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Primary malignant bone tumours in Ibadan, Nigeria: an update

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Summary

Bone tumours are relatively rare compared to tumours of other sites. The frequency of primary malignant bone tumours is low in our environment, as was observed in an earlier study. The aim of this study is to update the information available on the pattern of primary malignant bone tumours at the University College Hospital (UCH), Ibadan, Nigeria. The medical records of 49 patients with malignant bone tumours documented in the Cancer Registry of UCH, Ibadan between January 2001 and September 2007 were reviewed retrospectively. The results were then added to those of the previous study published in 2002. This brought the number of cases of primary malignant bone tumours to 163 from January 1977 to September 2007. Primary malignant bone tumours represented 0.53% of the 30462 cases of cancer seen in the hospital in the period studied. The male female ratio was 1.5:1. About 44% of the tumours occurred among patients less than 20 years of age. Osteogenic sarcoma was the commonest malignant bone tumour. Important changes recorded in the seven years since the last review from this centre include; a rise in the prevalence rate of primary malignant bone tumours (49 new cases in the last seven years as compared to 114 cases over 23 years), the male-female ratio of Osteogenic sarcoma showed a decline (1.5:1 as compared to 1.6:1), and there was an increase in the prevalence of primary malignant bone tumours in the 0-9 years and > 60 years age groups. The significance of these findings will need to be determined by further studies.

Keywords: Bone, neoplasm, malignant, pathology, Ibadan.

Résumé

Les tumeurs osseuses sont relativement rare comparé aux tumeurs des autres organes. La fréquence des tumeurs osseuses primaire mortelles est faible dans notre environnement, tel qu'était observé dans une

précédente étude. Le but de cette étude est d'actualiser l'information disponible sur un modèle de tumeurs osseuses primaires mortelle au centre hospitalier universitaire, UCH, Ibadan, Nigeria. Le rapport médical de 49 patients des tumeurs osseuse mortelle documenté dans le registre de cancer de UCH Ibadan entre janvier 2001 et septembre 2007 étaient rétrospectivement révu. Les résultats étaient alors ajoutés a ceux de l'étude précédente publiée en 2002. Ceci a amené le nombre de cas de tumeur osseuse primaire á 163 patients, de janvier 1977 á septembre 2007. Les tumeurs osseuse primaire mortelle representaient 0.53% des 30462 cas de cancer vue á l'hospital pendant la période d'étude. Le rapport male/femelle était 1.5/1 environ 44 de tumeurs existe parmi les patients de moins de 20 ans. Le sarcome ostéogénique était la tumeur osseuse mortelle la plus commune. Les changements important rapporté en sept ans depuis la dernière revue de ce centre incluse, l'augmentation du taux de prévalence des tumeurs osseuse primaire mortelle, 49 nouveaux cas dans les sept dernières années comparé aux 114 cas il y a 23 ans. Les proportions de male/femelle ayant le sarcome ostéogénique ont montré une chute de 1.5/1 á 1.6/1 et il y avait une augmentation de la prévalence des tumeurs osseuses primaire mortelle chez les groupes de 0 á 9ans et plus de 60ans. L'importance de ces découvertes sera á explorer dans les études futures.

Introduction

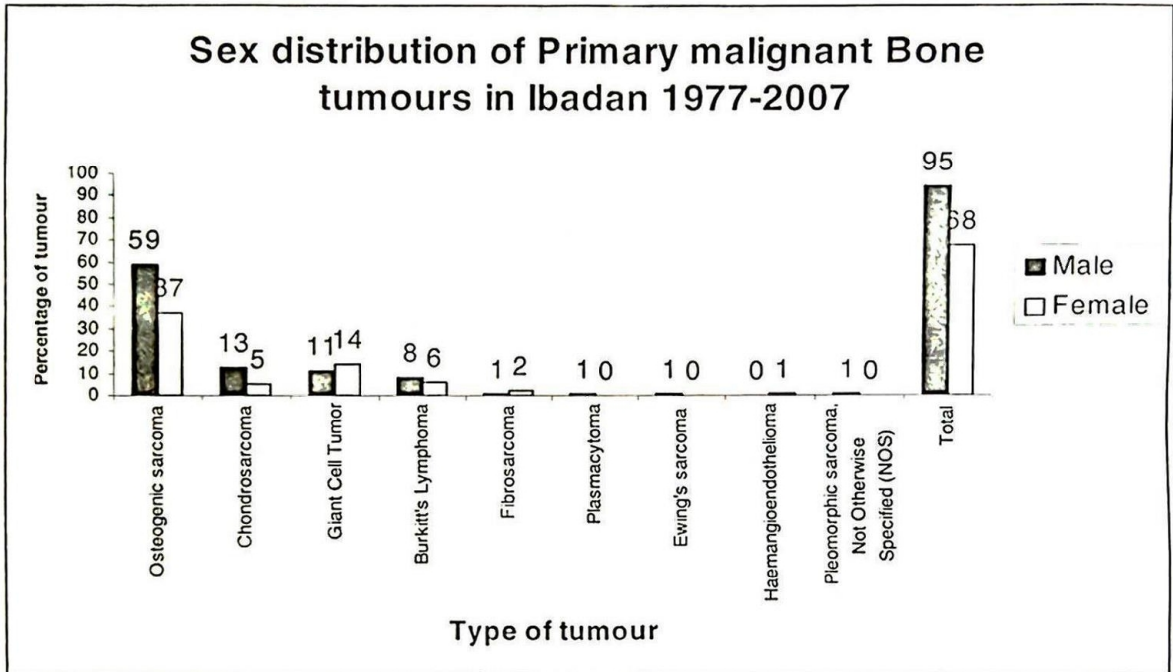
This study is done as a follow-up to a study we conducted, looking at primary malignant bone tumours between the periods January 1977 to December 2000 [1].

Primary malignant bone tumours arising from bone are still comparatively rare, representing less than 1% of all cancers worldwide [2,3]. Primary bone cancer accounts for 0.2% of all new cancers in the United States of America with approximately 2100 new cases diagnosed annually [3]. The incidence rates of these tumours differ as shown in the Cancer Registries in other African and Western countries [4]. With respect to age distribution, primary malignant bone tumours are seen relatively more commonly in young individuals compared to older patients, amongst whom secondary tumours predominate. Bone neoplasms are also comparatively rare in the paediatric age group, the predominant

examples being cases of osteogenic sarcoma, and among Caucasians, Ewing's sarcoma [5,6].

A lack of information on the frequency distribution of primary malignant bone tumours in this environment led to the previous study to determine these values. The aim of this study is to update available information and also to see if there are any variations from what was discovered in the previous study.

January 1977 to December 2007 was 30462. This figure shows a 29.8% increase in the total number of malignant neoplasms as compared to the previous study, which gave a value of 21390 as at December 2000. The total number of bone tumours seen during the entire study period was 997(3.2%) with 163 cases being primary malignant bone tumours as compared to 114 cases as at December 2000; this shows a 30% increase in the last seven years.



Materials and methods

We retrieved the records of all cases of primary malignant bone tumours in the Cancer Registry of the University College Hospital, Ibadan, Nigeria from January 2001 to September 2007. We already had the data from 1977 to 2000 [1]. Clinical notes were also retrieved and reviewed.

Cases were excluded from the study if the affected bone was not specified in the available clinical records or if the specimen was brought from a centre outside the University College Hospital, Ibadan and also where the tumours were of odontogenic origin.

The histological slides of the specimens were reviewed for correctness of diagnoses and when necessary, new slides were made from paraffin blocks and stained with haematoxylin and eosin.

Results

General findings

The total number of cases of malignant neoplasms recorded in the Cancer Registry during the period

Thus primary malignant bone tumours represented 16.3% of all the bone tumours while it represented 0.54% of all cancers recorded in Ibadan Cancer Registry between 1977 and 2007.

Tumour type

The histological types of bone tumours seen are shown in Figure I. Osteogenic sarcoma accounts for about 58.9% of all the tumours, as compared with 60.7% previously. Chondrosarcoma and Malignant giant cell tumour of bone represent 11.1% and 15.3% respectively of the primary malignant bone tumours, as compared with 14.3% and 11.6% previously. Malignant giant cell tumour had displaced Chondrosarcoma as the second commonest tumour. Burkitt's lymphoma accounted for 8.6% of the cases, while Plasmacytoma, Ewing's sarcoma and Haemangioendothelioma are still relatively rare, each representing 0.6% of the cases seen. One case of Pleomorphic sarcoma not otherwise specified (NOS) was documented in this study.

Sex distribution

Males accounted for 58.3% of cases with primary bone tumours seen while females accounted for 41.7% giving a male to female ratio of 1.4:1. In majority of the tumours, males were more frequently affected except in giant cell tumour and fibrosarcoma where more females were affected than males (fig. 1).

Site distribution

From the data (Table 1), the site most commonly affected by primary malignant bone tumour is the femur (43 cases) followed closely by the mandible (42 cases). The femur was still the site most commonly affected by Osteogenic sarcoma and the data shows an increased incidence of the tumour over the last five years. The tibia and maxilla follow in proportions (28, and 16 cases respectively)

age had increased to 4% from 3% in the previous study.

The results also show an increase in the incidence of primary malignant bone tumours in the age group 0-9years (4.9% as compared with 3.5%) and in the more than 60years age group (4.3% as compared to 1.75% previously).

Discussion

Primary bone tumours are rare (less than 1% of all malignant tumours) and are most common in young men [1,2,5,6]. This picture is validated in this study as 58.3% of all cases of primary malignant bone tumours seen in the course of this study were male and as stated in the results, 44.8% of all cases of primary malignant bone tumours in the period of study were seen in people less than 20years of age. The

Table1: Bimodal distribution of primary malignant bone tumours in relation to different bones of the body

	Osteo sarcoma	Chondro sarcoma	Giant cell tumour	Burkitt's lymphoma	Fibro sarcoma	Plasma cytoma	Ewing's sarcoma	Heman gio sarcoma	Pleomor phic sarcoma NOS	Total
Mandible	19	3	5	12	1	-	1	1	-	42
Femur	30	3	8	-	2	-	-	-	-	43
Tibia	20	1	7	-	-	-	-	-	-	28
Maxilla	10	2	2	1	-	-	-	-	1	16
Nasopharynx	1	-	-	-	-	-	-	-	-	1
Humerus	7	2	1	-	-	-	-	-	-	10
Ilium	2	3	-	-	-	1	-	-	-	6
Fibula	2	-	1	-	-	-	-	-	-	3
Ankle	1	1	-	-	-	-	-	-	-	2
Forearm bones	1	1	-	-	-	-	-	-	-	2
Ribs	1	1	-	-	-	-	-	-	-	2
Skull	3	-	-	1	-	-	-	-	-	4
Calcaneum	1	1	-	-	-	-	-	-	-	2
Sternum	-	1	-	-	-	-	-	-	-	1
Clavicle	1	-	-	-	-	-	-	-	-	1
Total	99	19	24	14	3	1	1	1	1	163
%	60.7	11.7	14.7	8.6	1.8	0.6	0.6	0.6	0.6	100

Age distribution

The highest incidence of primary malignant bone tumours is still in children and young adults less than 20years old (44.8%), this closely compares with 44.6% in the previous study. Osteogenic sarcoma and Burkitt's lymphoma still constitute the main tumours in the age group 0-20years (fig.2).

The majority of Osteogenic sarcomas (52.5% as compared with 50.6 previously) still occurred among patients less than 20years of age while the incidence in those more than 60years of

problem of malignant bone tumours with regards to age and sex incidence remains largely to be investigated in Africa [7,8].

In this study, primary malignant bone tumours accounted for 16.3% of all bone tumours and 0.54% of all cancers in Ibadan Cancer Registry.

Over the periods January 1977 to December 2000, 114 cases of primary malignant bone tumours were seen. In the periods January 2001 to September 2007, 49 new cases were seen, bringing the total from January 1977 to September 2007 to 163. This

demonstrates an increased prevalence rate of primary malignant bone tumours, the reason for which would have to be determined by further investigations.

Conclusion

The increasing incidence of primary malignant bone tumours in Ibadan as shown in this study is worth looking into. The trends in this study as compared

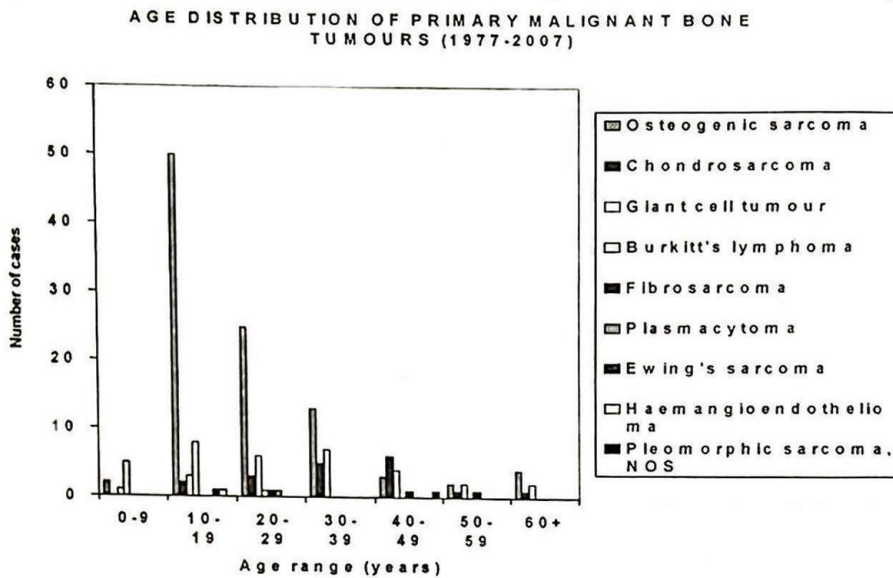


Fig. 2: Age distribution of primary malignant bone tumours (1977 - 2007)

In the previous study, the male to female ratio for Osteogenic sarcoma was 1.6:1, while in this study, the male to female ratio declined to 1.4:1, showing a rise in the incidence of this tumour in female subjects. The results also show an increased overall prevalence of primary malignant bone tumours in the age groups 0-9years and >60years. Burkitt's lymphoma seems to be having a progressive decline in primary bone involvement over the last five years [10]. The giant cell tumours were still more common in females than in males as compared with other types of tumours (Table 2) and this finding is consistent with the sex incidence of giant cell tumour worldwide, the results also shows a case of giant cell tumour in the 0-9years age group which is a bit unusual as the tumour is known to occur more commonly in persons over 20 years of age [11,12]. Osteogenic sarcoma in this update is now followed by giant cell tumour of bone before chondrosarcoma which is slightly different from the pattern observed in the earlier and other studies [13,14,15]. The presence of pleomorphic sarcoma not otherwise specified (NOS), highlights the diagnostic dilemma that arises with a small subset of bone sarcomas which are not so well differentiated and hence do not show the specific histologic features of any particular subtype of bone sarcomas. This subset of sarcomas would require ancillary studies like immunohistochemistry to properly sub classify them [15].

with the previous study show very little variation as the relative frequency of primary malignant bone tumours is still low in our environment and osteogenic sarcoma remains the most common primary malignant bone tumour though unlike in the previous study, it occurred slightly more commonly in the femur than in the mandible. The need for immunohistochemical studies in classifying a small subset of malignant bone tumours is also made obvious in this study.

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