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Bone Tumors of the Musculoskeletal System at the Cnhu-Hkm in Cotonou

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Abstract

Background: Tumor pathology, specifically bone tumors, is less frequent among all musculoskeletal diseases, but it is in full resurgence in the world. Studies have shown that the prevalence of tumor pathology is gradually increasing in Africa. Musculoskeletal bone tumors of the limb are less frequent. They often require clinical examination and imaging coupled with biopsy for their diagnosis. It can be a tragedy in developing countries like ours, depending on the histological nature of the tumor. Despite this, few data were retrieved in the literature review regarding the actual proportion of bone tumors, more specifically in Benin. **Methods:** This was a fifteen-year descriptive and analytic retrospective study. We recruited all patients with bone tumors of the musculoskeletal system in three units, namely the Orthopedic, Traumatology and Reconstructive Surgical Unit, Rheumatology Unit, and Internal Medicine and Palliative Care Unit at the Cotonou National Teaching Hospital from 1st January 2007 to 31st December 2022. Patients aged 15 years and above with musculoskeletal bone tumors were included. Those with radiation-induced lesions were excluded from our study. Therefore, this work had as objectives to study the epidemiological, lesion, and management aspects of the musculoskeletal tumor. **Results:** We identified a total of 97 cases of bone tumors out of the 13,161 medical files, with a prevalence of 0.74%. We had 48 men and 49 women, with a sex ratio of 0.97 and an average age of 48.67 ± 16.93 years, with extremes ranging from 15 to 82 years. Pain (94.84%), swelling (29.90%), and pathological fractures (12.77%) were the major complaints. The period between the first symptoms and the first consultation was 21 months. Malignant tumors were more common (n = 51), with multiple myeloma as the primary tumor and breast and prostate cancer metastases as secondary tumors; the most represented benign tumor was giant cell tumor (n = 9). Chemotherapy (48.49%), surgery

(35.29%), and radiotherapy (2.06%) were the most commonly used therapies. **Conclusion:** Bone tumors of the limb are found in young adults regardless of gender. Multiple myeloma as a primary tumor and secondary carcinoma were the most represented in our study. Chemotherapy and surgery were the principal means of management of our patients.

Keywords

Bone Tumors, Musculoskeletal System, Cotonou, CNHU-HKM

1. Introduction

The world is confronted with the alarming resurgence of tumor pathology, and in Africa, where it is a subject of great importance, the reason is the progressive increase in the prevalence of tumor pathology [1]. Fortunately, musculoskeletal tumor pathology remains less frequent among limb affections [2]. Depending on their histological nature, they can be a tragedy in developing countries like ours. The diagnosis of bone tumors, which obligatorily incorporates clinical examination, imaging, and biopsy, especially in cases of any suspicion of malignancy, is generally delayed due to late consultation, low income, and insufficient diagnostic resources [3]. Few data were retrieved in the literature review regarding the actual proportion of bone tumors [2]; more specifically in Benin, the subject has been very little discussed. With the aim of establishing a map of these tumors, our study focused on the epidemiological, lesion, and therapeutic aspects of bone tumors in Cotonou.

2. Methodology

We conducted a fifteen (15) year descriptive and analytic retrospective study starting from 1st January 2007 to 31st December 2022 in three teaching hospitals of the Cotonou National Teaching Hospital-HKM, namely the Traumatology, Orthopedics and Reconstructive Surgery unit, Rheumatology unit, and Internal Medicine and Palliative Care unit. Patients aged 15 years and above with musculoskeletal bone tumors were included. Those with radiation-induced lesions were excluded from our study.

3. Results

During this study period, we identified 97 cases of bone tumors out of the 13,161 medical files, with a prevalence of 0.74%. We had 48 men and 49 women, giving a sex ratio of 0.97. The average age in our cohort study was 48.67 ± 16.93 years, with extreme ages ranging from 15 to 82 years. Pain (94.84%), swelling (29.90%), and pathological fractures (12.77%) were the main circumstances upon discovery. A 21-month period was the time taken between the first symptoms and first consultation. Long bones were the preferred site of bone tumors, with 48.45% of cases,

followed closely by the spine with 40.21%. The femur (n = 28), humerus (n = 10), and tibia (n = 8) were the most affected long bones. An X-ray was performed in 85.37% of the cases, and a computerized tomography (CT) scan in 11.34% of cases. On the X-ray, osteolytic lesions (70.93%) were in the majority, particularly type 1 lesions with respect to Lodwick classification, followed by osteocondensing lesions (12.79%) and mixed lesions (17.28%).

In this study, the pathological examination was performed in 66 cases, with 15 benign tumors (Table 1) and 51 malignant tumors, either primary or secondary (Table 2). The histological nature of the tumor was not obtained in 31 cases. Nevertheless, based on clinical and imaging data, among the 31 cases previously mentioned, 4 cases were suspected to be benign tumors, 6 cases primary, and 21 cases secondary malignant tumors.

Table 1. Distribution of benign bone tumors according to their histological nature.

Histological nature	Effectif (n = 15)
Giant cell tumor	09
Synovial chondroma	01
Osteoid osteoma	01
Exostosis	01
Bone cyst	03

Table 2. Distribution of malignant bone tumors according to their histological nature.

Histological nature		Effectif (n = 51)
Primary tumors	Multiple myeloma	09
	Osteosarcoma	06
	Chondrosarcoma	02
Secondary tumors	Carcinoma	20
	Adenocarcinoma	12
	Melanoma	02

Chemotherapy and surgery were the principal means of management for our patients; radiotherapy was performed in 2.06% of cases, and seven (07) patients refused any treatment. The mortality rate in our study population was 21.31%. The average survival time after a year was 40% for malignant tumor after a 1.9-year follow-up, with extremes ranging from 0.96 to 2.87 years. At the end of our study, 12 patients initially carrying both primary and secondary malignant tumors had an average remission time of 4 years.

4. Discussion

Musculoskeletal tumors in general, and more specifically bone tumors, are rare pathologies. This fact is widely shared in the literature review. Their distribution

according to gender varies greatly. In our study, both the male and female populations were affected in equal proportion. Whereas Lasebikan [4] in Nigeria and Nwatsock [5] in Cameroon conducted a study and found the male population to be predominant, with a sex ratio of 1.35 and 1.34 respectively. The average age in our study was 48 years; this result was similar to that of Kakpovi [6] in Togo in 2016, who found an average of 55 years. Bone metastases were the most frequent and were predominantly found in adults and the aged population, justifying the average age oscillating around five decades of life.

Bone tumors were revealed principally in our study group by pain, followed by swelling. This was also the case in a study conducted by Atchi [7] in 2015 in Togo, where pain (77.30%) constituted the principal complaint, followed by swelling (48.23%). Pathological fracture coupled with pain and swelling constituted the most frequent discovery of bone tumors in our literature review, but in variable proportion according to our study. On average, patients came and consulted 21 months after the onset of the illness. This delay in consultation was also observed by Kakpovi [6] in Togo in 2016 and Khezami [8] in 2018 in Tunisia with an average delay of 17 months and 34.31 months, respectively. In our milieu, this long consultation delay could be explained by some native beliefs and patients' low income, but also due to lack of knowledge by certain health care personnel.

X-ray was the most performed imaging exam. The CT scan, though often necessary, was obtained in only 10% of the patients. This rate is very low compared to some other authors consulted. The CT scan, although present in our milieu, remains inaccessible for most patients in our context because of the high cost. The same is true for pathological examination, with a realization rate of 68%. Apart from the cost, difficulty in the transportation of the various specimens for pathological examination to the various laboratories in charge could explain this rate.

During our study, we registered more cases of malignant tumors than benign tumors, and the majority were secondary tumors (51.51%). The same observation was made by Daboika [9] in Abidjan in 2004. In contrast, Bahebeck [10] in his research study found 0.6% of bone metastases compared to 45% of primary malignant tumors. The predominance of secondary bone tumors in our milieu could be explained by the insufficiency of human, material, and financial resources for the diagnosis of primary tumors, which probably contributes to an underestimation of their real frequency.

Multiple myeloma was the most represented malignant tumor in our cohort, similar to that of Kakpovi [6] in Togo 2016, whereas in the study by Zomalheto [11] in 2015 in Benin, it was osteosarcoma. Chondrosarcoma was the rarest primary malignant tumor (**Figure 1**) in our country. With regards to benign tumor, giant cells (**Figure 2**) and bone cysts were the most frequent, whereas in Togo, a study conducted by Atchi [7] found that osteochondroma was the most frequent benign tumor. Breast cancer and prostate cancer metastases were respectively the first and second most observed secondary malignant tumors in our study, as well as those of Nwatsock [5] in Cameroon 2021 and Toure [12] in Mali 2020. Some

older research conducted in 1994 in Ivory Coast by Kouakou [13] and in 2009 in Togo by Oniankitan [14], revealed that secondary bone tumors were equally distributed in their study but with prostate cancer metastasis followed by breast cancer in a reversed order. These results show that breast and prostate cancer remain osteophilic tumors in our milieu; a reversed order could be due to the resurgence of breast cancer but also due to the massive and increasingly early diagnosis of this pathology.

Figure 1. Radiographic appearance of a chondrosarcoma of the femur.

Figure 2. Radiographic appearance of a giant cell tumor (GCT) of the distal radius.

5. Conclusion

Bone tumors of the limb are found in young adults regardless of gender. Pain re-

mains the most common clinical manifestation and, to a lesser extent, swelling. Multiple myeloma as a primary tumor and secondary carcinoma were the most represented in our study. Chemotherapy and surgery were the principal means of management for our patients. Bone metastases from breast and prostate tumors accounted for the majority of cases collected.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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