9%, and 4.8% reported by Fomete et al [4] and Patil et al [10] respectively. The aetiologic agents of tongue trauma in this study is road traffic accidents, followed by bites due to eclamptic fits and falls in children. It is interesting to note that trauma secondary to motorbike accidents is alarmingly high in this locality where motor bike is the major means of

Table 3: Age distribution of the lesions

Lesions sources	Age groups (in years)									Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-83	
Road traffic accident	0	2	12	9	9	5	1	2	0	39
Falls	6	1	1	1	0	0	0	0	0	9
Assault	0	0	3	1	1	0	0	0	0	5
Seizures	0	1	1	0	0	0	0	0	0	2
Eclampsia	0	0	2	6	3	1	0	0	0	12
Ankyloglossia	12	0	0	0	0	0	0	0	0	12
Macroglossia	2	1	1	0	0	2	0	0	0	6
Microglossia	1	1	0	0	0	0	0	0	0	2
Fissured tongue	0	0	1	0	0	0	0	0	0	1
Coated tongue	0	0	2	4	6	8	9	6	0	35
Median rhomboid glossitis	0	0	3	2	2	2	0	0	0	1
Geographic tongue	0	0	2	2	1	0	0	0	0	5
Varicose veins	0	0	0	1	0	0	0	0	0	1
Hairy/Fur tongue	0	0	0	1	1	0	0	0	0	2
Papilloma	1	1	0	0	1	0	0	0	0	3
Fibroma	0	0	0	1	0	0	0	0	0	1
Squamous cell carcinoma	0	0	0	0	2	9	11	6	1	28
Aphthous/ herpetic ulcers	5	7	4	4	1	0	0	0	0	21
Depapillation	0	0	0	0	0	2	1	0	0	3
Erythema multiforme	0	1	0	1	0	0	0	0	0	2
Mucocele	4	2	3	0	0	0	0	0	0	9
Dermoid cyst	0	0	1	0	0	0	0	0	0	1
Candidiasis	0	1	3	3	5	3	3	5	1	24
Syphilitic ulcer	0	0	0	0	0	1	0	0	0	1
Pyogenic granuloma	0	0	0	0	1	1	0	0	0	2
Neurological deviation due to stroke	0	0	0	0	0	0	1	1	0	2

Table 4: Lesions sites

Lesions sources	Site of lesions							
	A	B	C	D	E	F	G	Total
Road traffic accident	27	1	6	5	0	0	0	39
Falls	0	0	0	0	9	0	0	9
Assault	0	2	0	1	2	0	0	5
Seizures	0	0	0	0	2	0	0	2
Eclampsia	3	3	1	0	5	0	0	12
Ankyloglossia	0	3	0	0	0	9	0	12
Macroglossia	0	0	0	0	0	0	6	6
Microglossia	0	0	0	0	0	0	2	2
Fissured tongue	0	0	0	1	0	0	0	1
Coated tongue	0	0	0	35	0	0	0	35
Median rhomboid glossitis	0	0	0	9	0	0	0	9
Geographic tongue	5	0	0	0	0	0	0	5
Varicose veins	0	0	0	1	0	0	0	1
Hairy/Fur tongue	0	0	0	2	0	0	0	2
Papilloma	0	0	0	3	0	0	0	3
Fibroma	0	0	0	1	0	0	0	1
Squamous cell carcinoma	11	0	4	8	0	6	0	28
Aphthous/herpetic ulcers	20	0	0	0	1	0	0	21
Depapillation	0	0	0	3	0	0	0	3
Erythema multiforme	2	0	0	0	0	0	0	2
Mucocele	0	0	0	0	0	9	0	9
Dermoid cyst	0	0	0	0	0	1	0	1
Candidiasis	0	0	0	24	0	0	0	24
Syphilitic ulcer	0	1	0	0	0	0	0	1
Pyogenic granuloma	0	0	0	2	0	0	0	2
Neurological deviation due to stroke	0	0	0	1	0	0	1	2
Total	68	7	11	96	19	13	9	229

A - Multiple/ Overlapping surfaces; B – Tip; C – Edge; D – Dorsum; E- Anterior 1/3rd; F – Undersurface; G - Whole tongue issue

transportation with no regulatory control and where control exists it is neither implemented nor obeyed. Therefore, effort geared toward cubing this menace should be of concern to the regulatory authorities.

Traumatic injuries to the tongue often presents as lacerations, swellings or ulcerations and are caused by physical, thermal or chemical agents, the most common cause being physical. In addition, malpositioned, fractured, or carious teeth as well as ill-fitting dental prosthesis may predispose to tongue lacerations.

Tongue laceration due to eclamptic fits in pregnant women though not commonly reported, was the second most common cause of traumatic tongue lacerations in our study. Eclampsia is onset of seizure activity or unexplained coma in a pregnant woman with pre- existing preeclampsia. Lacerations of the tongue due to biting is the major oral presentation in this condition [16]. Trauma due to fall is another cause of injury to the tongue seen in this study. This was predominant seen in male school children due to falls in the playground. Male children are very active, eager to learn new physical motions resulting in frequent falls and injuries.

Treatment is mainly by suturing the lacerations, withdrawing the causative agents, trimming of the sharp tooth edges and correcting the prosthetic devices. Soft diet is usually advised along with appropriate analgesics and warm saline mouth bath.

Coated tongue (15.3%) was the second most encountered lesion in this study, followed by carcinoma of the tongue (12.2%), candida infections (10.5%), Ulcers (9.2%), ankyloglossia (5.2%) and fissured tongue (3.1%). Fomete et al [4] in their study among a group of Nigerian population found coated tongue (19.35%) and

Patilet al [10] reported (28%) as the most prevalent tongue lesion, this study found traumatic lesions as the most prevalent lesion. The reason for traumatic tongue lesion accounting for the most prevalent cases is the high rate of motor bike accident which is very rampant in this locality.

Fissured tongue (Figure 2) was reported in 7(3.1%) patients in this present study. In a study conducted in the UAE by Patil et al [10], fissured tongue accounted for 40% of the cases, while in India, Bajarang et al [17] reported 51.7% when compared with other tongue lesions. In a Libyan population [18], fissured tongue was also reported as one of the most commonly occurring tongue lesion. These studies are contrary to our finding where fissured tongue accounted foronly3.1%. However, our study is consistent and comparable to a similar study [4] in Nigeria where they reported 3.2%.It was also noted that the prevalence of fissured tongue was low in Saudi Arabia (1.4%) [19] and the Turkish population [20].

The prevalence of fissured tongue was noted to be more common in older patients and it is thought to be due mainly to hyposalivation, vitamin deficiency, diabetes mellitus, candida infection and licheniod reactions [18].Fissured tongue and geographic tongue are often seen in Down's and Melkelson-Rosenthal syndromes, usually asymptomatic, except when the fissures are exceptionally deep and can accumulate foods increasing the risk of invasion of bacteria and candida infections predisposing to inflammation of the tongue. Treatment is usually not required other than to encourage patients to maintain good oral hygiene including regular brushing of the dorsal surface of the tongue to eliminate any food debris from the fissures [12,13,14].

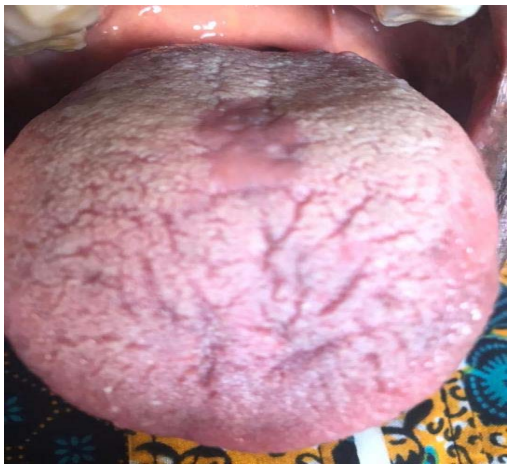

Figure 2: Fissured tongue coexisting with median rhomboid glossitis

In this present study, squamous cell carcinoma (Figure 3) of the tongue 28(12.2%) was the most common of the biopsied lesions of the tongue. The prevalence of Carcinoma of the tongue in this study was far less than 40.5% in a Nigerian study [21]. The reason is that the design of this study reviewed the clinical presentations where activities within the locality influenced the pattern of presentation as against the Nigerian study where only biopsied lesions were evaluated. It is also not in agreement with Dawazeh et al [12] who also reported higher values.

Cancer of the tongue is the second most common type of oral cancers, with about 40% found in the base of the tongue. In addition, lesions located at the base of the tongue are likely to be malignant (85%) than those located in the oral surface (20%). Again, in our study, majority of the Ca tongue were found at the base extending to involve the edges, the dorsum and the floor of the mouth. Squamous cell carcinoma constitute greater than 95% of histologically diagnosed tongue cancers and has a predilection for those 40 years and above [21]. This is consistent with our findings where squamous cell carcinoma accounted for greater than 95% of the biopsied lesions and are found in the5th decade and above.

Cancers of the tongue are a biologically distinct entity compared to those of other oral sites. It is usually more aggressive and associated with higher rate of metastasis. It starts as an indolent lesion, clinically non

Figure 3: Squamous cell carcinoma of the tongue.
Microscopy: sections of the tongue ulcerated lesion shows islands of dysplastic basaloid cells with pleomorphic, hyper chromatic and vacuolated nuclei, numerous and abnormal mitoses, foci of keratin pearls and individual cell keratinization. These are foci of central necrosis within the tumour islands in a surrounding fibrotic stroma. There are also vascular spaces, minor salivary glands, adipose tissue, and striated muscles within the stroma. There is a covering parakeratinized squamous epithelium with foci of chronic inflammatory cell infiltration in the submucosa.
Diagnosis: These are features of a malignant lesion; Basaloid squamous cell carcinoma.

active with laxity of tissues separating the intrinsic muscles, which aid cancer cells to spread easily and becoming symptomatic when tumor size interferes with the tongue function [22]. The anterior third, the lateral borders (mobile region) and the dorsum are more commonly involved. It may arise de novo or from preexisting chronic irritation from sharp tooth, preexisting premalignant lesions such leukoplakia, chronic hyperplastic candida infection, prolonged tobacco use, alcoholism and old age [21]. In our cases, the clinically suspicious irritants were prolonged smoking, alcohol intake, increasing age and candida infections. This is because majority of the patients whose lesions were biopsied are long time smokers/alcoholics. This is in agreement with several studies which reported cancers to be associated with the above risk factors [21, 23, 24]. In this study also, the age group affected by cancer of the tongue were between 40-69 years which is similar to previous studies [21, 29, 30].

Tongue ulcers especially the recurrent aphthous ulcer and the herpetic gingivostomatits were among the common findings in this study. They occurred in all ages with female gender predilection (2:1) as opposed to other studies which reported no gender predilection [2, 4]. The prevalence of ulcers was 6.5%, which is greater than 1.8% and 1.6% in Indian and Libyan studies [10, 18], but lower than 9.67% in a study from the same country [4]. Treatment of aphthous ulcers is usually symptomatic with relief of pain, rehydration, antibiotics to prevent super infection and occasional use of steroid as the mainstay.

Figure 4: Fibroma
MICROSCOPY: Sections of the tongue swelling show a covering parakeratinized stratified squamous epithelium with prominent filiform papillae. There is underlying proliferation of loose and dense fibrous connective tissue with blood vessels within the stroma. There are bundles of striated muscles in the deeper section. No evidence of malignancy.
DIAGNOSIS: These are features of REACTIVE FIBROMA.

Ankyloglossia (tongue tie), is a congenital developmental disorder that limit tongue protrusion due to abnormally short or thickened lingual frenumor high lingual frenal attachment [5,14,25,26]. The prevalence of ankyloglossia in this study was 5.24% which is higher than previously reported 0.1%-3.7% [10,26].

The prevalence of geographic tongue (migratory glossitis) in this study was 2.2% which is less than 6.8% in India,17.4% in Libya, 21% in Brazil, and 4.8% in Jordan [2, 10, 12, 13]. It is however higher than 0.6% and 1.6% reported in American and South African populations [27, 28]. Geographic tongue is associated with spontaneous remission and occasional recurrence. No treatment is required except in symptomatic cases where analgesics and topical corticosteroid may be applied [4,22].

Regarding the gender distribution, this study showed that tongue lesions were more prevalent among males (65.9%) than females (34.1%). This is consistent with Patil et al [10], Fomete et al [4], Shayeb et al [14], who reported that males presenting with greater percentage of tongue lesions. This study is however not in agreement with Byahatti et al [18] and Sura Ali Fouad [2] who reported female predominance with tongue lesions than the males.

Considering the site of presentation of the tongue lesions, the dorsum of the tongue (41.9%) followed by lesion involving multiple surfaces (29.7%), accounted for greater majority of the lesions in this study. The dorsum of the tongue is peculiar in that it contains a number of specialized epithelial structures, (the papillae) with many of the tongue lesions thought to arise from these papillae [4]. The tongue also being a highly mobile organ is easily prone to trauma involving multiple surfaces [3].

Conclusion

The findings of this study were not considerably different from the results of other previous studies, but it provided more information regarding tongue lesions in our locality. The presence of a variety of tongue lesions in this study underscores the importance of thorough clinical assessment.

List of abbreviations

Not applicable

Declarations

Ethics approval and consent to participate

None provided

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

No conflict of interest associated with this work.

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Contribution of Authors

We declare that this work was done by the authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors. Both authors contributed equally to the conceptualization, design, data collection and analysis, and approved the article for publication.

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