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ORIGINAL ARTICLE

SPECTRUM OF MUSCULOSKELETAL TUMOURS IN CHILDREN IN A TERTIARY HOSPITAL IN NIGERIA

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ABSTRACT: BACKGROUND: Musculoskeletal tumours in children are a source of concern for the orthopaedic surgeon and paediatric oncologist. In Nigeria and other parts of sub Saharan Africa, where infectious diseases like malaria, tuberculosis and malnutrition are the leading causes of illness among children, little attention is given to paediatric oncology. This study was aimed at determining the spectrum of these tumours in children at our centre, and arriving at the common types of these tumours and the sites involved. **METHODOLOGY:** This was a retrospective study analysis of the pathology records from the cancer registry and the case notes of children who were diagnosed clinically and histologically, and managed for musculoskeletal tumours at the Jos University Teaching hospital Nigeria, from 2000 to 2009. **RESULTS:** A total of 90 musculoskeletal tumours in children were identified. The ages of the children ranged from 11 months to 18 years with a mean age of 10.9 years +/-5.1 years. The male female ratio was 1.3: 1.70(77.7%) tumours were malignant while, 20(22.2%) were benign. For the malignant variety, Rhabdomyosarcoma made up, 54(77.1%), Osteosarcoma 8(11.4%), Fibrosarcoma 5(7.1%). The benign tumour varieties were; Osteochondroma 5(25%), Giant cell tumour 2(10%), Angio fibroma 2(10%), Osteoid osteoma 2(10%). The anatomic regions affected were; head and neck 27(30.0%), trunk 20(22.2%), thigh 10(11.1%), legs 10(11.1%). **CONCLUSION:** Malignant tumours made up most of the musculoskeletal tumours in children. Rhabdomyosarcoma was the commonest malignant tumour and osteochondroma the commonest benign. The head and neck was the anatomical site mostly affected.

KEYWORDS: Musculoskeletal, Tumours, children, Nigeria.

INTRODUCTION: Tumours in children can be challenging for the clinician, and are an unpleasant reality in clinical practice.[1-3] Children can be plagued by a wide variety of tumours and malignant conditions ranging from the, hematological malignancies to solid tumours of the intra cranial, intra thoracic and intra-abdominal compartments to those involving the musculoskeletal system.[4-7] The occurrence of these tumours in these children can be very devastating as with tumours even in adults. The inability of children to clearly characterize their symptoms.[8] can delay the presentation of these conditions to the clinician and even when they present, can result in a misdiagnosis or a delayed diagnosis. Musculoskeletal tumours on the other hand when they appear may lead the parents to consider other clinical entities first because such conditions are usually associated with adults more frequently than children.

This can result in delayed presentation. An early diagnosis of these conditions whether benign or malignant and prompt treatment would lead to a better prognosis and outcome of care. Early presentation and improved management modalities have shown an increased survivourship in children with tumours both benign and malignant.[5,9-12] In Nigeria, sub-Saharan Africa and other developing countries where the burden of disease in children is mainly from infective and nutrition

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related illnesses such as malaria and tuberculosis[13-16] attention to conditions such as tumours tends to take the backstage. The management of tumours also require a multidisciplinary and multimodal approach,[17-20] the use of specialized diagnostic equipment both laboratory and imaging and a range of treatment modalities,[5,21-24] and this further adds to the cost of care, which further limits the quality of care obtainable in resource poor settings. These conditions have however been shown to be present among children in these environments.[3,5,6,25] and thus, more attention needs to be paid to these conditions by means of enlightenment and greater allocation of the limited health resources in developing countries towards the management of these conditions. The poor attention to paediatric surgical oncology in this region, ignorance on the part of parents and poor access to healthcare, results in many of these patients presenting to the hospitals with locally advanced or metastatic tumours,[3,5,25,26] with the attendant poor prognosis this stage of presentation portends. This study was aimed at elucidating the musculoskeletal tumours common in our hospital, the various histologic varieties as well as the age of occurrence and the sites more commonly involved.

METHODOLOGY: This was a retrospective study analysis of the pathology records from the cancer registry and the case notes of children who were diagnosed clinically and histologically, and managed for musculoskeletal tumours at the Jos University Teaching Hospital from 2000 to 2009. Data was obtained from these sources regarding the tumour type, sex, age at presentation and the anatomical site involved. Children with nonsolid tumours, tumours in the chest or within the abdomen and pelvis and those who had incomplete records were excluded from the study. The data was analysed for simple means and percentages using Epi - info statistical software.

RESULT: A total of 90 musculoskeletal tumours in children were identified. The ages of the children ranged from 11 months to 18 years with a mean age of 10.9 years +/-5.1 years. The male female ratio was 1.3: 1.70(77.7%) tumours were malignant while, 20(22.2%) were benign. Of the malignant variety, Rhabdomyosarcoma made up, 54(77.1%), Osteosarcoma 8(11.4%), Fibrosarcoma 5(7.1%). Table 1.The benign tumour varieties were; Osteochondroma 5(25%), Giant cell tumour 2(10%), Angio fibroma 2(10%), Osteoid osteoma 2(10%) Table 2. The anatomic regions affected were; head and neck 27(30.0%), trunk 20(22.2%), thigh 10(11.1%), legs 10(11.1%) Table 3, Fig. 1.

DISCUSSION: 90 musculoskeletal tumours in children were identified in this study. Malignant tumours made up 77.7% of these musculoskeletal tumours while the benign tumours made up 22.2%. The commonest histologic type of malignant tumour was Rhabdomyosarcoma which made up 54(77.1%) of the malignant tumours. This finding is similar to that obtained by other investigators.[1,3] Rhabdomyasarcoma has been found to be amongst the commonest malignant musculoskeletal tumours affecting children.[1,17,27,28] Israelsen et al in their work found Osteosarcoma and Ewings sarcoma the commonest varieties.[29] Osteosarcoma was the next most commonly occurring malignant tumour in children here 8(11.4%).

The above findings are in keeping with a review article by Arndt et al who found Osteosarcoma, Rhabdomyosarcoma and Ewings sarcoma to be the most commonly occurring malignant musculoskeletal tumours in children and adolescents.[17] This is fact is also stated by Heare et al in their study.[12] Osteosarcoma is a primary malignant bone tumour that has a peak incidence in adolescents and late adulthood.[30] It is commonly associated with bone growth during pubertal

growth spurts.[30,31] It commonly affects adolescents and is one of the commonest musculoskeletal malignancies in adolescents.[32] Only one case of malignant fibrous histiocytoma and dermatofibrosarcoma were found in this study. Though Ewings sarcoma is among the common musculoskeletal tumours in children,[12,17,33] no case of Ewings sarcoma was seen in this study. Other investigators in this part of the world have not reported Ewings sarcoma as a common cause of musculoskeletal malignancy.[1,3,5,27] Of the benign tumours, Osteochondroma was the most commonly occurring (25%). Next commonly occurring benign tumours were Giant cell tumour (10%), Osteoid osteoma (10%). Similar findings are also noted in studies by other researchers.[34,35]

The most frequently affected anatomical site in this study was the head and neck region (30%) and this site is also seen as being the most affected in works done by several other investigators.[27,36,37] The trunk was next in line of involvement (22.2%) and the thighs and legs being involved in 11.1% each. The male female ratio in this study was 1.3: 1 which was also is similar to that by Tanko et al and Adewuyi et al.[1,3] The mean age of presentation was 10.9 yrs+/-5.1. Adewuyi and colleagues.[3] had a mean age of 8.7years for rhabdomyosarcoma. From the above study the malignant tumours make up a larger percentage of musculoskeletal tumours in children. Ewings Sarcoma is found to be a rare occurrence in this environment. A prospective multicenter study covering a wide region of Nigeria would give a clearer picture of these tumours in children. This information can be employed in health care planning and population enlightenment to enhance early presentation and help improved care towards these conditions.

CONCLUSION: Malignant tumours made up most of the musculoskeletal tumours in children in our center. Rhabdomyosarcoma was the commonest malignant tumour and osteochondroma the commonest benign tumour. The head and neck was the anatomical site mostly affected.

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Malignant tumours	Frequency	Percentage
Dermatofibro sarcoma	1	1.4%
Fibrosarcoma	5	7.1%
Liposarcoma	1	1.4%
Malignant firous histiocytoma	1	1.4%
Osteosarcoma	8	11.4%
Rhabdomyosarcoma	54	77.1%
Total	**70**	**100.0%**

Table 1: Malignant tumours

Benign tumours	Frequency	Percentage
Angiofibroma	2	10.0%
Chondroma	2	10.0%
Chondromyxoid fibroma	1	5.0%
Fibroma	1	5.0%
Fibrous dysplasia	1	5.0%
Fibrous histiocytoma	3	15.0%
Giant cell tumours	2	10.0%
Osteiod osteoma	2	10.0%
Osteoblastoma	1	5.0%
Osteochondroma	5	25.0%
Total	**20**	**100.0%**

Table 2: Benign tumours

Location	Frequency	Percentage
Arm	2	2.2%
Axilla	5	5.6%
Foot	5	5.6%
Forearm	2	2.2%
Groin	5	5.6%
Hand	4	4.4%
Head and neck	27	30.0%
Leg	10	11.1%
Thigh	10	11.1%
Trunk	20	22.2%
Total	**90**	**100.0%**

Table 3: Anatomic location of the Tumours

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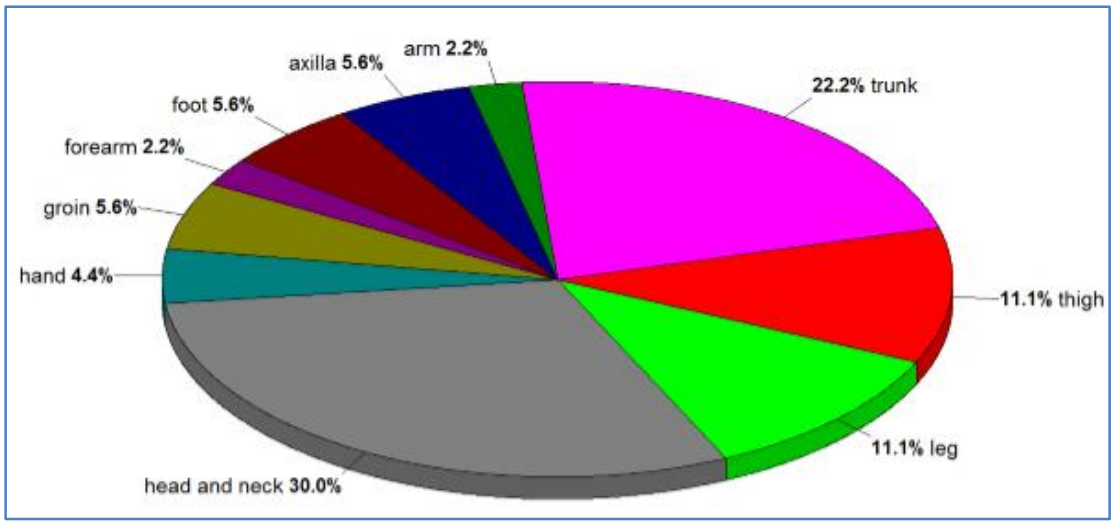

Fig. 1: Anatomic location of Tumours

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