Original article

MALIGNANT OROFACIAL TUMOURS AMONG ETHNIC IGBOS AT A TERTIARY HOSPITAL IN ENUGU

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ABSTRACT

BACKGROUND: To study the geographical distribution of malignant orofacial tumours seen at the University of Nigeria Teaching Hospital Enugu, among ethnic Igbos in Nigeria distributed over five states with 95 local government areas.

METHODS: A Seven-year (2012-2018) retrospective study of native Igbo patients who presented at the Oral and Maxillofacial Pathology Unit of University of Nigeria Teaching Hospital, Enugu. Records of all identified as Igbo in the biopsy forms were analysed to obtain their age, gender, location, histologic diagnosis, local government area, and state of origin.

RESULTS: Ninety-six malignant orofacial tumours were diagnosed by histological methods among native Igbo patients presenting at the hospital. The male to female ratio was 1.6 to 1.0. The overall mean age was 49.1 ± 19.2 years, and the malignant tumour observed were: oral mucosal carcinomas (41.7%), salivary carcinomas (18.8 %), sarcomas (15.6 %), odontogenic carcinomas 9.4 %, haematolymphoid malignancies 8.3 %, vascular malignancies 3.1 % and metastatic tumours 3.1 %. The most common specific orofacial malignancies were squamous cell carcinoma (41.6 %), and Igbos from Enugu State (54.2 %) had the highest incidence of orofacial malignancies, with the highest prevalence in the local government area of Enugu-South (11.5%). The Pearson correlation of orofacial malignant tumour with age was -0.297, with a p value of 0.003 indicating an inverse relationship.

CONCLUSION**:** Igbo patients who presented at the tertiary hospital had similar prevalent orofacial malignancies as those reported in other regional Nigerian studies. The geographic distribution of the lesions showed that the highest prevalence of cases was from those with closer proximity to the state and local government area where the dental facilities were located.

Key-words: Igbo, Malignant, Orofacial Tumour, Nigeria

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INTRODUCTION

A vital aspect in the evaluation of the causes of malignant orofacial tumours is the study of regional differences in the distribution of malignant neoplasms. Geographical features, culture and types of occupation to varying degrees affect the population. Malignant orofacial tumours are encountered among all races and in every geographical zone with marked differences in its frequency. To discover the causes of these differences means to understand the conditions that favour the more frequent occurrence of particular forms of tumours.[1]

Malignant orofacial tumours are cancers that affect the tissues of the oromaxillofacial region. It is an important global health concern accounting for an estimated 275,000 cases and 128,000 deaths annually.[2,3] It is the sixth most common malignancy globally and the third most common malignancy in the developing countries.[4,5] Its incidence and distribution vary globally because of differences in geographical, cultural, racial, and socioeconomic factors. [6-10] The incidence of malignant oral neoplasm is much higher in the developing countries compared with the developed countries,[11] and this is largely attributed to the differences in the prevalence and type of risk/habitual factors found in these geographic locations.[12,13] About 90-95% of these malignancies are reported to be oral squamous cell carcinoma [OSCC].[14-18]

In Nigeria, oral cancer has been estimated to account for about 1146 new cases, with an estimated mortality of 764 cases annually in 2012.[19,20] The real burden of oral cancer is poorly captured in Nigeria due to under-reporting and lack of population-based registries.[20] Other reported malignant orofacial tumours include sarcomas, lymphomas, malignant odontogenic tumours, and salivary gland carcinomas.[21,22]

Geomapping is a widely used epidemiology tool, often employed as the first step to define a health problem, to visualize spatial distribution, and to indicate areas of high occurrence or predominance of the event.[23,24] Geomapping pathology is the study of disease-incidence rates in different geographical areas. Comparison may be made between different areas in the same country as inter-state and inter-local government areas.[25] It is this latter approach that we wish to apply in this article.

Furthermore, within each location, the cases of OSCC seem to be categorized according to the age, gender, and ethnicity of the person.[26,27] Hence, analysing such distribution helps to put together descriptive cancer data, which gives an idea about the extent of the problem and to understand the high-risk and the low-risk population.[26,27] It also helps in relating the freight of oral cancer to that of other cancers to evaluate the allocation of resources for research, prevention, treatment, and support services.[26] Dentists play a vital role in the early detection of oral malignancies thereby increasing the survival rate of the patients.[27]

To our knowledge no studies have been done in Nigeria to analyse the geographic distribution of malignant orofacial tumours among the Igbos. The aim of this paper is to study the geographical distribution of malignant orofacial tumours seen at the University of Nigeria Teaching Hospital Enugu, among ethnic Igbos in Nigeria distributed over five states: Abia, Enugu, Imo, Anambra, and Ebonyi, consisting of 95 local government areas.

MATERIALS AND METHODS

The study was carried out at the Department of Southeast Nigeria is a region of Nigeria that borders Cameroon to the east and the Atlantic Ocean to the south. The inhabitants belong to the Igbo tribe and their language is also called Igbo. They are one of the major nationalities of Nigeria and are native residents in seven states in Southern Nigeria namely, Abia, Anambra, Enugu, Ebonyi, Imo, Delta and Rivers State. The area occupied by Igbos of Southern Nigeria is one of the most densely populated in Africa after the Nile Valley,[28] with an area of some 40,900 to 41,400 km2 (15,800 to 16,000 sq mi). The territory has more than 30 million inhabitants with a population density ranging from 140 to 390 inhabitants per square kilometer.[29]

This is a seven-year retrospective observational study of native Igbo patients who presented at

the specialist Oral and Maxillofacial Surgery/Pathology Departments of University of Nigeria Teaching hospital Enugu. Specimens of patients from other peripheral hospitals in other Igbo dominated states were also received and included in the study. The Igbo-speaking areas covered by the study included Abia, Anambra, Ebonyi, Enugu and Imo States. These five states rely on the oral pathology services provided by the Department of Oral Pathology and Oral Medicine where orofacial specimens are sent to for histopathology reports.

Records of all patients diagnosed with oral and maxillofacial malignancy were identified. Those identified as Igbo in the biopsy forms, with their permanent home addresses in Igbo speaking towns and local government areas of southern Nigeria were selected. The age, gender, location, histologic diagnosis, local government area, and state of origin were obtained. Patients excluded were those who did not identify as Igbo in the completed biopsy forms, and Igbos who were referred from Delta State and Rivers State, and Igbos who did not provide a permanent home address in any Igbo speaking areas.

The analysis of descriptive variables was done with Statistical Package for Social Sciences, version 23 (Chicago: SPSS Inc.). The results of analysis of categorical variables were represented as tables. The association of categorical variables using chi square tests were determined. The level of significance was set at $P < 0.05$.

RESULTS

A total of 115 orofacial malignancies were diagnosed during the period of study, out of which 96 (83.5%) patients were identified as Igbos. The gender of the Igbo patients consists of 59 (61.5%) males and 37 (38.5%) females giving a ratio of 1.6 to 1 The overall mean age was 49.1 ± 19.2 years, and with age range 12 to 90 years. The mean age for male patients was 49.1 ±19.8 and range 12years to 90 years. The female patients had a mean age of 49 years ±18.5 years and age range of 15 years to 78 years.

A total of 95 Local government areas were identified in the five states predominantly occupied by Igbos as follows: Abia (17) Anambra (21), Ebonyi (13), Enugu (17), and Imo (27).

Among Igbos in the states studied, ninety-six (96) malignant orofacial tumours were diagnosed histologically. Oral mucosal carcinoma (n=40, 41.7%) was the most common group of oral malignancy among the Igbos (Figures 1-3).

Figure 1: Palatal lesion of oral mucosal melanoma

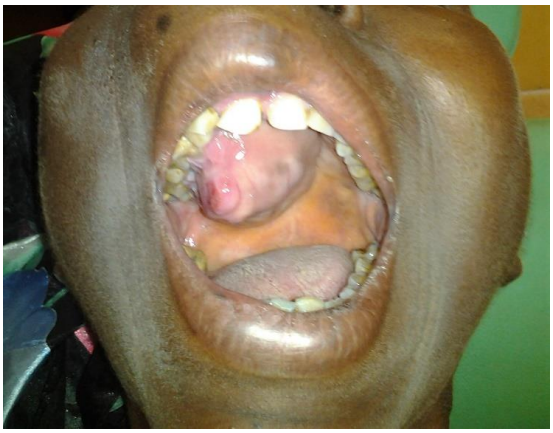

Figure 2: A maxillary malignant tumour protruding through the palate

Other groups of malignancies in order of frequency included salivary carcinomas, sarcomas (Figure 3), odontogenic carcinomas, haematolymphoid malignancies, and metastatic tumours (Table: I). The least occurring orofacial malignant tumours were vascular malignancy and metastatic carcinoma.

Table I. Group Distribution of Orofacial Malignant Tumour (n = 96) among Igbos

Tumour Group	Frequency (%)
Oral epithelial carcinoma	40 (41.7)
Salivary adenocarcinoma	18 (18.8)
Sarcoma	15 (15.6)
Odontogenic carcinoma	9 (9.4)
Haemotolymphoid tumour	8 (8.3)
Vascular malignancy	3 (3.1)
Metastatic carcinoma	3 (3.1)

Table II shows that oral epithelial carcinoma, salivary adenocarcinoma and odontogenic carcinoma are prevalent in men while sarcomas were more common in women.

Table II. Association of orofacial malignant tumour groups with Gender

Tumour Group	**Gender**		
	Male Frequency (%)	Female Frequency (%)	Total Frequency (%)
Oral Epithelial Carcinoma	26 (27.1)	14 (14.6)	40 (41.7)
Salivary Adenocarcinoma	14 (14.6)	4 (4.2)	18 (18.8)
Sarcoma	4 (4.2)	11 (11.5)	15 (15.6)
Odontogenic Carcinoma	7 (7.3)	2 (2.1)	9 (9.4)
Haematolymphoid tumour	4 (4.2)	4 (4.2)	8 (8.3)
Vascular Malignancy	2 (2.1)	1 (1.0)	3 (3.1)
Metastatic Carcinoma	2 (2.1)	1 (1.0)	3 (3.1)
Total	59(61.5)	37(38.5)	96(100)

Table III shows the most common specific orofacial malignancy was squamous cell carcinoma (n=40, 41.6%) [Figure 4]. Adenoid cystic carcinoma [Figure 5], ameloblastic carcinoma, and mucoepidermoid carcinoma came a distant second to fourth respectively, in frequency of occurrence.

Table IV shows that majority of the orofacial malignant tumour were localized in the mandible (38.5%) and palate (17.7%). Other important sites included the maxilla (11.5%) and buccal mucosa (10.4%).

Table III. Frequency of specific orofacial malignant tumours with Gender

Tumour Group	Gender Male Frequency (%)	Female Frequency (%)	Total Frequency (%)
Squamous cell carcinoma	26 (27.1)	14 (14.6)	40 (41.7)
Adenoid cystic carcinoma	4(4.2)	3(3.1)	7 (7.3)
Ameloblastic carcinoma	5(5.2)	2(2.1)	7 (7.3)
Mucoepidermoid carcinoma	5(5.2)	1(1.0)	6 (6.3)
Extramedulary plasmacytoma	2(2.1)	1(1.0)	3 (3.1)
Osteosarcoma	0(0.0)	3(3.1)	3 (3.1)
Metastatic carcinoma	2 (2.1)	1 (1.0)	3 (3.1)
Others (Ewings, acinic cell carcinoma,adenocarcinoma NOS,Angiosarcoma, clear cell adenocarcinoma, fibrosarcoma, malignant melanoma, non hodgkins lymphoma, polymorphous carcinoma, rhabdomyosarcoma, myxofibrosarcoma, haemangioendothelioma etc	15(15.6)	12(12.5)	27(28.1)
TOTAL	59(61.5)	37(38.5)	96(100)

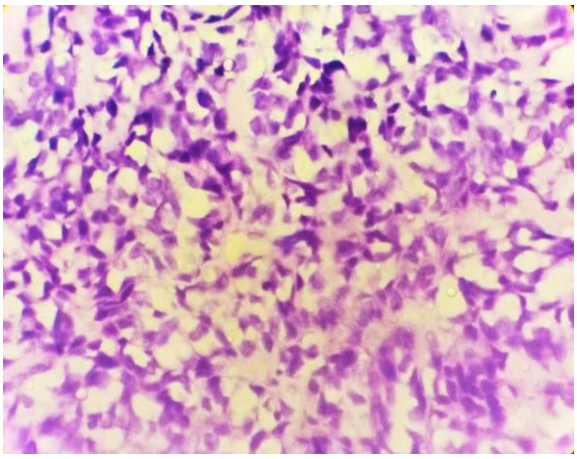

Figure 3: Alveolar Rhabdomyosarcoma of the oral tissues. (H&E x100

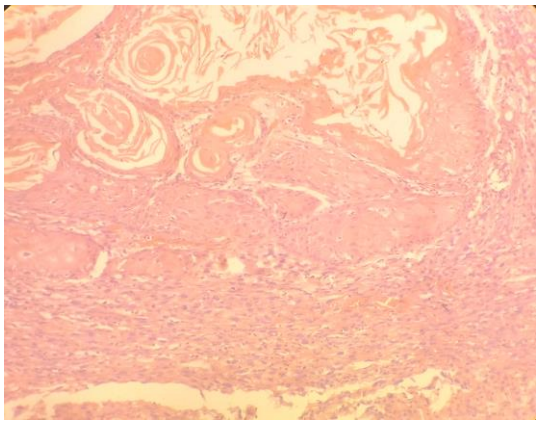

Figure 4: Squamous cell carcinoma (H&E x400)

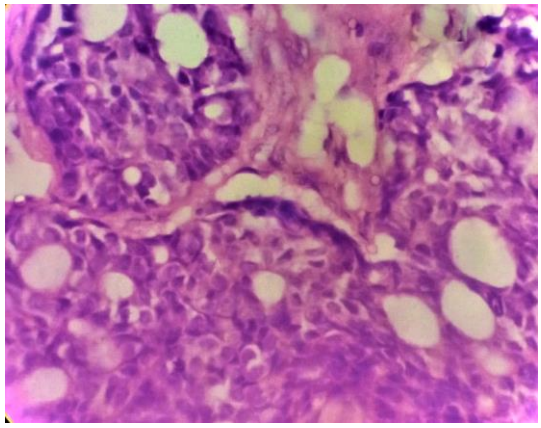

Figure 5: Adenoid cystic carcinoma of the minor salivary gland (H&E x400)

Table V shows the frequency and correlation of orofacial malignant tumour with age group. The most common age groups affected with orofacial malignant tumours were from the 4th to the 8th decades (79.1%). Women had higher frequency of malignancy in the 6th and 7th decades, while men showed earlier onset of malignancy from the 4th -7th decades. Malignant orofacial tumours were not observed in the first decade of life in this series.

The Pearson correlation of orofacial malignant tumour with age group was -0.297, with a p value of 0.003. This indicates an inverse relationship between orofacial malignant tumour and age group. Table VI showed that a large number of orofacial malignant tumour cases were among patients from Enugu State while the least was Ebonyi State. Igbos from Enugu state had more than half the total number of orofacial malignancies with 54.2 % (52). Anambra and Imo state came a distant second and third respectively. Table VII shows the local government areas with the highest cases of orofacial malignant tumour. Enugu South 11.5 % (11), followed by Nkanu West and Udi were the areas with the highest cases of orofacial malignant tumour.

Table IV: Frequency of Sites of Tumour

Location	Frequency (%)
Mandible	37 (38.5)
Palate	17 (17.7)
Maxilla	11 (11.5)
Buccal mucosa	10 (10.4)
Floor mouth	3 (3.1)
Parotid	3 (3.1)
Tongue	3 (3.1)
Others	12 (12.5)
TOTAL	96 (100.0)

Table V. Frequency and Correlation of orofacial malignant tumour with age group

Age Group	Frequency (%)	Pearson correlation, p value
10-19	11 (11.5)	-0.297, 0.003
20-29	5 (5.2)	
30-39	13 (13.5)	
40-49	17 (17.7)	
50-59	18 (18.8)	
60-69	16 (16.7)	
70-79	12 (12.5)	
80 and above	4 (4.2)	

Table VI: Distribution of orofacial malignant tumours by state of origin

State	Frequency (%)
Enugu	52 (54.2)
Anambra	17 (17.7)
Imo	13 (13.5)
Abia	8 (8.3)
Ebonyi	6 (6.3)

DISCUSSION

There is no report known to the authors, of ethnic Igbo distribution of malignant orofacial tumours in Nigeria. The present study which focused on malignant orofacial tumours among Igbos in a tertiary health centre in Enugu had no other ethnic prevalence data to compare with. Adisa et al. only reported the geographic distribution of ameloblastoma, a benign jaw tumour among ethnic nationalities in Nigeria.[32]

Oral malignancy is not rare and constitute the sixth most common malignancy globally and the third most common in the developing countries.[4,5] The malignant orofacial tumours encountered among ethnic Igbos are probably under-reported as in other parts of the country due to challenges of maintaining cancer registries.[19,20] Data from this seven-year series represents a fraction of the 1,146 new cases documented annually in Nigeria.[19,20] The prevalence of 41.7% for squamous cell carcinoma among Igbo patients presenting at the tertiary centre in Enugu is considered low when compared to the 90 – 95% global prevalence among oral malignancies.[14-16]

This study analysed the geographical distribution of malignant orofacial lesions among patients of Igbos nationality who presented at a tertiary hospital in Enugu or whose specimen was submitted for histology report. As the only the tertiary hospital in Enugu state with oral pathology service for the five states of the Southeast region, it is therefore understandable that Igbo patients from Enugu state presented with more than half (54.2%) of the surgical specimen of orofacial malignancies submitted for histopathological diagnosis. Difficulties with transportation, distance from Enugu, poor dental awareness could be additional reasons that affected the low turnout of patients from states farthest away.

Furthermore, the dental awareness of Igbos in Enugu was probably higher than in other states reviewed in the study. This may be attributed to the presence of three major dental institutions and many dental clinics. The Faculty of Dentistry, the School of Dental Therapy and Technology, as well as the Oral and Maxillofacial Pathology/Surgery centre of the Teaching Hospital are all located in Enugu state capital. Some patients with orofacial malignancies in localities in other states may have been treated in private hospitals by general surgeons or otorhinolaryngologists and the histology were unreported or probably sent to general pathologists. Such biopsy or surgical specimens were unavailable for inclusion in this data.

Among those who presented at the Tertiary health centre, oral malignances were observed to be more prevalent among ethnic Igbo men (61.5 %) than women (38.5 %). Other orofacial malignancies with high frequency of occurrence were salivary adenocarcinoma, sarcoma and odontogenic carcinoma. Incidentally, all these malignancies were prevalent in men while sarcomas were more common in women. It is known that men in general have more incidence of cancers especially oral squamous cell carcinoma.[30] This is more remarkable due to many oral habits related to smoking, alcohol consumption and other oral irritants, and this habits cut across various ethnic nationalities. [30,31]

Other reason why men of Igbo ethnic nationality have more oral malignancies may not be explained here but could be related to the general tendency of men to suffer more stresses of work, poorer health, poorer oral hygiene and outdoor exposures to harsh weather conditions in the field, and environmental factors and pollutants. Many Igbo women are culturally spared from these exposures because of a general tendency to live a more protected life and generally work indoors or shaded places, either as house-wives or office workers or in markets.

There was an earlier onset of malignancy in Igbo men from the 4th decade while malignancy in the women tended to commence from the 6th decade. This observation is consistent with the risky behaviours and factors that are associated with the male gender in the aetiology of oral cancer.[30,31]

Malignant orofacial tumours were not observed in the first decade of life in this series and the reason for this unusual observation is unknown

to the authors. This observation is consistent with the significant finding of p value of 0.003 indicating the inverse relationship between orofacial malignant tumour and age group. Some salivary gland and haematological malignancies are known to present in childhood were absent in this series. The absence of haematological childhood malignancy such as Burkitts' lymphoma may be because suspected cases were promptly referred to the paediatric Department and frequently no orofacial biopsy was performed before referral or commencement of chemotherapy.

The mandible was the site with the majority of orofacial malignant tumours (38.5%), followed by the palate (17.7%). The mandible is ordinarily the site of majority of odontogenic carcinomas, haematolyphoid tumours, most bone sarcomas and metastatic tumours. Most of the non-epithelial tumours occurred in the mandible, while the more prevalent epithelial mucosal malignancy such as squamous cell carcinoma are located in variable oral sites.

Other reports refer to regional studies of mixed ethnic Nigerian populations.[8,20,21] These studies reported squamous cell carcinoma as the most predominant oral cancer in all the regions in Nigeria.[8,20,21] A similar observation was made in this study. The reported regional prevalence in the mixed ethnic populations reflected variations that could not be attributed to any particular ethnic nationality in Nigeria. The study in Northern Nigeria by Adekeye et al. of intraoral carcinomas reported a prevalence of 57.7% for squamous cell carcinoma,[33] while a study in Calabar, South-South region of Nigeria, by Bassey et al. reported the prevalence of squamous cell carcinoma as 36.4 % of orofacial malignant tumours.[21]

A recent squamous cell carcinoma study in Nigeria by Omitola et al. reported higher incidence in Benin, South-South Nigeria than in Ife and Ibadan in western Nigeria. The same study also found a low incidence in Port-Harcourt another large city in South-South Nigeria.[20] These cities in Western (Ife and Ibadan) and South-south (Benin and Port-Harcourt) regions have populations dominated by the Yoruba ethnic group (Ife and Ibadan), Bini ethnic group (Benin) and a mixture of other ethnic groups in Port-Harcourt. The results could not be attributed to any specific ethnic group.

Many authors acknowledge factors that contribute to variations in prevalence of orofacial malignancies: geographic locations, ethnic and racial considerations.[5,21] Patients of Igbo ethnic nationality who presented at the tertiary hospital had similar prevalent orofacial malignancies as reported in other regional Nigerian studies. The geographic distribution of the lesions showed that the highest prevalence of cases were from those with closer proximity to the state and local government area where the dental facilities were located.

A multicentre study involving some of the secondary or tertiary hospitals that offer oral and maxillofacial services in the Southeast region could help present a more representative prevalence of orofacial malignancy among the Igbos as a population group. However, the challenges posed by this is that hospitals in these five states of the Eastern Nigeria rely on the oral pathology services provided by the Department of Oral Pathology and Oral Medicine, in Enugu. They frequently send orofacial specimens for histopathology reports. The only oral and maxillofacial pathology service centre in the entire South-East Nigeria is based in the Enugu tertiary hospital. The emphasis of this study is therefore to consider the aggregation of surgical specimens in the tertiary centre in Enugu as a partial representation of the prevalence of malignant orofacial tumours in the South East Nigeria. A more comprehensive study in the future with more distribution of oral and maxillofacial pathology service centres would give a better picture of the prevalence of the malignant lesions. Data from other native Igbos resident in two southern states of Delta and Rivers States were not represented in this series because they largely patronize Oral Pathology Centres with the services of Oral and maxillofacial Pathologists in Asaba and Port-Harcourt. The inclusion of people of Igbo nationality in these states in future studies could possibly add to the effort to achieve a more representative prevalence of diseases among this ethnic population in Nigeria. The study of ethnic

distribution of malignant tumours is important for epidemiologic studies, health policy planning and targeted prevention and management considerations.

CONCLUSION

Igbo patients who presented at the tertiary hospital had similar prevalent orofacial malignancies as those reported in other regional Nigerian studies. The geographic distribution of the lesions showed that the highest prevalence of cases was from those with closer proximity to the state and local government area where the dental facilities were located.

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