Original Research

Six year review of malignant oral and maxillofacial neoplasms attended at Muhimbili National Hospital, Dar es Salaam, Tanzania

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Abstract

Background: Cancers of the head and neck constitute an important group of human malignancies. It is estimated that head and neck cancers constitute about 5–8% of all malignancies world-wide. These neoplasms affect speech and deglutition due to their location and might result in tooth mobility, expansion and destruction of adjacent structures. This study aimed at determining the types, prevalence and demographic distribution of malignant oral and maxillofacial tumours among patients treated at Muhimbili National Hospital (MNH).

Methods: This was a retrospective study where by histological results of lesions that occurred in oral and maxillofacial region from 1st January 2008 to 31st December 2013 were analyzed. The lesions were grouped into carcinomas, lymphomas and sarcomas; histological diagnoses of the top ten lesions with higher frequency of occurrence were picked for analysis.

Results: Malignant orofacial lesions accounted for 37.8% of all lesions that were biopsied from oral and maxillofacial region. Males comprised 51.4% of the patients. Age distribution was 3 to 98 years, mean 50.86 ± 19.89 years. Lymphomas and sarcomas occurred mostly in the patients below 40 years of age, while carcinomas were predominant above age 40 years. Squamous cell carcinoma was the most common malignant lesion (62.2%) followed by Kaposi's sarcoma (13.1%) and adenoid cystic carcinoma (7.4%).

Conclusion: Our analysis demonstrated 51 different types of malignant lesions in which squamous cell carcinomas were the most common. In general, carcinomas were prevalent group of malignant lesions, with its incidence increasing with advancement of age. The results provide a clue to the clinicians in establishing differential diagnosis hence aiding in correct identification and early diagnosis of orofacial cancer in Tanzania.

Key words: Malignant, Oral and maxillofacial tumours, Histopathological pattern, Demographic pattern

Introduction

The oro-facial region including the jawbones and related tissues can be the site of a multitude of neoplastic conditions. The maxilla and the mandible are the sites of many cystic and neoplastic conditions which could be either benign or malignant [1]. These neoplasms affect speech and deglutition due to their special location and might result in tooth mobility, expansion and destruction of adjacent structures [2].

Neoplasms of the oral maxillofacial area are source of great differences in nomenclature and classification and reports from different parts of the world show differences in the pattern of maxillofacial tumours seen [3]. Orofacial tumours are known to exhibit geographic variations in prevalence and pattern due to cultural, social, occupational or climatic factors [4, 5].

Cancers of the head and neck constitute an important group of human malignancies. It is estimated that head and neck cancers constitute about 5–8% of all malignancies world-wide [6]. The malignant lesions usually found in this region include sarcomas of soft and hard connective tissue, carcinomas and lymphomas, with squamous cell carcinoma accounting for more than 90% of reported malignant tumours of the oral cavity and rarely melanomas [7, 8].

The age at diagnosis of head and neck cancers is between 9 months to 80 years with 90% of the patients being over the age of 40 years [9]. Some studies reported male preponderance in head and neck malignancies [10,11]. Wakiaga *et al* [12] in a report from Kenya, found ameloblastoma, Burkett's lymphoma, ossifying fibroma and osteogenic sarcoma as the most common tumours in that order, where else in a review of head and neck tumours in Nigeria. Amusa *et al* [10] reported lymphomas as

the predominant histological type followed by squamous cell carcinomas and sarcomas. Mwansasu *et al* [13] in Tanzania, reported carcinomas to be the most prevalent malignant lesions.

Epidemiological studies of diseases brings to prominence specific characteristics of the disease and the environment which are necessary in the development of intervention measures [14,15]. The aim of this study was to determine the types, prevalence and demographic distribution of malignant oral and maxillofacial tumours among patients treated at Muhimbili National Hospital (MNH) within a period of six years retrospectively

Materials and Methods

This was a retrospective study where by histological results of lesions that occurred in oral and maxillofacial region from 1st January 2008 to 31st December 2013 were retrieved from the archives at the Department of Oral and Maxillofacial Surgery at Muhimbili National Hospital (MNH) in Dar es Salaam, Tanzania. The tumour type, age, sex, file number and histopathological number of the patient were recorded. Diagnosis was recorded as reported in the biopsy result slip. Reports of fine needle aspiration cytology were excluded. Those reports which had no final diagnosis were excluded as well. In case where a single patient had more than one result, as one for pre-surgery incisional biopsy and another of post-surgical excision of the lesion, the post-op results were included. The histological result slip which had benign lesions as final diagnoses, were excluded as well. The top ten lesions with higher frequency of occurrence were picked for analysis. The data for histological diagnosis and demographic data were entered into a dataset and data analysis was done by Statistical Package for Social Sciences (SPSS) computer program version 19. Permission to conduct this study was sought from and granted by Muhimbili National Hospital.

Results

A total of 1447 histological results of patients with oral and maxillofacial lesions were obtained from the archives of histological results from year 2008 up to 2013, out of which 37.8% were histological results of patients with malignant oral and maxillofacial lesions. 51.4% of these patients were male, with male to female ratio of 1.1:1. The age distribution of the participants was from 3 years to 98 years, with the mean of 50.86 ± 19.89 years.

Out of 547 patients, 51 different types of malignant lesions were reported. The top 10 lesions with frequency above 6 (472 patients) were picked and analyzed. This comprised 82.2% of the patients in which squamous cell carcinoma was the most common malignant lesion accounting for 62.2% of the lesions, followed by Kaposi's sarcoma 13.1% and adenoid cystic carcinoma 7.4% (Table 1).

Table 1: Summary of top 10 malignant conditions

Condition	Frequency	(%)
Squamous cell carcinoma	294	62.2
Kaposi's sarcoma	62	13.1
Adenoid cystic carcinoma	35	7.4
Adenocarcinoma	24	5.1
Mucoepidermoid carcinoma	14	3.0
Osteosarcoma	13	2.8
B-cell lymphoma	9	1.9
Carcinoma NOS	8	1.7
Plasmacytoma	7	1.5
Basal cell carcinoma	6	1.3
Total	472	100

Table 2: Distribution of occurrence of malignant lesions groups according to the gender

Group of malignant lesions	Gender		Total	Total (%)
	Male	Female		
Carcinoma	222	190	142	75.3
Sarcoma	41	60	101	18.5
Lymphoma	18	16	34	6.2
Total	281	266	547	100

Each subset of gender of the patient categories' column proportions do not differ significantly from each other at the 0.05 level. (p=0.06)

Table 3: Distribution of occurrence of malignant lesion by age group

Group of Malignant lesion	Age group of the patients (years)								Mean age
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70+	
Carcinoma	1	8	26	53	56	72	87	109	55.96
Sarcoma	3	13	25	30	17	6	2	5	34.65
Lymphoma	3	6	-	13	1	4	5	2	37.00
Total	7	27	51	96	74	82	94	116	50.86

Upon grouping of the malignant conditions on the basis of their tissue of origin, (Table 2) carcinomas were the most common accounting for 75.3% of cases followed by sarcomas (18.5%), while lymphomas were least common (6.2%). There were more males than females in group of carcinoma and lymphoma except for sarcomas, but with no significance difference ($p>0.05$). The age group 50 years and above was more affected by carcinomas, while sarcomas affected the age group 49 years and below. Lymphomas mostly affected the age group 30-39 years (Table 3). In general, carcinomas were found to affect patients with advanced age while sarcomas and lymphomas affected young age.

Discussion

In general, carcinomas were found to affect patients with advanced age while sarcomas and lymphomas affected young age. The results of this study concurred with some studies in the literature [16-20], and contrasts others studies [3,21-23]. The incidence and pattern of occurrence of head and neck cancer vary greatly among races and geographic regions [16]. While head and neck cancers are relatively uncommon in the west where they constitute about 4% of all malignancies, in Asia and India subcontinent, they are the most common form of cancer contributing up to 50% of all malignancies [6]. Similarly, some cancer types are strongly associated with some geographic region and racial groups [24].

In comparison to other African studies [25, 26], our study confirms that squamous cell carcinoma was the most common type of malignancy amongst the head and neck cancers, however within African populations, the epidemiology of head and neck malignancies is not certain. As in most developing countries, the systematic study of cancer in Africa has been hospital oriented and limited to few countries with sophisticated histological diagnostic facilities. Most knowledge therefore, is based on biopsy and autopsy material. It's hence difficult to appreciate the many possible constraints against getting comparable data between centers; these may include differences in sophistication of health care system, difference in fidelity to biopsy taking and difference in record keeping.

Age and gender distribution of malignant oral and maxillofacial tumours in our study compares with the findings reported elsewhere [25-27] in which head and neck malignant lesions were observed most commonly after the age of 40 years except for lymphomas and sarcomas which occur mostly in the age groups below forty years. This occurrence of oral and maxillofacial malignant lesions in old age could be attributed to slow accumulation of mutation which reflects its effect at advanced age. A slight male predominance over females encountered in this study was also reported in other studies [28]. Males tend to have a high exposure to the commonly known predisposing factors for head and neck cancers [28].

The broad histological types of malignancies in this study were carcinomas, sarcomas and lymphomas. Carcinoma accounted for 75.3% of the malignancies in this study of which squamous cell carcinoma was the most frequent. Histologically, squamous cell carcinoma has been shown to be the most common type accounting for about 70% of head and neck cancer [20]. The complexity of head and neck region with many routes (ear, mouth and nose) for carcinogens to pass through in large quantity together with its exposed location make the region prone to developing cancer more than any other area of the body. The occurrence of sarcoma and lymphomas in young patients in this study is in agreement with studies reported in literature [29, 30] thus a need to study the predisposing factors in the region.

Conclusions

The results of the current study reflect incidence of malignant orofacial lesions in Muhimbili National Hospital. Carcinomas were the commonest group of malignant lesions affecting majority of individuals, with incidence increasing with advancement of age. The pattern of occurrence of malignant orofacial lesions in this study provides some information on the occurrence of orofacial malignant lesions in Tanzania. Despite the results providing a clue to the clinicians in establishing differential diagnosis, hence aiding in correct identification and early diagnosis of orofacial cancer in Tanzania, the findings may compare with other studies reported in the region but it must be interpreted with caution because of the disparities in diagnostic capacity existing among institutions, especially in the developing nations. Therefore, coordinated multi-center study on these lesions is very crucial in order to understand the extent of the problem in the region.

Conflict of interest

We have none to declare.

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