

ORIGINAL ARTICLES

CHILDHOOD ORAL AND MAXILLOFACIAL CANCER AT THE KORLE-BU TEACHING HOSPITAL, ACCRA, GHANA

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Abstract

Background: There is limited information on the incidence and distribution of childhood malignant oral and maxillofacial tumours. The aim of this study was to carry out a retrospective evaluation of the prevalence and distribution of oral and maxillofacial cancers seen in children at Korle-Bu Teaching Hospital (KBTH), a tertiary hospital.

Patients and method: The selection criteria was all patients who were seen at the department 15 years old and younger with an orofacial tumour (benign and malignant), between January 1998 and December 2007. The clinical and histopathological charts of all these patients were retrieved from the records office of the Oral and Maxillofacial Surgery (OMFS) Department of KBTH. There was no difficulty retrieving the charts. Their age, sex, location of tumour, signs and presenting symptoms and histopathological report were recorded and transferred

to a Microsoft Excel* spread sheet and analysed.

Results: 118 charts of the patients met the selection criteria. 34 (28.8%) of them were records of patients whose lesions were reported as malignant neoplasms. The mean age was 9.4 years. The male: female ratio was 1:1. Histologically, 73.5% (N=25) of the lesions were diagnosed as lymphoma. 50% (N=17) were Burkitt's lymphoma (BL). 20.6% (N=7) were rhabdomyosarcoma (RBD). There was one each of osteogenic sarcoma (OSC) and squamous cell carcinoma (SCC).

29 (85.3%) of the children underwent chemotherapy, three children with RBD were treated by surgery and adjuvant radiotherapy.

Conclusion: BL is the most common malignant maxillofacial cancer found in Ghanaian children and chemotherapy is the commonest mode of treatment.

Key Words: Childhood, malignant, tumours, orofacial, Ghana

INTRODUCTION

Childhood malignant oral and maxillofacial tumours in developing countries have scantily been reported on¹. Data on the subject from Africa has concentrated on a few countries^{2,3,4,5}. Reports from USA suggest that the prevalence may be rising^{6, 7} however because reporting from different studies sometimes uses different maximum ages, comparing them can be difficult^{8,9,10}. Public health management of these potentially fatal pathologies require very good and reliable data with continuous and consistent updating¹¹⁻¹³. There seems to be a variation in the reported prevalence from studies carried out on different continents as well as differences in prevalent tumour types. Sato et al.¹⁴, Chen et al.¹⁵ and Tanaka et

al.⁸ reported that incidence in Asian populations ranged from 2.9-7.3%, while according to Arotiba et al.², Kalyanyama et al.⁵ and Aregbesola et al.¹⁰, the incidence ranged from 40% to 51% in African patients. Studies by Jones et al.¹⁶ and Ulmansky et al.¹⁷, all suggest much lower prevalence in Caucasians. According to Das et al.¹⁸ and Shah et al.¹⁹, malignant neoplasms represented 1.2% and 0.8% respectively of total tumours found in the North American populations studied. There are very few specific reports on malignant neoplasms of the jaws alone in children and most of them refer to a particular type of tumour^{20, 21-25}.

The high incidence of BL in locations where most of the African studies have been carried out has sometimes been suggested as the main reason for the high prevalence, however in a more recent study from Ghana²⁶ it was noted that if this was excluded from the data, the prevalence is reduced but remains high.

The causes of childhood orofacial cancers including BL and other cancers are still being researched²⁷. Using different statistical measuring methods may contribute to the variation in reported data^{18, 19, 20, 26}. The aim of this study was to conduct a retrospective analysis of the prevalence of malignant tumours seen in children aged 15 years or below

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attending a tertiary care hospital in Accra, Ghana. There is limited information on the subject.

Continuous evaluation of these pathologies would help in following the trend and also provide information for medium and long term development of management strategies.

Patients and Method

The selection criteria were records of patients who were 15 years or younger with orofacial tumours. Clinical and histopathological charts of all who met this criteria, who attended the OMFS Department of KBTH, Accra, between January 1998 and December 2007 were retrieved from the records office with no difficulty. The charts of patients whose tumour had been confirmed after a biopsy as malignant were further studied. Their age, sex, signs and symptoms, site of lesion, histology and mode of treatment were recorded using a data collection sheet. The data was transferred to a Microsoft Excel* spreadsheet and analysed.

Results

There were a hundred and eighteen charts (118) that met the study criteria of patients who were 15 years or younger with an orofacial tumour (both benign and malignant). Out of this, thirty-four (28.8%) were charts of patients with malignant neoplasm. The charts of this group were further evaluated. There was an equal gender distribution with male to female ratio of 1:1. The age distribution is shown in Figure 1. The youngest was 3 years old and the oldest 15. The average age of the boys was 8.4 years, girls 10.4 years and the whole group, 9.4 years. The prevalence of the pathologies is shown in Table 1. 12 boys and 13 girls had lymphoma. The average age of patients with this pathology was 8.84. All the lymphomas were extranodal non-Hodgkin's lymphoma (NHL). BL had the highest incidence (N=17) with a male to female ratio of 9:8. The patients with NHL were on average older than the patients with the other tumours (Table 2). Two of the tumours occurred once – Osteosarcoma (OSC) and Squamous Cell Carcinoma (SCC). Both were boys and aged 15 years. The gender distribution of the patients with Rhabdomyosarcoma (RBD) was 3:4 (M:F). 91% (N=31) presented with a painless swelling of the orofacial region. The commonest site was the maxilla with 31 tumours (91%). One was bi-maxillary in location and the other two in the mandible. There were other symptoms that were sometimes associated with the swelling. These included mobile teeth (15%), toothache (10%), mouth ulcer (9%) and dysphonia (5%). The other three patients with no jaw swelling had as their primary symptom- gum swelling, large mouth ulcer and a dental abscess.

Twenty-nine (85.3%) of the children underwent chemotherapy, three children with RBD were treated by surgery and adjuvant radiotherapy.

The child with SCC was treated by chemotherapy and radiotherapy and the one with OSC was given palliative treatment. The survival rate for these patients was not studied, however the patients with RBD, OSC and SCC survived for short periods and died within two years with complication of metastasis to the lungs.

Discussion

The reported incidence of the different malignant neoplasms in children in the orofacial region varies between studies on different continents^{2, 3, 4,5,10,16,17,18}. In studies carried out in African societies the incidence of NHL is higher than other malignancies^{2,5,10}. BL which is endemic in these locations makes a huge contribution to this high incidence. There can also be a wide variation in the incidence even when the studies are from the same population¹. The explanation for these variations still remains a subject for research. Racial differences, geography and ethnicity have all been suggested as possible aetiological factors^{1, 25, 27}.

The prevalence of orofacial malignant tumours from this study is 28.8% (34 out of 118). This is higher than a recent study from Ghana (22.3%)²⁶, and a study from Nigeria (13.3%)¹ and contrasts with reports by Arotiba² and Aregbesola et al.¹⁰ who reported a prevalence of 40.2% and 51%, respectively also from Nigeria.

In the first decade of life the prevalence of malignant tumours among the boys was higher (Figure 1) (M: F=13:7) but this was reversed in the older age group (10-15 years) with boys to girls ratio of 4:10. In most studies the incidence of malignant tumours is higher among the boys though with significant variation^{1, 10, 26}. Studies from South America suggest an even distribution of malignant neoplasms among male and female²⁵.

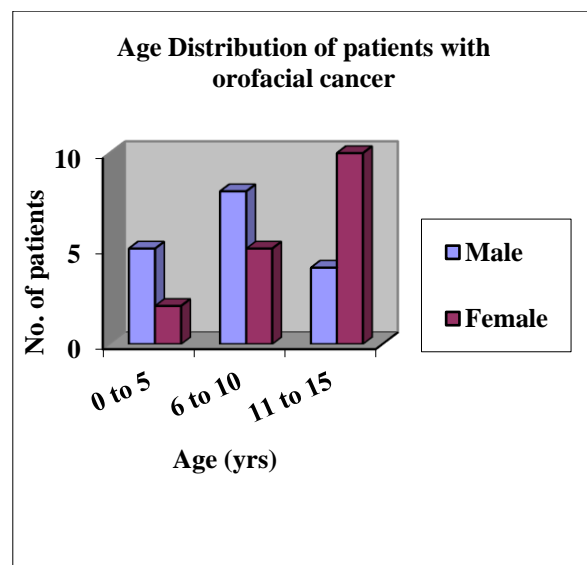


Fig. 1: Age Distribution of patients with orofacial cancer

The tumour with the highest prevalence was lymphoma (N=25) followed by sarcoma then carcinoma (Table 1 and also Figure 1).

Table 1: Incidence of malignant orofacial tumours

Tumour	Incidence	% Incidence
Lymphoma	25	73.5
Sarcoma	8	23.5
Carcinoma	1	2.9
Total	34	100

This is consistent with multiple studies carried out round the globe^{1, 2, 14, 10, 17, 28, 29}. The gender distribution was nearly even with respect to lymphomas (12:13 or 0.9) and equal in the sarcoma group (Figure 2). Only one 15 year old boy had carcinoma. The slightly higher prevalence of lymphomas among the girls is in contrast with the findings of most other studies where the prevalence among boys is higher than girls in all groups of malignant tumours of the orofacial region.^{1, 10, 25}

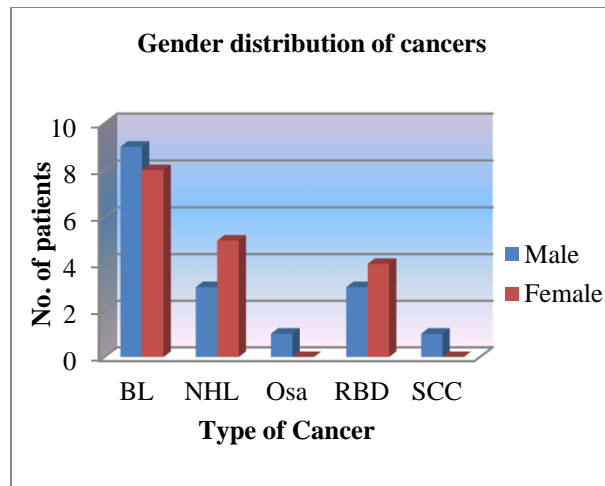


Fig. 2: Gender distribution of cancers

The average age for the group with lymphomas is 8.84 which is similar to other studies in Ghana and Nigeria^{1, 30, 31, 32}. However the girls were on average older than the boys and the prevalence slightly higher among them (Figure 2 and Table 2). The mean age in the South American study suggests an average age of 7.9 and male female ratio of 1:3²⁵.

Table 2: Average age of patients in different tumour groups

Sex	BL	NHL	RBD	OS	SCC
Boys	7.22	8.67	7.33	15	15
Girls	7.75	13.6	11.5	NIL	NIL
Both sexes	7.47	11.75	9.7		

In this study BL (Figures 3a, 3b, 3c) consists of 50% (N=17) of the total number of malignant tumours and 68% of the lymphomas. Excluding BL, the incidence of lymphomas drops from 73.5% to 47.1% (8 cases of lymphoma out of 17 malignant tumours) and the incidence of malignant tumours of the orofacial region from 28.8% to 16.8%. The male: female ratio is 9:8 (1:1). This ratio does not support the very high prevalence seen in boys in most studies^{1, 10} though it confirms the higher incidence in boys. Segbefia et al report 72% BL of all childhood lymphomas seen at the KBTH³³.



Fig. 3a: 7year old boy with Burkitt's lymphoma of left maxilla



Fig. 3b: Intraoral lesion of patient in Figure 3a



Fig. 3c: Same patient after 2 cycles of chemotherapy

There were eight (8) sarcomas of which one was OSC and the rest were RBD (Figures 4a, b). The former represents 2.9% of the malignant tumours and the latter 20.6%. They are usually reported to occur in the younger age group. In this study the youngest was 5 and oldest 13 for the RBD group. There were more girls (N=4) with the condition than boys (N=3). The girls were, as the other groups, older than the boys (Table 2). The only patient with OSC was a 15 year old boy.



Fig. 4a: 9 year old girl with Rhabdomyosarcoma of left maxilla



Fig. 4b: Patient in fig. 4a after surgery and chemotherapy

The variety of malignant neoplasms was very restricted in this study. This may be that some of the tumours are very rare. Ajayi¹ attributes the low incidence to the low global incidence of childhood malignant tumours. Another factor could be the use of local medicine men in our region who may be the first port of call for the parents and hence the child not being brought to the hospital in time before their demise.

Carcinoma is consistently the rarest of all the tumours in this age group with only one recorded in this study. This is similar to most other studies^{10, 17, 34}. It is infrequent in patients under 20 years of age and extremely rare in the first decade of life^{1, 4}. The risk factors of squamous cell carcinomas in adolescents

have been widely discussed²⁵. The main risk factors of tobacco and alcohol and the period of indulgence are usually very low because of the period of contact. Other factors such as genetic predisposition, viral infections and states of immunodeficiency, among others may still have a role to play³⁵.

The treatment methods are limited in our region, especially due to late presentation. Chemotherapy remains the main mode of treatment with unpredictable results. Surgery is aimed at debulking and palliation. The survival rate for these patients was not studied as already mentioned, however most of the patients did not return for review, as parents visit traditional medicine men with their wards with the hope that there would be better outcome. The patients who presented early had better outcome, such as the one shown in figures 3a, 3b and 3c.

Conclusion

The commonest childhood malignant tumour in this study was lymphoma with sarcoma a distant second and only one carcinoma. BL is the commonest of the lymphomas. The gender variation is not as wide as reported in other studies being equal in the overall prevalence. The prevalence was higher among the girls in the oldest age group. Chemotherapy is the mainstay of treatment with variable results.

There is the need to educate the public on early presentation since that would give a good outcome. There is also the need for a prospective study to establish incidences over more prolonged periods. Conclusions made using higher incidences may be more substantive.

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