

Intraoral carcinoma in Nigeria: a review of 137 cases

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Summary

Carcinoma of the oral cavity occurring in Africans is poorly documented. Although oral cancer is considered rare in Africa approximately 40 cases of intraoral carcinoma are seen yearly at the Maxillofacial Clinic, Kaduna. This paper reviews 137 cases of malignant disease in the oral cavity and compares the results with previously published literature. Tumours of the major salivary glands and carcinoma that could clearly be shown to originate from the antral mucosa are not included in this series. Lesions of the palate, alveolar ridge and the oral vestibule, all of which appeared to have arisen primarily from the oral mucosa, predominated. A relatively low incidence of carcinoma of the lip and tongue was recorded. The patients were considerably younger than those reported in comparable series from Europe and America.

Introduction

The data for this report were gathered from a retrospective study of more than 200 oral malignancies seen and treated at the Maxillofacial Clinic, Department of Dental Surgery of the Ahmadu Bello University Hospital, Kaduna. Only cases submitted for histopathological diagnosis to the Department of Dental Science of the Royal College of Surgeons of England are included in this paper. Cases diagnosed elsewhere were excluded. Most of the cases referred to in this report (96 out of 137) were first diagnosed from 1980 onwards. The data collected include age, sex, site, histological type, treatment and prognosis.

ABU Hospital at Kaduna serves the ten northern states of Nigeria, the population of which is approximately 44 million. The mean number of patients seen annually (1981, 1982 and 1983) was approximately 169 000, of which the mean number attending the Oral and Maxillofacial Clinic was 2123. Table I shows the age distribution of these patients in the year 1983.

Data collected

AGE DISTRIBUTION

Table II shows the ages of the patients in this series at the time when the diagnosis was made. There was a wide distribution, ranging from 22 to 80 years (mean 45 years). More than half the patients (~62%) were in the 4th and 5th

TABLE I Age distribution of patients seen in MFU in 1983

Age group	No.	%
0-10	691	23.8
11-20	523	18.0
21-30	1012	34.8
31-40	427	14.7
41-50	148	5.1
51-60	71	2.4
61-70	27	0.9
71-80	4	0.1
81-90	5	0.2
Total	2908	100.00

TABLE II Age and sex distribution of 137 cases of intra-oral carcinoma

Age group	Male		Female		Total	
	No	(%)	No	(%)	No	(%)
0-10	—	—	—	—	—	—
11-20	—	—	—	—	—	—
21-30	13	(9.5)	8	(5.8)	21	(15.3)
31-40	33	(24.1)	11	(8.0)	44	(32.1)
41-50	26	(19.0)	15	(10.9)	41	(29.9)
51-60	10	(7.3)	8	(5.8)	18	(13.1)
61-70	6	(4.4)	2	(1.5)	8	(5.8)
71-80	4	(2.9)	1	(0.7)	5	(3.6)
Total	92	(67.2)	45	(32.8)	137	

decades of life. Approximately three fourths (~77%) were 50 years or younger.

Sex The incidence of oral malignancy was greater in males than in females. Of the 137 patients in this survey, 92 (~67%) were males and 45 (~33%) were females, a male to female ratio of 2:1.

SITE DISTRIBUTION

The sites included in this series (based on the WHO International Classification of Diseases) comprise the vermilion lip (ICD 140), the tongue (ICD 141), the gingivae (ICD 143), floor of mouth (ICD 144), other parts of the mouth (ICD 145) and the nasopharynx (ICD 147) (Table

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TABLE III Site distribution of 137 cases of intra-oral carcinoma

Site of origin (ICD classification)	Male		Female		Total	
	No	(%)	No	(%)	No	(%)
Lip (ICD 140)	7	(5.1)	3	(2.2)	10	(7.3)
Tongue (ICD 141)	5	(3.6)	0	—	5	(3.6)
Gingiva (ICD 143)	5	(3.6)	5	(3.6)	10	(7.3)
Floor of mouth (ICD 144)	4	(2.9)	4	(2.9)	8	(5.8)
Other Oral Mucosa (ICD 145)	61	(44.5)	28	(20.4)	89	(65.0)
Nasopharynx (ICD 147)	10	(7.3)	5	(3.6)	15	(10.9)
Total	92	(67.2)	45	(32.8)	137	

III). The latter fall mainly into the subdivision 147.3, viz the nasopharyngeal surface of the palate; this site is included because such tumours often appear to be oral in origin, as indeed may primary tumours of the antrum, but in the case of nasopharyngeal carcinoma microscopic features are sufficiently distinctive to assist the identification of their origin. The series does not include tumours of the major salivary glands or those that could be unequivocally classified as antral in origin. As most of the tumours had reached an advanced stage by the time they were first seen, several sites were involved and the exact origin could not always be determined with certainty. For this reason in some lesions affecting the palate, maxillary alveolus, buccal mucosa and buccal sulcus, the possibility of an antral origin cannot be entirely excluded. However distinctive histological features, such as transitional cell carcinomas, were taken as sufficiently strong evidence in association with a compatible clinical description to exclude six tumours from this series during the final stage of reviewing the material.

HISTOLOGICAL TYPES

As shown in Table IV, squamous cell carcinoma was by far the commonest malignant tumour seen in this series comprising 57.7% of the total. Most of these were moderately or well differentiated, this classification being based on the presence of recognisable intercellular bridges (prickle cells) as well as keratin pearls, an abundance of the latter being the principal criterion for the "well differentiated" category. The presence of keratin pearls, however sparse, excluded lesions from the 'poorly differentiated' category (16.1%) and in the most anaplastic of these it was sometimes difficult to identify rudimentary prickle cells. An attempt to correlate age with histological grading of carcinomas revealed a trend towards greater differentiation in the older age groups, the mean age of 79 patients with differentiated carcinomas being 47.9 years against a mean of 38.3 years in 22 patients with tumours classified as poorly differentiated. Thirteen of the latter tumours were nasopharyngeal carcinoma and their mean age was slightly more than that of the poorly differentiated group as a whole—40.8 years.

The three verrucous carcinomas occurred on the lower lip, the labial mucosa and the palate respectively. The two female patients were sixty years old and the male was fifty. These could be considered unusual sites and a somewhat early age for verrucous carcinoma in Britain.

Two thirds of the carcinomas of glandular origin, comprising approximately 24% of the series, were located in the palate. They were of four types—predominantly adenocarcinoma and adenocystic carcinoma. Although it is widely recognized that mucoepidermoid tumours of salivary glands are not always malignant, the eight cases included in this series all exhibited features associated with either frank malignancy or a tendency in that direction. One of the pleomorphic adenomas in which malignant transformation had occurred was in a male aged 65 and the other in a 37 year old female; both were palatal in origin.

TABLE IV Histological types of 137 cases of intra-oral carcinoma

Lesion	Male		Female		Total	
	No	(%)	No	(%)	No	(%)
Squamous cell carcinoma	55		24		79	(57.7)
Verrucous carcinoma	1		2		3	(2.2)
Adenocarcinoma	8		4		12	(8.8)
Adenocystic carcinoma	7		4		11	(8.0)
Mucoepidermoid carcinoma	5		3		8	(5.8)
Carcinoma in pleomorphic adenoma	1		1		2	(1.5)
Poorly differentiated carcinoma	15		7		22	(16.1)
Total	92		45		137	(100)

TREATMENT AND PROGNOSIS

Surgery was the only form of treatment available, but when first seen approximately two thirds of the lesions were already too extensive to allow for surgical removal. When possible, measures used included resections of the maxilla, mandible, lip, tongue and cheek depending on the site of involvement and, where appropriate, reconstruction of soft tissue defects was carried out. Radical neck dissection was undertaken when palpable nodes were present. As most of the lesions were advanced, the results of surgery were for the most part disappointing. More than half the cases of resection of the maxilla returned with inoperable recurrences. However, good results were obtained from resections of carcinomas of the lip even though involvement of the entire lip substance was common. Of the 6 cases that had excision of the lip and reconstruction, only 1 case returned with recurrence within a period of 5 years.

Discussion

There are considerable difficulties in determining the overall incidence of oral carcinoma in Nigeria and it is likely that within the country regional differences exist. Figures from Ibadan for the period 1960–1970 (1) suggest an incidence of 1.5 per 100 000 per annum for all the sites included in the series we are reporting. No figures from Nigeria are provided in the latest compilation of Cancer in Five Continents (2) the only West African data being those from the Dakar Registry which indicate an even lower incidence in Senegal. There are obvious difficulties in collecting information sufficiently standardized to permit accurate comparison of populations separated geographically, economically and culturally. With this reservation in mind it is unwise to regard the incidence of these tumours as relatively low even when compared with incidence rates at related sites (per 100K per annum) of 6.8 in Jamaica, 7.6 in the Thames region of the United Kingdom, 8.9 in West Scotland, 14.6 in Bombay, 16.2 in Italy (Varese), 21.4 in France (Bas-Rhin), or Newfoundland, 24.2 (all figures from Waterhouse *et al.* (2)). The apparent differences could be attributable in part at least to differences in size of the country, the extent to which populations are dispersed, the state of communications and, of course, the availability of medical services.

Whether intrinsic differences exist that influence cancer incidence in black and white-skinned races has been the subject of several investigations. In a study of gastrointestinal cancer among black populations Correa (3) made no mention of oral malignancies but it is noteworthy that Nigerian males enjoyed the lowest incidence of ten black populations studied (and a lower incidence than five white populations included for comparison) in respect of cancer affecting the oesophagus, stomach, colon and rectum. The figures for females were almost as favourable except in the case of stomach cancer.

Cancer registries in multiracial communities afford some evidence of differences between ethnic groups. In Alameda County in California the incidence (per 100K per annum) of

the sites covered in this survey was 19.7 in the white population as against 14.0 in the black; a similar greater susceptibility emerges from the San Francisco Bay Area (Whites 20, Blacks 12).

Another important consideration concerns the age at which oral cancer occurs. This, too, is open to errors of interpretation. The peak incidence for intraoral carcinoma at all sites, in this series, fell within the 4th and 5th decades of life but, in contrast, in most of the countries cited above the peak ages are within the 6th, 7th and 8th decades (2). Whereas in Britain 98% of cases occur above the age of 40 years (4) only 52.6% occurred above 40 years in this series. Although it is difficult to be certain of patients' ages in Nigeria as births are not routinely recorded in rural areas, nevertheless there is no doubt that most of the lesions appeared in relatively young patients. This view is supported by the preponderance of oral cancer in young individuals recorded from Ibadan, in a similar study (5). One explanation might be that proportionately fewer people in the population survive into the fifth, sixth and seventh decades. It is estimated that the average life expectancy in Nigeria is 40 years, although this figure is considerably distorted by a high rate of neo-natal and infant mortality. There is conflicting evidence concerning the association between oral carcinoma and abnormalities of cellular and/or humoral immunity. It has been postulated that increased frequency in the elderly may be attributable to a breakdown of immune surveillance associated with ageing. Theoretically, therefore, it is possible that as a result of endemic parasitic disease e.g. malaria and schistosomiasis and other conditions such as anaemia or malnutrition, many young Nigerians may suffer from a depressed immune response. Whether this depressed immunity, notable in the pathogenesis of cancer oris, is responsible for the earlier onset of intraoral carcinoma in Nigerians is as yet unknown. Although recognisable cell membrane changes occur in oral carcinoma there is no certainty that new antigens, capable of exciting a host response, are associated with these malignancies (6) and certainly the possibility of discovering neoantigens unique to neoplastic states has receded as the volume of research on the subject has increased.

The relative frequency of tumours at different sites varies widely in reports from different countries. A comparison tabulated by Smith (7) shows how different oral sites predominate in four widely separate populations, the widest disparity being evident in figures of lip cancer. An indication of regional differences within Nigeria is provided by the fact

that in the Ibadan series of Daramola et al the tongue was the commonest site (~37%) while in the present series it was the least common with only 5 cases (all male) out of the 137 surveyed; in addition lip cancer was only half as common in the present series. This low incidence is in line with the general observation that lip carcinoma is rare in Negroes because of protection conferred by the darkly pigmented lip. It is of considerable interest that of the 10 cases of lip carcinoma seen in this survey 2 were albinos, devoid of pigmentation, thus supporting the hypothesis that melanin is protective.

Regrettably, because of ignorance, faith in native healers, distance from referral clinics with inability to meet transport costs, incorrect diagnosis leading to extraction of teeth or administration of antibiotics, reluctance of some patients to seek medical or dental care, and limited facilities for the diagnosis of oral cancer, many patients from rural areas still delay seeking hospital treatment until late. For these reasons, a central feature of this survey is the high proportion of lesions considered inoperable at the initial assessment and the high recurrence rate subsequent to surgery, particularly in respect of maxillary lesions. Paradoxically, neglected and advanced lesions of the lip responded favourably to surgery with good prognosis.

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