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PRIMARY BONE TUMOURS IN A TERTIARY HOSPITAL IN NIGERIA: 25 YEAR REVIEW

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SUMMARY

Background: Primary bone tumors remain a daunting challenge to orthopaedic surgeons. The challenge is heightened in developing countries due to limited diagnostic and therapeutic facilities and ignorance. The published literature on the subject is sparse in our environment.

Objective: To describe the pattern of primary bone tumors seen in a tertiary hospital in Nigeria.

Methods: This is a retrospective review of all the histologically confirmed primary bone tumours seen at Lagos University Teaching Hospital (LUTH) over a 25 year period.

Results: A total of 242 patients (aged 7.5 to 62 years) with a mean of 25.3 years were studied. One hundred and forty four patients (59.5%) were males and 98(40.5%) were females. The peak age incidence was in the age group 11-20 years. One hundred and thirty (53.7%) of the tumors were benign. Among these Osteochondroma was the commonest accounting for 36 cases (27.7%) followed by Osteoclastoma, 28 cases (21.5%). Osteosarcoma accounted for 66 cases (58.9%) of all primary malignant tumours in the study.

Conclusion: This study showed that primary bone tumours were mainly benign, occurred predominantly in the second decade of life with a male preponderance. Osteochondroma and Osteosarcoma were the most common benign and primary malignant bone tumours respectively.

Key Words: Bone tumours, bone neoplasms, Nigeria *(Accepted 10 June 2008)*

INTRODUCTION

Bone tumours remain a daunting challenge to orthopaedic surgeons, pathologists, medical oncologists and radiotherapists worldwide. There are of two varieties; primary and secondary. Predisposing factors to primary bone tumours include trauma[1], irradiation[2], foreign bodies[3] and mutation[4]. However, the precise causes are not known. Bone tumours affect males more than females[5-8], and occur more in the second and third decades of life[5,9]. Benign bone tumours occur more frequently than primary malignant tumours[4-6,9,10]. Generally, primary malignant bone tumours carry high morbidity and mortality[11] especially when inappropriately managed. The scourge of bone tumours in our environment remain devastating inspite of the tremendous progress made in its management worldwide. Our inability to grapple with this problem stems from the twin factors of lack of diagnostic/therapeutic facilities as well as ignorance of our populace[6]. The latter is caused mainly by mis-directed cultural and religious beliefs in our society. In the United States of America there are about 3,000 new cases of bone tumours annually[12]. In Nigeria, the incidence of bone tumours is not known; as such statistics relating to epidemiology from a community perspective are non existent. Also many of such patients die without orthodox medical care or definitive diagnosis and there is no properly kept tumour registry for appropriate documentation and records. Considering the potential morbidity associated with bone tumours, it is important to understand the magnitude and characteristics of the disease in our population, albeit from a hospital perspective. We thus sought to retrospectively determine the pattern and demography of bone tumours presenting at tertiary care level in Nigeria.

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MATERIALS AND METHODS

This was a retrospective review of all cases of histologically confirmed primary bone tumours treated at Lagos University Teaching Hospital (LUTH), Lagos, Nigeria from January 1981 to December 2005. Utilizing the case records in the morbid anatomy department of LUTH, cases of histologically confirmed primary bone tumours over the study period were retrieved. They were reviewed and analysed for age, gender and histological types. Tumours of the marrow elements except for Ewing's

Sarcoma were excluded, because treatment of such tumours were often undertaken by haematologists without the attention of orthopaedic surgeons. The data was collated and analyzed with Epi-info soft ware version 6.05.

RESULTS

Two hundred and forty two cases were identified of which 144(59.5%) were males while 98(40.5%) were females. This gives a male to female ratio of 1.5:1. the age range of cases was from 7.5 to 62 years with a mean of 25.3 years. Table 1 shows crowding of cases of primary bone tumours in the first four decades of life which accounted for 84.3% of the cases studied. Nearly half (48.0%) of the cases were aged 20 years or below with a peak frequency in the age range 11-20 years. Benign bone tumours accounted for 130 cases representing 53.7%, while primary malignant tumours were 112 (46.3%).

Tumours of osteocyte cell type accounted for a clear majority (62.0%) of the cases studied followed by tumours of fibrocyte cell type which accounted for 19.8%. These are shown on table 2.

Among benign bone tumours shown on table 3, Osteochondroma was the commonest accounting for 27.7% followed by osteoclastoma (21.6%). Further breakdown of the types of primary malignant bone tumours on table 4 showed that osteosarcoma accounted for a majority (58.9%). Of the Osteosarcoma reviewed 40 (66.7%) were young and within the first two decades of life. Similarly all the cases of Ewing's sarcoma were aged 11 to 20 years. Twenty-two (61.1%) of the 36 cases of osteochondroma, were aged 20 years or less. However, for osteoclastoma, 79.0% were in the third and fourth decades of life.

Table 1**: Distribution of Cases of Primary Bone Tumours by Age at Diagnosis**

AGE	NO. OF CASES	%
0-10	28	11.6
11-20	88	36.4
21-30	48	19.8
31-40	40	16.5
41-50	20	8.2
51-60	12	5.0
Above 60	6	2.5
TOTAL	**242**	**100**

Peak frequency 11-20 years, less than 40 = 84.3%, 41 and above 15.7%

Table 2: **Histologic (Cell Types) of Primary Bone Tumours**

Cell type	Benign	Malignant	Total	%
Osteocytes	84(34.7%)	66 (27.3%)	150	62.0
Chondrocytes	12(5.0%)	24 (9.9%)	36	14.9
Fibrocytes	34 (14.0%)	14 (5.8%)	48	19.8
Marrow cells (Ewing's)	0(0%	8 (3.3%)	8	3.3
Total	**130(53.7%)**	**112(46.3%)**	**24**	**100**

Table 3: **Pattern of Benign Bone Tumours According to Cell and Tumour Type.**

Cell Type	Tumour	M	F	Total	%
Osteocytes	Osteoma	8	8	16	12.3
	Osteochondroma	24	12	36	27.7
	Osteoblastoma	4	0	4	3.1
	Osteoclastoma	12	16	28	21.6
Fibrocytes	Non-Ossifying Fibroma	2	0	2	1.5
	Ossifying Fibroma	4	2	6	4.6
	Simple bone cyst	2	0	2	1.5
	Aneurysmal bone cyst	12	6	18	13.9
	Fibrous Histiocytoma	4	2	6	4.6
Chondrocytes	Chondroma	6	4	10	7.7
	Chondroblastoma	2	0	2	1.5
	Total	**80(61.5%)**	**50(38.5%)**	**130**	**100%**

Table 4:**Pattern of Malignant Bone Tumours According to Cell and Tumour Type**

Cell Type	Tumour	M	F	Total	%
Osteocytes	Osteosarcoma	36	30	66	58.9
Chondrocytes	Chondrosarcoma	10	14	24	21.4
Fibrocytes	Fibrosarcoma	8	2	10	8.9
	Haemangio pericytoma	4	0	4	3.6
Marrow cells	Ewing's Sarcoma	6	2	8	7.2
Total		**64(57.1%)**	**48(42.9%)**	**112**	**100**

DISCUSSION

This retrospective study describes the pattern and frequencies of primary bone tumours histologically evaluated at a tertiary referral centre in Lagos, Nigeria, over a quarter of a century. The study is relevant in that it addresses a bone disorder for which there are relatively few reports emanating from our population, emphasizing the histologic types and age groups for which the burden is highest. Two hundred and forty two cases of primary bone tumours in a tertiary centre over a period of 25 years gives an annual average of 10 cases per year. This is less than annual average of 16.5 documented at a similar centre in eastern Libya[9], and much less than 3,000 new cases per year in the United States of America (USA)[12]. This may not only reflect the rarity of the tumours in Lagos but it particularly highlights the unwillingness of our people to utilize orthodox medical services while patronizing traditional bone setters and spiritual homes. The male preponderance found in this study had been reported in other Nigerian and foreign studies[5-7,9,10,13,14]. The male to female ratio of 1.5:1 found coincides with the finding of 1.5:1 by Mohammed et al[5] in Zaria but slightly higher than ratios reported by Odetayo[6] at National Orthopaedic Hospital, Lagos Omololu et al[7] in Ibadan and Rasahid et al[14] in China. Our finding of peak age group as 11-20 years had been reported by other authors[5,13,15]. In this study the 48% of the primary bone tumours found among patients aged 20 years or less is similar to 45% reported in same age groups in Ibadan[7]. Benign bone tumours accounted for majority (53.7%) of primary bone tumours in this study. This dominance of benign over primary malignant bone tumours had been generally reported[5,6,9,10,16-19]. The most common benign tumour was osteochondroma, while the most common primary malignant tumour was osteosarcoma. This pattern is consistent with results of other studies[6,10,11,20-22]. This study provides a basis for comparison of demographics and histology of bone tumours in our environment with those of other populations. Our study is limited by its retrospective nature because of inherent problems in data documentation and record retrieval. In addition, more extensive histo-pathologic analysis was not done due to limitations in technology available at our centre.

CONCLUSION

The demographic pattern and distribution of bone tumours seen at our centre are similar to that reported from other countries. Males were more commonly affected by bone tumours with a peak in the second decade of life. Osteochondroma and Osteosarcoma were the commonest benign and malignant varieties respectively. Studies to determine the true prevalence and incidence from a population perspective are warranted.

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