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Head and Neck Sarcomas: Demographic and Histological Characteristics in a Tertiary Hospital of a Developing Country

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Authors' contributions

This work was carried out in collaboration between all authors. Author AM designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors KA and SBA managed the analyses of the study. Author SBA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Background: Head and neck sarcomas are rare connective tissue malignancies affecting all age groups and any of the anatomical sites of the head and neck region.
Aim: Is to describe the demographic, anatomic and histological characteristics of head and neck sarcomas.
Materials and Methods: This is a retrospective study of patients with histologic diagnoses of head and neck sarcomas seen in a Nigerian tertiary hospital, from January 2010 to December 2015. The retrieved data were reviewed for age, sex, types and sites of tumour origin and analysed statistically using predictive analysis software version 18.
Results: We reviewed a total of 51 cases, and these represented 3.2% of a total of 1,574 cases of head and neck malignancies diagnosed during the study period. Males 27 (52.9%) and Females 24 (47.1%). The median ages at presentation for adults and children were 28 and 6.5 years respectively. Age ranged from 8 days to 65 years. The majority of the patients were in their first

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(31.4%) and third (27.5%) decades. The soft tissue sarcomas 38 (74.5%) accounted for the majority of primary head and neck sarcomas. Osteogenic Sarcoma 13(25.5%) was the only hard tissue sarcoma reported. Thirty-one (60.8%) cases recorded in adults; osteogenic sarcoma 11(35.5%) was the most common and in children 20 (39.2%), the majority were rhabdomyosarcoma 17 (85%), and the least commonly reported case was a malignant peripheral nerve sheath tumour 1(5%).
The most common sites of primary head and neck sarcomas among children were the oral cavity 5 (25%) followed by the mandible 4 (7.8%). In adults, maxilla and the neck 5 (16.1%) respectively were the most common site.
Conclusions: Head and neck sarcomas are uncommon tumours. The most common histological type for adults and children were embryonal rhabdomyosarcoma and osteogenic sarcoma respectively. Though any part(s) of the head and neck region can be affected, in adults patients, parameningeal site are more frequently involved.

Keywords: Head and neck; sarcoma; anatomical sites; histological characteristics.

1. INTRODUCTION

Sarcomas are aggressive and rare malignancies, derived from cells of mesenchymal origin with less than 15% of this occurring in the head and neck region [1], and constitutes 1% of all tumours in this region [2,3]. The tissue of origin is diverse, classified into soft tissue sarcoma and bone/cartilage sarcoma [4,5]. About 80% of sarcomas originate from soft tissues, while 20% originate from the bone [6]. Specifically, osteosarcoma is the most common sarcoma in the head and neck among adults and rhabdomyosarcoma is the most common in children [7,8].

The commonly reported primary sites of soft tissue sarcoma in the head and neck region include the scalp, face, and neck [9], while in bone sarcomas, maxilla and the mandible are commonly involved especially for osteosarcoma. [10,11].

There are lots of literature on head and neck malignancies in Nigeria, with a shortage of information precisely on the head and neck sarcoma [12-14]. This study aims to describe the demographic, anatomic and histological profile of head and neck sarcomas in a Nigerian tertiary health institution.

2. MATERIALS AND METHODS

A retrospective study of patients with histological diagnosis of head and neck sarcomas seen in the Usman Danfodiyo University Teaching Hospital, Sokoto, Nigeria. The tertiary health institution is a referral centre that receives biopsies from the nearby hospitals of the northern states of Nigeria (Kebbi, Zamfara, and Niger) and also from a neighbouring country: Niger Republic. Data on the head and neck sarcomas from January 2010 to December 2015, were reviewed for age, sex, histological diagnoses, types of sarcomas and site of tumour origin. The data retrieved from the registers of the department of histopathology which keeps Archives of histologically confirmed reports. International classification of disease for Oncology (3rd edition) [15] was used to classify the sarcomas based on the site. The in exclusion criteria are benign/other malignant tumours of head and neck and that of the intracranial compartment.

Age less than 14 years and 15 years and above [16] were defined as children and adults respectively.

The data analysed statistically using Predictive Analysis Software version 18, for mean and frequency distributions.

3. RESULTS

A total of 51(3.2%) cases of head and neck sarcomas were reviewed, representing a total of 1,574 cases of all the histologically diagnosed head and neck malignancies reported during the study period. Twenty-seven (52.9%) were males and 24 (47.1%) females with a ratio of 1.1:1. Twenty-two years was the median age at presentation (age ranged from 8 days to 65 years). However, respectively, the median ages for adults and children with head and neck sarcomas were 28 and 6.5 years. The majority of patients 16(31.4%) in the first and the third decades 14(27.5%) were commonly affected while a patient in the 6th decade 1 (2%) of life was the least affected as shown in Fig. 1. The soft tissue sarcomas 38 (74.5%) accounted for the majority of the head and neck sarcomas in

this study and of which embryonal rhabdomyosarcoma 15 (39.5%), alveolar rhabdomyosarcoma 9 (23.7%), and malignant peripheral nerve sheath tumours 6(15.8%) were the most common. Osteogenic Sarcoma 13(25.5%), being the second most common head and neck sarcoma was the only hard tissue sarcoma reported in this study as shown in Table 1. We recorded thirty-one (60.8%) cases in adults: osteogenic sarcoma 11(35.5%), alveolar rhabdomyosarcoma and malignant peripheral nerve sheath tumours 5 (16.1%) respectively, were the most frequently reported cases (Table 1). Twenty (39.2%) were children of which, embryonal 13 (65%) and alveolar 4 (20%) rhabdomyosarcomas were the most common and the least reported cases were osteogenic sarcoma 2 (10%) and malignant peripheral nerve sheath 1 (5%) as shown in Table 1.

The most common sites of primary head and neck sarcomas among children in the study were the oral cavity 5 (25%) and the mandible 4 (20%). In adults, maxilla and the neck 5 (16.1%) respectively, followed by the mandibular 4 (12.9%) as shown in Table 2.

4. DISCUSSION

Sarcomas are uncommon in the head and neck region [2]. Many studies, depending on the duration, reported few cases of patients with head and neck sarcomas [17-24], and this could explain the few number of cases reported in this study.

Studies in adults with head and neck sarcomas reported median ages at presentation between 50-59 years [20,21]. In contrast to this review, the majority of our adult patients were in the third decade of life. The osteogenic sarcoma frequently reported in adult in this study, was found to present at the median age of 30 years in other studies [12] and this will explain our finding in this study.

In our series, osteogenic sarcoma and rhabdomyosarcoma are the most common head and neck sarcomas in adults and children respectively, which is similar to other findings in the literature [7,25,21].

Osteogenic sarcoma in children is very rare. A study by Daw et al. [22], reported 18 cases of osteosarcoma in children over 36 years; this will explain the rarity of childhood osteosarcoma. Similarly, rhabdomyosarcoma though common in the pediatric age group [26], it is very rare in an adult with the alveolar type been more frequent [23], this was similar to our finding in our study.

Sarcoma can occur at any anatomic site of the head and neck. In literature, the commonly reported sites are the neck, maxilla and mandible. [4,17] In our series, the various involved anatomical sites are comparable with other studies. [4,17] Oral cavity as a primary site of sarcoma, is not a typical finding in children. Yamaguchi et al. [4], reported 3 of 32 cases of sarcomas of the oral and maxillofacial region in 25 years, which is in contrast to the finding in this present study where oral cavity was the most commonly involved site in children.

Table 1. Histological types of head and neck sarcomas by age group

	Age group (n=51)	
	0-14 (n=20)	15-70 (n=31)
Types of sarcomas	**Number (%)**	**Number (%)**
Rhabdomyosarcoma		
Embryonal	13(65)	2(6.5)
Alveolar	4(20)	5 (9.8)
Osteogenic sarcoma	2(10	11(35.5)
MPNST (Malignant Peripheral Nerve Sheath Tumor)	1(5)	5(16.1)
Kaposi sarcoma		3(9.7)
Dermatofibrosarcoma		2(6.5)
Undifferentiated fibrosarcoma		1(3.2)
Leiomyosarcoma		1(3.2)
Malignant fibrous histocytoma		1(3.2)

Table 2. Anatomic sites distributions of head and neck sarcomas by age group

	Age groups (n=51)	
	0-14 (n=20)	15-70 (n=31)
Site	**Number (%)**	**Number (%)**
Oral cavity	5 (25)	1 (3.2)
Mandible	4 (20)	4(12.9)
Cheek	2 (10)	1 (3.2)
Forehead	2 (10)	1 (3.2)
Temporal bone	2 (10)	
Maxilla	1 (5)	5(16.1)
Nasopharynx	1 (5)	1 (3.2)
Parotid	1 (5)	3 (9.7)
Nasal cavity	1(5)	1 (3.2)
Orbit	1 (5)	
Neck		5 (16.1)
Scalp		3 (9.7)
Frontoethmoidal sinuses		2 (6.5)
Oropharynx		2 (6.5)
Lower eye lid		1 (3.2)
Nasolabial		1 (3.2)

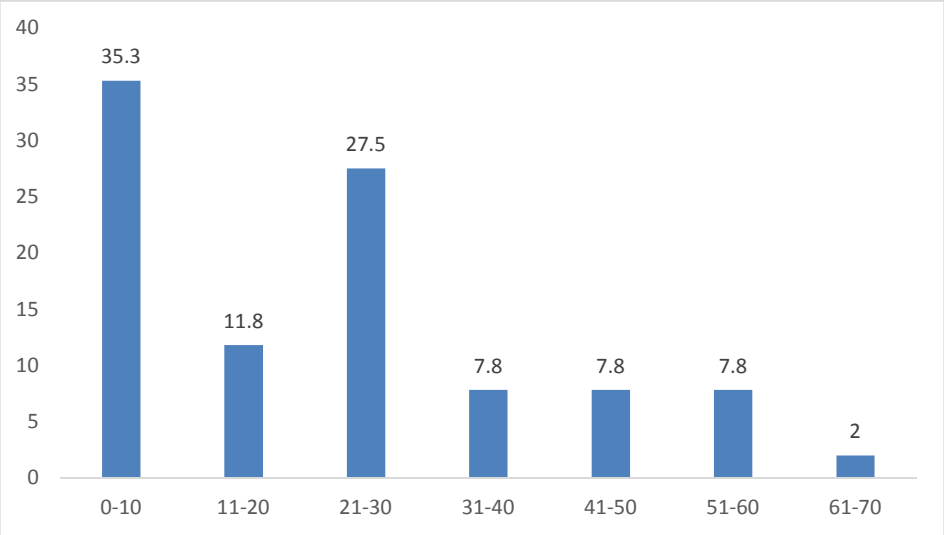

Fig. 1. The age distribution of head and neck sarcomas

This study mainly highlights the histological types of sarcoma and sites of tumour origin. The need for future studies to describe the treatment outcomes especially for those with parameningeal involvement which are known to have poor prognostic outcome [27], cannot be overemphasised.

5. CONCLUSION

In conclusion, head and neck sarcoma are uncommon tumours. The age ranged from 8 days to 65 years (mostly involving children and the young adult patients). Tumour origin arises from the various anatomical sites of the head and neck regions. However, the parameningeal locations are more affected in adult patients. This study only examines the demographic, anatomic, and histological profile of patients with head and neck sarcoma; further research is desirable in our institution to describe the management and prognostic outcomes of these patients.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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