

A retrospective histopathological review of oral squamous cell carcinoma in a Nigerian teaching hospital

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Summary

This study was undertaken to describe the demographic pattern of oral squamous cell carcinoma (OSCC) in Ibadan, Nigeria and compare our findings with that of other countries. It involved a retrospective review of OSCC diagnosed at the University College Hospital Ibadan, Nigeria between 1990 and 2008. A review of studies from other countries was done with respect to the three most frequently affected sites by OSCC, as well as mean ages and gender ratios. OSCC comprised 181 (43.7%) of the 414 malignant neoplasms diagnosed in the oral cavity within the study period. The most frequently affected sites were the maxillary gingiva (24.9%) and mandibular gingiva (21.5%). There was a slight male preponderance; with a male to female ratio of 1.2:1. The peak age was in the eighth decade of life. About 17.7% of cases were diagnosed in patients below the age of 40 years and 1.1% of cases occurred in children. Worldwide, the tongue is the most frequently affected site by squamous cell carcinoma followed by the floor of the mouth. Males are also more frequently affected. In conclusion, OSCC remains an important cause of morbidity and mortality among middle aged individuals in our environment and worldwide, but sometimes affecting younger individuals.

Keywords: *Oral, cancer, squamous, carcinoma, Nigeria*

Résumé

Cette étude était faite pour décrire la fréquence démographique des carcinomes des cellules squameuses orales (OSCC) à Ibadan, Nigeria et de comparer nos résultats à ceux d'autres pays. Ceci impliquait une revue rétrospective des OSCC diagnostiqués au Centre Universitaire Hospitalier, Ibadan, Nigeria entre 1990 - 2008. La revue des études d'autres pays était faite par

rapport a trois fréquent sites des OSCC, comme moyennes d'âges et la proportion des genres. OSCC était constitué 181 (43.7%) des 414 de néoplasmes malignes diagnostiqués dans la cavité orale pendant cette période. Les sites les plus fréquemment affectés étaient la gingivite maxillaire (24.9%) et gingivite mandibulaire (21.5%). Il y avait une légère prépondérance masculine avec un ratio male: femelle de 1.2:1. Le sommet de l'âge était de quatre vingt ans de vie. Environ 17.7% des cas étaient diagnostiqués chez les patients de moins de 40 ans et 1.1% des cas chez les enfants. Globalement, La langue était le site la plus fréquemment affectée par le carcinome des cellules squameuses suivie de la partie inférieure dans la bouche. Les garçons sont plus fréquemment affectés. En conclusion, OSCC reste une cause importante de la souffrance et la mortalité dans la classe moyenne des individus dans notre environnement et mondiale, mais souvent affecte les plus jeunes.

Introduction

Head and neck cancer, of which oral squamous cell carcinoma (OSCC) constitutes a significant proportion, is one of the most devastating diseases in man. This is partly due to the conspicuous cosmetic disfigurement of cancers in the region, especially in advanced stages of the disease, as well as the many important functions this region sub serves [1]. For example, the cancers of the oral cavity can lead to poor phonation, drooling of saliva, difficult deglutition, amongst other problems that often lead to social isolation, considerable emotional stress and reduced quality of life [1]. OSCC still constitutes an enormous health problem worldwide despite great advances in medical science. Diverse factors ranging from ultraviolet radiation to oncogenic viruses, dietary deficiencies, genetic predisposition, immunodeficiency states and habits such as chronic alcohol and tobacco use have been associated with its aetiology [2,3]. Epidemiological evidence points to the fact that these predisposing factors may vary from one geographic region to the other as well as from site to

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site within the oral cavity and probably with age. For instance, Human papilloma virus infection is associated with squamous cell carcinoma (SCC) of the tonsils and base of the tongue than SCC of other sites within the oral cavity [3]. In addition, epidemiological studies have not found a strong association between OSCC in patients younger than 40 years of age and chronic use of tobacco or alcohol which are the two most important risk factors [4]. This study aims to describe the demographic pattern of OSCC histopathologically diagnosed at the Departments of Oral Pathology and Pathology of the University College Hospital, Ibadan, Nigeria between 1990 and 2008 and to compare our findings with those of other countries.

Materials and method

A retrospective review of the records and files of the departments of Oral Pathology and Pathology of the University College Hospital Ibadan, Nigeria between 1990 and 2008 to determine the total number of head and neck cancer diagnosed in the period. The surgical day books and surgical pathology request forms of patients with a histological diagnosis of OSCC were retrieved to determine patients' age at diagnosis, gender and primary site of lesion. For the purpose of this study, the oral cavity was defined as the area that extends from the lips to the anterior pillars of the fauces. This consists of the lips, tongue, buccal mucosa, gingivae, palate and floor of the mouth. Tumours of the oropharynx, nasopharynx, tonsils, antrum and the major salivary glands were excluded [5]. Patients aged <15 years were

categorized as children; those aged 15-39 years were categorized as young adults and those ≥ 40 years were categorized as adults [6,7].

The data obtained in the present study was also compared with that from previous studies in Nigeria and other countries, with respect to the three most frequently affected sites by OSCC, mean ages and gender ratios. For the purpose of uniformity, comparisons between the present study and other studies were only made after excluding sites such as the tonsil, oropharynx or pharynx that were not included in the present study.

The statistical significance of differences for categorical data was evaluated using the Chi-squared test. A p value of $\leq 5\%$ was considered to be statistically significant. The Student's t test was used to compare the mean ages of different groups of patients. All analyses were conducted using SPSS Version 16.0.

Results

Oral malignant lesions constituted a total of 414 cases (30.5%) of all the 1356 head and neck malignancies seen during the study period; of this number, oral squamous cell carcinomas comprised 181 (13.3%) of all head and neck cancers and 43.7% of oral cancers, as shown in Table 1.

The age range was from 9 to 108 years with a peak age of occurrence in the eighth decade of life and a male to female ratio of 1.2:1. Figure 1 shows the age and gender distribution of patients with OSCC. The mean age of the patients was 55.9 ± 17 years. The mean

Table 1: Summary of histological types of oral cancers and their gender distribution

Histological Subtypes	Male	Female	Total	Percent
<i>Epithelial malignancies</i>	143	127	270	65.2
Squamous cell carcinoma	98	83	181	43.7
Adenoid cystic carcinoma	21	22	43	10.3
Mucoepidermoid carcinoma	8	8	16	3.9
Ameloblastic carcinoma	4	2	6	1.4
Other carcinomas	12	12	24	5.8
<i>Connective tissue malignancies</i>	34	27	61	14.7
Osteogenic sarcoma	16	19	35	8.5
Rhabdomyosarcoma	10	5	15	3.6
Other sarcomas	8	3	11	2.7
<i>Haematopoietic malignancies</i>	51	32	83	20.0
Burkitt's lymphoma	36	18	54	13.0
Other non-Hodgkin's lymphoma	14	11	25	6.0
Other haematopoietic lymphomas	1	3	4	0.009
Total (%)	228(55.1)	186(44.9)	414	100.0

Table 2: Site, age and gender distribution of oral squamous cell carcinoma

Site	Mean Age	Male	Female	Total	Percent
Maxillary gingiva	54.00±16.47	24	21	45	24.9
Mandibular gingiva	59.67±15.03	21	18	39	21.5
Palate	51.72±16.89	23	13	36	19.9
Tongue	60.18±14.09	17	11	28	15.5
Cheek	54.38±24.79	5	11	16	8.8
Lip	53.33±23.14	3	6	9	5.0
Floor	56.63±12.65	5	3	8	4.4
Total	55.87±17.02	98	83	181	100.0

Table 3: Site distribution of oral squamous cell carcinoma in patients less than and greater than 40 years of age

Site	Age <40 years No (%)	Age >40 years No (%)	Total No (%)
Tongue	2 (6.3)	26 (17.4)	28 (15.5)
Floor	1 (3.1)	7 (4.7)	8 (4.4)
Cheek	3 (9.4)	13 (8.7)	16 (8.8)
Palate	10 (31.3)	26 (17.4)	36 (19.9)
Lip	3 (9.4)	6 (4.0)	9 (5.0)
Mandibular gingiva	5 (15.6)	34 (22.8)	39 (21.5)
Maxillary gingiva	8 (25.0)	37 (24.8)	45 (24.9)
Total	32 (100.0)	149 (100.0)	181 (100.0)

Table 4: Three most common sites of oral squamous cell carcinoma in studies from different countries

Country	Most common site (%)	2 nd most common site (%)	3 rd most common site (%)	M:F	Mean age years
Korea ¹⁶	Tongue (20.4)	Floor (13.2)	Palate (12.3)	3:1	56
Kenya ²⁰	Tongue (20.1)	Floor (18.4)	Cheek (18.4)	1.5:1	53.7
Nigeria ¹⁴	Tongue (40.2)	Palate (23.9)	Lips (20.5)	1.7:1	48
Brazil ¹⁸	Tongue (31.1)	Floor (19.5)	Gingiva (18.8)	4.8:1	58.6
USA ¹⁷	Tongue (30.2)	Floor (28.1)	Gingiva (25)	1.1:1	63.3
Nigeria ¹⁹	Gingiva (54.9)	Tongue (17.6)	Cheek (13.3)	1.4:1	45.3
Thailand ²⁶	Tongue (42.8)	Cheek (16.0)	Floor (10.4)	1.3:1	*
Taiwan ¹¹	Cheek (37.4)	Tongue (20.9)	Alveolus (11.9)	15:1	*
Zimbabwe ¹²	Gingiva (27.6)	Tongue (18.0)	Floor (16.0)	2:1	*
Congo ³⁰	Tongue (24.1)	Palate (20.4)	Lip (16.9)	*	*

*information not available in the study

age (54.72±15.46 years) for male OSCC patients was slightly lower than the females (57.22±18.71 years), but the difference was not statistically significant ($t = -0.981$, $df = 179$, $p = 0.328$).

Table 2 shows the site distribution and mean ages of patients with SCC at these different sites within the oral cavity. The most common sites were the

maxillary gingiva (24.9%), mandibular gingiva (21.5%) and the palate (19.9%). The mean ages were least for tumours of the palate and lip, and greatest for tumours of the tongue and mandibular gingiva. However, there was no statistically significant difference in the mean ages of patients with SCC of various intraoral sites in this study.

Among patients whose age was less than 40 years, the palate (31.2%), maxillary gingiva (25%) and mandibular gingiva (15.6%) were the most common sites of OSCC (Table 3). In patients aged 40 years and above, the maxillary gingiva (24.8%), mandibular gingiva (22.8%), tongue (17.4%) and palate (17.4%) were the commonest sites.

Two (1.1%) cases of OSCC were diagnosed in the paediatric age group in female patients aged nine and eleven years respectively, involving the buccal mucosa and the maxillary gingiva respectively (Figure 1).

A male preponderance for most sites was observed, apart from the cheek and lip which showed a female preponderance. However, in patients below 40 years of age, there was a female preponderance for the maxillary gingiva. Thirty two (17.7%) cases of OSCC were diagnosed in patients below the age of 40 years. (Figure 1)

diagnosed in the oral cavity, which agrees with an earlier study from our centre by Arotiba *et al*, which found 42.8% [5]. In other studies by Daramola *et al* [14] from Nigeria, and Chidzonga and Mahomva [12] from Zimbabwe, OSCC constituted over 70% of all malignant diseases in the oral cavity.

Traditionally, OSCC is believed to be a disease of elderly men. There was only a slight male preponderance and the mean age was 56 years, but the peak age of occurrence was the eighth decade of life [11,15]. An analysis of several studies from different parts of the world indicates that the mean ages of affected patients range from 45.3 to 63.3 years (Table 4) [14,16-20].

The male preponderance for OSCC has been attributed to males indulging in chronic use of tobacco and alcohol more than females [21]. However, studies in different parts of the world have observed an increase

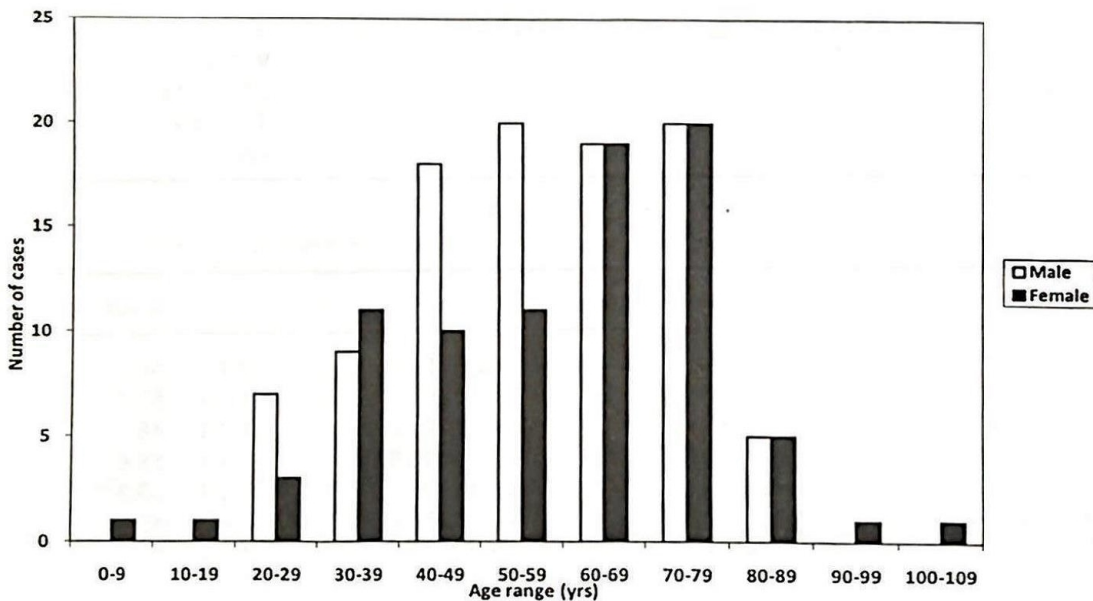


Fig.1: Age and sex distribution of the cases of oral squamous cell carcinoma

Discussion

The prevalence of OSCC varies greatly from one part of the world to the other ranging from about 1-2% of all cancers in Sweden and the United States of America to about 40% in India, largely due to differences in life style and habit [3,8,9,10].

OSCC is believed to account for between 90% and 95% of oral cancers [11,12,13]. In this study, it accounted for only 43.7% of all malignant neoplasms

in the incidence of OSCC due to increase in the number of females involved in these risk habits [22,24]. The prevalence of chronic use of alcohol and tobacco amongst the patients retrospectively studied could not be assessed due to lack of data concerning these habits for many of the patients.

The most frequently affected site in this study was the maxillary gingiva while several other studies (Table 4) found the tongue and floor of the mouth to be the most frequently affected sites [9,16,25] 0 further corroborated

by a Zimbabwean study which showed that about 50% of those diagnosed with SCC of the lip were albinos [12]

The peak age of OSCC at the time of diagnosis was the eighth decade of life, which agrees with the findings of Effiom *et al*, who also observed a peak in this age group [19]. The incidence of OSCC is known to increase with increase in age [9]. The sharp drop in the incidence of OSCC after the eighth decade observed in this study may be as a result of the low life expectancy in Nigeria and not necessarily a decreased susceptibility to the disease amongst the elderly in Nigeria [27].

The risk factors for OSCC in patients below the age of 40 years are poorly understood and the possibility of genetic instability has been queried, as well as an inherited inability to repair DNA damage [26]. Oral squamous cell carcinoma is rare in patients below 40 years of life, accounting for only about 4 - 7% of cases [6,26]. The 17.7% seen in this study is similar to that found by Chidzonga and Mahomva, in Zimbabwe (19.1%) [12]. About 10% of OSCC were diagnosed in patients below 40 years of age in the study by Dimba *et al*, amongst the Kenyans [20]. These African figures are much higher than findings in developed countries. This disparity is most likely due to the lower life expectancy in Africa as compared to developed countries [27]. Oral squamous cell carcinoma is infrequently seen in the paediatric age group [28,29]. In this study only two cases (1.1%) were diagnosed in female patients in the paediatric age group during period under review.

In conclusion, oral squamous cell carcinoma constitutes an important cause of mortality and morbidity in Nigeria despite constituting a much lower percentage of all oral cancers compared to developed parts of the world. The predisposing factors for oral squamous cell carcinoma amongst Nigerians have not been sufficiently studied. Identifying the risk factors may play an important role in reducing the incidence of the disease amongst Nigerians.

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