Primary Orofacial Squamous Cell Carcinoma: A Multicenter Nigerian Study

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Citation

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Abstract

BACKGROUND: Previous Nigerian reports of primary orofacial squamous cell carcinoma have focused on individual center experiences; hence we decided to undertake a review of cases in order to give a fairly national overview.

METHODS: Multicenter retrospective study of 149 histologically diagnosed cases of primary orofacial squamous cell carcinoma seen between 1992-2001 in 3 Nigerian Teaching Hospitals

RESULTS: The patients' (85 males (57%) and 64 (43%) females.) whose ages ranged from 11-91years (mean ± SD; 54 ± 15.5 years, median 52.5 years) constituted 78.7% of all orofacial malignancies seen within the study period. Lesions were of 8-67 weeks duration (mean ± SD 28.6± 15.1 weeks, median 24 weeks). Overall, the maxillary antrum (20.3%) was the most commonest site, while intraorally; the alveolus (29.6%) and palate (12.4%) predominated. Most lesions (65.8%) were well-differentiated and only 35.6% showed individual cell keratinization. Patients with well-differentiated lesions had a comparatively higher mean age than their counterparts with other histological varieties and this was statistically significant ($P < 0.05$). About 45.6% presented with stages III and IV disease, and significant difference was found between duration of the lesions and clinical staging of disease ($P < 0.05$). Surgery in conjunction with radiotherapy was undertaken for 36.9% of the cases, followed by surgery alone in 14.4%. Close to a quarter (24.2%) either declined or failed to turn-up for treatment. Whereas treatment was found to be successful in 13.4% of the cases, failure to attend follow-up appointment was observed in 62.4%.

CONCLUSIONS: The pattern of orofacial squamous cell carcinoma differs from that of industrialized countries and since the majority of the lesions were well differentiated, there is need for intensive oral health awareness to encourage early presentation, as this will further enhance prognosis.

INTRODUCTION

Squamous cell carcinoma of the orofacial region is an insidious and potentially life threatening malignant epithelial neoplasm representing more than 90% of all head and neck cancers[1 2,3]. Studies have shown that the incidence of orofacial squamous cell carcinoma varies significantly among the continents and within industrialized and developing nations [1, 2]. In Brazil and other developing countries, orofacial cancer accounts for 35% of all malignancies. while iIn the United States, it constitutes about 4% of all malignancies or 17 per 100,000 persons with newly diagnosed squamous cell carcinoma of the head and neck per year [3, 4].

Men are affected twice as often as women and in most instances, affected individuals are older than 45 years of age [1, 4, 5]. However, worldwide statistics show that squamous cell carcinoma of the oral and oropharyngeal mucosa represents the sixth most common site of cancer amongst males and females[6].

Although several etiological agents have been implicated, alcohol consumption and tobacco smoking remains the most important risk factors for orofacial squamous cell carcinoma. The risk is cummulative and is 15 times greater than in those who neither smoke nor drink. Furthermore, about 90% of oral cancers and 80% of larynx cancers have been attributed to these habits [7, 8].

Previous Nigerian reports have focused on individual center experiences with incidence figures ranging from 40% to 84% [9,10,11]; hence we decided to undertake a multicenter retrospective analysis in order to present a fairly national overview.

PATIENTS AND METHODS

A retrospective analysis of all histologically diagnosed cases of primary orofacial squamous cell carcinoma seen between January 1992 and December 2001 in the maxillofacial Units of three referral hospitals (University of Maiduguri Teaching Hospital, Maiduguri, Ahmadu Bello University Teaching Hospital, Kaduna and Obafemi Awolowo University Teaching Hospital, Ile-Ife) located in the North East, North Central and South West of Nigeria was undertaken. Data such as patients' demographics, duration of lesion, clinical and , radiographic characteristics, and histopathologic features, treatment and outcome including complications were obtained from the case records and histopathologic reports in the cancer registries of these institutions.

In the present study orofacial cancer was anatomically defined as squamous cell carcinoma affecting the lips, tongue, gingiva, floor of the mouth, buccal mucosa, palate, alveolus, mandible, maxilla, facial skin, tonsils, nasopharynx, retromolar region and antrum. These are specified in the International Classification of Disease for Oncology (ICD) [12] as codes 140, 141, 143, 144, 145, 146, 147 and 160. Excluded were cases from the major salivary glands (ICD 142) and reticuloendothelial system. In addition, clinical staging of the cases was done using the American Joint Committee for Cancer (AJCC) Staging and End Result Reporting System [13]. Treatment was classified as successful if patients' were clinically free from disease at least 24 months after completion of therapy.

Data were analyzed using descriptive statistics, chi-square test and student's t tests. Significance levels were inferred at P levels less than 0.05.

RESULTS

During the study period 149 patients with primary squamous cell carcinoma whose ages ranged from 11-91years (mean ± SD; 54 ± 15.5 years, median 52.5 years) constituted 78.7% of all orofacial malignancies seen. The frequency of cases was more in males (57%) than females (43%), however no statistically significant difference was established ($P > 0.05$). Patients' in the 5th and 6th decades accounted for 50.9% of cases and the duration of all lesions ranged from 8 to 67 weeks (mean ± SD 28.6± 15.1 weeks, median 24 weeks). In addition, females presented earlier than their male counterparts and this was found to be statistically significant ($P < 0.05$).

Table 1 shows the distribution of cases according to the primary site of lesion. Overall, the maxillary antrum (20.3%), apart from being the most commonest common site, was also the most common extra oral location of squamous cell carcinoma. Similarly, the predominant intra oral sites were the alveolus (19.6%) and palate (12.4%). The lips and buccal mucosa recorded fifteen (9.8%) and two (1.3%) cases respectively.

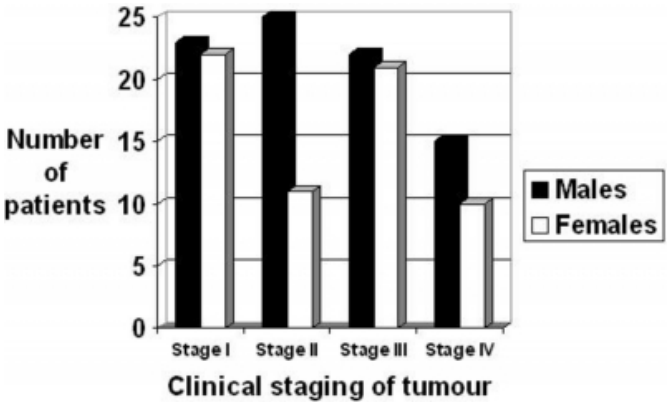
Figure 1

Table 1: Distribution of patients according to primary site of lesion

Site	Number of patients		Total (%)
	Males	Females	
Antrum	15	16	31 (20.3)
Alveolus	18	12	30 (19.6)
Palate	9	10	19 (12.4)
Tongue	9	5	14 (9.2)
Lips	6	9	15 (9.8)
Nasopharynx	12	3	15 (9.8)
Forehead	3	1	4 (2.6)
Gingiva	5	4	9 (5.9)
Buccal mucosa	1	1	2 (1.3)
Floor of the mouth	6	3	9 (5.9)
Tonsil	1	0	1 (0.7)
Total	85	64	149 (100)

Figure 2

Figure 1: Distribution of cases accordnig to tumour staging



Although majority of the patients had stage I disease (30.2%) at presentation, 45.6% presented with stages III and IV (Fig 1). There was no statistically significant difference in the clinical staging of both sexes ($X^2 = 3.6$, df = 3, P = 0.31) but a significant relationship was established between the duration of lesions and clinical staging of the disease (df = 3, f =24.3, P< 0.05). Evidence of regional or distant metastasis was observed in 61 cases (40.5%) with the submandibular and supraclavicular nodes recording 28.2% and 8.1% respectively.

Table 2 shows the distribution of patients according to the location of their lesions and histologic differentiation. Overall, a preponderance of well-differentiated (65.8%) lesions were observed followed by those with poor differentiation (18.8%) while 34.6% showed individual cell keratinization. Patients with well-differentiated lesions had a comparatively higher mean age than their counterparts with other histological varieties and this was statistically significant (df = 3, f = 7.79, P < 0.05).

Figure 3

Table 2: Distribution of patients according to site and histologic differentiation

Site	Number of patients (%)	Histologic differentiation			
		Well	moderate	poor	undifferentiated
Antrum	31 (20.3)	11	11	9	0
Alveolus	30 (19.6)	23	3	4	0
Palate	19 (12.4)	14	2	2	1
Tongue	14 (9.2)	10	1	3	0
Lips	15 (9.8)	11	2	2	0
Nasopharynx	15 (9.8)	10	0	5	0
Forehead	4 (2.6)	2	0	2	0
Gingiva	9 (5.9)	7	2	0	0
Buccal mucosa	2 (1.3)	2	0	0	0
Floor of the mouth	9 (5.9)	7	1	1	0
Tonsil	1(0.7)	1	0	0	0
Total (%)	**149 (100)**	**98 (65.5)**	**22(14.8)**	**28(18.8)**	**1 (0.7)**

Of the 149 patients, various treatment modalities were instituted in 113 (75.8%) and the remaining 36 (24.2%) either declined or failed to turn-up for treatment (Table 3). Surgery in conjunction with radiotherapy was undertaken in 55 cases (36.9%), followed by surgery (14.8%), radiotherapy (10.1%) and chemotherapy (7.4%), respectively. Whereas treatment was found to be successful in 20 cases (13.4%), 28 (18.8%) had clinical evidence of recurrence while failure to attend follow-up appointment was observed in 62.4%. There was no statistically significant difference in the recurrence rate for the different treatment modalities ($X^2 = 0.31$, df = 2, P = 0.86). Furthermore, the clinical staging of the disease at presentation had a statistically significant influence on both the rate of recurrence and success of treatment (Table 4). Eight patients (5.4%) died during the study period.

Figure 4

Table 3: Distribution of patients according to treatment given and their outcome

Treatment	Outcome				
	Successful	recurrence	lost to follow-up	died	Total (%)
Surgery	8	6	7	1	22 (14.8)
Chemotherapy	0	3	6	2	11 (7.4)
Radiotherapy	0	4	10	1	15 (10.1)
Surgery plus chemotherapy	2	3	5	0	10 (6.7)
Surgery plus radiotherapy	10	12	30	3	55 (36.9)
No treatment	0	0	35	1	36 (24.2)
Total (%)	**20 (13.4)**	**28 (18.8)**	**93 (62.4)**	**8 (5.4)**	**149 (100)**

Figure 5

Table 4: Analysis of the relationship between clinical staging and success or recurrence of lesions in 113 patients.

Clinical staging	Stages I & II	Stages III & IV	*P* - value
Number of patients	70	43	
Successful	17	3	0.01
Recurrence	11	17	0.03

DISCUSSION

Although previous reports have described oral cancer as relatively rare in Africa, recent investigations have consistently demonstrated that it remains the most frequently occurring malignant neoplasm of the orofacial tissues [7, 9,14,15,16]. This is consistent with the findings of the present survey. Similarly the incidence figure obtained falls within the range quoted from other Nigerian studies [9, 11, 14].

The male: female distribution (1: 1.3) is comparable with other studies [4, 8,9,10, 17, 18] but much lower than those of the Brazilian and Greek series[1, 19]. It is noteworthy that amongst the Indian population of South Africa, Van Wyk et al[20] observed a higher female incidence, a factor attributed to their habit of chewing areca nut.

Incidentally, it is generally believed in this locality that all cancers including those of the orofacial region affect mostly the elderly with sporadic occurrence before the third decade of life. Both the mean (54 years) and peak age (5th and 6th decades) incidence obtained in this series not only contradicts such insinuations but corroborates the findings of Oliver et al[4], Gervasio et al[1], and Arotiba et al[21] even though lower than the figures reported by krutchkoff et al[3] and Summerlin[22]. Our lower mean age apparently corresponds to the average life expectancy of Nigerians.

The results of several studies has shown that late presentation is a common phenomenon as far as orofacial diseases are concerned in most developing countries and the picture from this report further substantiates suchsupports these claims. Though reasons and solutions have been proffered to stem this trend [9, 10, 14,21], their impact on the oral health status of the communities where these patients come from are yet to be fully appreciated. Hence clinicians and health care planners need to compliment one another and intensify efforts in mapping out strategies for effective oral cancer screening and health awareness programmes.

Opinions are divergent on the site predilection of orofacial cancer due to differences in the anatomic and histological classification by various workers. While some[1, 3,4,17,23] have shown that the most common sites for squamous cell carcinoma in order of frequency are the lips, tongue, floor of the mouth and gingiva with the lips accounting for about 98% in some instances, others[9, 10,14,21] reveal a preponderance of palatal, tongue and alveolus lesions. However, despite these differences, our results compare favorably with the latter reports. The penchant for the lips has been ascribed to ultra violet ray exposure especially in outdoor workers.

An analysis of the histological profile revealed that well differentiated lesions predominated. This sharply contrasts the higher prevalence of moderately differentiated lesions derived from the Connecticut Tumour Registry [2] but supports the observations of other investigators [3, 10,21]. Krutchkoff et al [3] apparently attributed this discrepancy to the subjective nature of histopathological characterization. In agreement with the findings of Willen et al [25] and Anneroth et al [26] no correlation was demonstrated in the present study between the histologic varieties and clinical gradings of the squamous cell lesions. The fact that patients with well differentiated lesions presented with a relatively higher mean age when compared to other histological types also supports the results of Odukoya et al [10].

Over the years the goals of treatment for orofacial cancer consist of removal of cancer load, maintenance of quality of life and prevention of recurrence through conventional treatment modalities like surgery, radiotherapy, chemotherapy or combinations of these via a multidisciplinary approach [27,28,29]. The recent introduction

of photosensitizers, interstitial laser, imunotherapy and gene therapy offers future hope of better prognosis for patients afflicted with this disease [27,28]. For instance, laser photothermal ablation may offer a better alternative to surgery for palliative treatment because of its tissue-sparing access, the possibility of repeated treatment, and experimental evidence suggesting lower recurrence at tumour margins compared with surgery. However, radical surgical resection remains the golden standard and this was employed alone or in combination with other treatment modalities in our series. Apart from lack of infrastructures and equipments, the potentially high cost of treatment makes the aforementioned modalities unattractive in our locality. Of particular note is the considerable number of patients who either declined or failed to turn up for treatment as a result of financial constraints, sociocultural and religious beliefs culminating in the patronage of unorthodox practitioners.

CONCLUSIONS

In conclusion, the pattern of orofacial squamous cell carcinoma differs from that of industrialized countries and since majority of the lesions were well differentiated, there is need for intensive oral health awareness to encourage early presentation, as this will further enhance prognosis.

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