ISSN 2692-5877
DOI: 10.46998/IJCMCR.2024.47.001170

International Journal of
Clinical Studies & Medical Case Reports

Research Article

Anatomopathological Profile of Primitive Bone Tumors in Kinshasa

Mutombo Kalala A[1,*], Beya Kabongo F[2], Kisile Mukuo Olive[2], Lebwaze Bienvenu[2], Situakibanza Hyppolite[3], Mutombo Paulin[4], Bokambadja F[2], Nsumpi Tshimanga G[1] and Kabongo Mpolesha JM[2]

[1]*Official University of Mbujimayi, Democratic Republic of Congo*

Department of Pathological Anatomy, University Clinics of Kinshasa, Faculty of Medicine, University of Kinshasa, Demo-cratic Republic of Congo

[3]*Department of Internal Medicine University Clinics of Kinshasa, Democratic Republic of Congo*

[4]*School of Public Health of the University of Kinshasa, Democratic Republic of Congo*

***Corresponding author:** Dr. Mutombo Kalala, Official University of Mbujimayi, Democratic Republic of Congo

Received: November 12, 2024 **Published:** December 19, 2024

Abstract

Introduction: Bone tumors are rare, poorly understood and sometimes neglected pathologies. They are divided into primary bone tumors that are benign or malignant and secondary or metastatic tumors.

Objectives: Our objective was to establish the anatomopathological profile of primary bone tumors in four pathological anatomy laboratories in Kinshasa.

Material and Methods: This is a descriptive, cross-sectional and retrospective study spanning a period of 40 years (from January 1, 1977 to December 31, 2017) of bone biopsy specimens received and analyzed in four pathological anatomy laboratories in Kinshasa that agreed to make their archives available.

Results: During the period of our study, 57,479 conditions were counted in the study sites. Among them, 104 cases of bone tumors were reported, representing a relative frequency of 0.18%. The age group from 1 to 17 years was the most affected (35.6%). Benign bone tumors were the most common with 79 cases (76%) and represented mainly by osteochondroma (24%). The most common malignant bone tumor was osteosarcoma with 18 or 72%.

Conclusion: Bone tumors remain rare pathologies in our environment as everywhere in the world. They are more represent-ed by benign tumors with osteochondroma in the lead while osteosarcoma remains the leader of malignant bone tumors.

Keywords: Bone tumors; Epidemiological profile; Anatomopathological; Kinshasa

Introduction

Bone Tumors (BTM) are rare pathologies and sometimes difficult to diagnose. The diagnostic approach is based on clinical data, imaging and pathological anatomy, which remains the key examination for diagnostic certainty. They are classified into benign and malignant primary bone tumors as well as secondary or metastatic bone tumors [1-3]. Primary Malignant Bone Tumors (PMBT) represent all malignant bone tumors originating in the different structures constituting the bone and repre-sent less than 0.2% of all cancers [4,5].

The incidence of these tumors is 3 per 100,000 inhabitants during the second decade, while in adults, this incidence drops to less than 0.2 per 100,000 inhabitants. Benign bone tumors (BBT) are more numerous than MBT [1].

Bone sarcomas are serious conditions and are more common in the West than in Africa [6,7]. In the United States of America, approximately 2,100 new cases of bone sarcomas are diagnosed each year and result in 1,300 deaths. Among these tumors, osteosarcoma is the most common (30 to 35%) of bone sarcomas, followed by chondrosarcoma and Ewing's sarcoma [8,9].

According to the Canadian Cancer Society, 345 Canadians suffered from bone cancer in 2010, while in France there are 300 new cases per year, with osteosarcoma at the top, which represents 30% of bone cancers [7]. In Africa and particularly in sub-Saharan Africa, the real incidence of bone sarcomas and especially that of bone sarcomas is poorly understood [7]. In the Democratic Republic of Congo (DRC), the lack of studies devoted to these types of lesions is the fundamental reason that justified this present work.

DOI: 10.46998/IJCMCR.2024.47.001170

Materials and Methods

This is a descriptive, cross-sectional and retrospective study of cases of bone tumors archived between 1977 and 2017 at the University Clinics of Kinshasa, the LEBOMA Cytology and Pathological Anatomy Cabinet, the KAMA Pathological Anato-my Laboratory and the Pathological Anatomy Department of the MONKOLE Hospital Center.

We used bone biopsy slides for which bone tumor diagnoses were made during the period of our study. The histopathological analysis request forms allowed us to have certain clinical elements and the pathological anatomy reports served to verify the diagnoses made and that of the slide review.

The study variables were as follows: sociodemographic variables (age grouped into groups of 1 to 17 years, 18 to 30 years, greater than or equal to 30 years and sex), clinical variables (signs and symptoms, presence of pathological fracture) and anatomopathological variables (affected bone, topography on the long bone, histological type and histological subtype for sarcomas).

Results

Sociodemographic variables

Table 1: Distribution of bone tumors by age and gender.

Variable	Frequency	%
Age (years)		
Children 1 to 17	37	36
Young adults 18 to 30	32	31
Adult ≥ 30	35	33
Total	**n = 104**	**100**
Sex		
Male	54	52
Female	50	48
Total	**n=104**	**100**

Table 1 reveals that the age group from 1 to 17 years was the most affected, 37 cases or 36% and the male sex was discreetly predominant with 54 cases or 52%.

Anatomopathological variables

Distribution of Bone Tumors by Affected Bone

Table 2: Distribution of bone tumors by location.

Affected bone	Frequency	%
Femur	39	37,5
Tibia	21	20,19
Humerus	16	15,38
Radius	5	4,8
Mandibles	5	4,8
Parietal	5	4,8
Phalanx	4	3,8
Maxilla superior	4	3,8
Others (Ulna, Clavicle, iliac bone, Temporal bone)	5	4,8
Total	**n=104**	**100**

Table 2 shows that the femur was the most affected bone with 39 cases or 37.5%.

Distribution of Bone Tumors by Histological Types

Table 3: Distribution of bone tumors by histological types.

Histological type	Frequency	%
Osteochondroma	19	18,3
Osteosarcoma	18	17,3
Osteoma	17	16,3
Ossifying fibroma	16	15,4
Osteoclastoma	11	10,6
Chondrosarcoma	5	4,8
Solitary chondroma	4	3,8
Fibrous dysplasia	4	3,8
Steroid osteoma	4	3,8
Lymphoma	2	1,9
Hemangioma	2	1,9
Aneurysmal cyst	1	1
Fibroma	1	1
Total	**104**	

Table 3 reveals that osteochondroma was the most common bone tumor with 19 cases or 18.3% followed by osteosarcoma with 18 cases or 17.3%.

Distribution of Bone Sarcomas by Histological Types

Table 4: Distribution of bone sarcoma cases by histological types.

Histological type	Frequency	%
Osteosarcoma	18	78,26
Chondrosarcoma	5	21,73
Total	**23**	**100**

Table 4 reveals that osteosarcoma is the most common bone sarcoma with 18 cases or 78.26%.

Distribution of Osteosarcomas According to Histological Types

Table 5: Distribution of osteosarcoma cases according to histological types.

Type	Fréquence	%
Conventional	14	77,7
Telangiectatic	2	11,1
Small cell	2	11,1
Total	**18**	**100**

Table 5 reveals that conventional osteosarcoma was the most common type with 14 cases (77.7%).

Distribution of Chondrosarcomas According to Histological Subtypes

Table 6: Distribution of chondrosarcoma cases according to histological subtypes.

Histological subtype	Fréquence	%
Conventional	4	80,0
Clear cell	1	20,0
Total	**5**	**100**

Table 6 reveals that conventional chondrosarcoma was the most common with 4 cases, or 80%.

Distribution of Conventional Osteosarcomas According to Histological Subtypes

Table 7: Distribution of osteosarcomas according to histological types.

Subtype	Fréquence	%
Osteoblasticfibroblastic	12	85,7
Fibroblastic	1	7,1
Chondroblastic	1	7,1
Total	**14**	**100**

Table 7 reveals that osteoblastic osteosarcoma was the most common subtype with 12 cases (85.7%).

Distribution of Bone Tumors According to The Nature of The Lesion

The figure above shows that benign bone tumors predominated with 76% against 24% of malignant tumors.

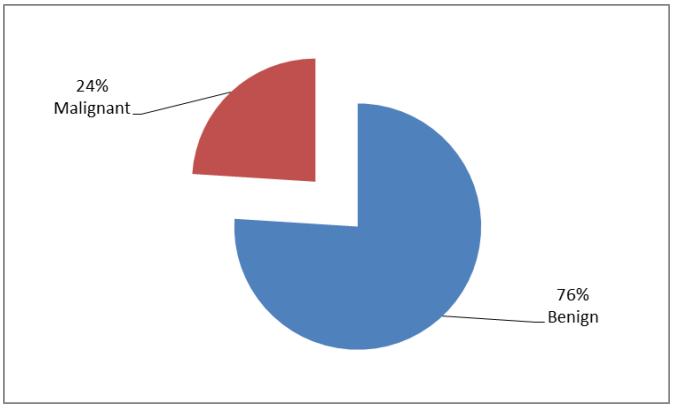

Figure 1: Distribution of cases of bone tumors according to the nature of the lesion.

Discussion

1. Age distribution of bone tumor cases: The incidence of bone tumors increases with age to peak around 15 years; in our study, children were the most affected with 36%. The median age was 23 years.

These results are similar to those of the series of Mohammed et al. in Algeria, who noted a high frequency in children with a percentage of 50.4% between 0 and 20 years. Obalum et al. also noted that bone tumors were more common in children with a percentage of 48% between 0 and 20 years [10,11].

2. Sex distribution of bone tumor cases: Our study showed a slight male predominance with 52%, the sex ratio being 1.08. These results are similar to those reported in Ethiopia by Negash et al. his colleagues who had reported a male predom-inance (51.3%). Obalum et al. In Nigeria had also noted a male predominance with 59.5% [4,10]. These series all showed a male predominance, and the difference in percentage could be explained by the difference in sample size.

3. Distribution of bone tumor cases according to the affected bone: The femur was the most affected bone in our review with 37.5%. These results are consistent with those of Zomalhetho et al. in Benin as well as that of Adeniran et al. in Nigeria who had also noted the predominance of the femur with 54% and 42.9% respectively [5,12]. On the other hand, in Cameroon, Bahebeck et al. had noted a predominance of the tibia of 35% followed by the femur with 19% [13]. This inversion of results could be explained by the difference in sample size.

4. Distribution of bone tumor cases according to histological type: Osteochondroma was the most common histopathological type in our study with 18.3%. Similar results were noted in the review by Mohammed et al. where osteochondroma was the most common with 15.7% [11].

5. Distribution of bone sarcomas according to histological type: Our study showed that among bone sarcomas, os-teosarcoma was the most common malignant bone tumor with 18 cases or 78.26%. These results are reported in several stud-ies as reported by Traoré Ob et al who [17].

6. Distribution of osteosarcomas according to subtypes: Among osteosarcomas, our study noted that conventional osteosarcoma was the most common with 77.9%. Our results are similar to those of Pillay et al. in South Africa and those of Selma in Morocco who had noted respectively 85.8% and 85.7% for conventional osteosarcoma. The difference in percent-ages could be explained by the difference in sample size [9,16].

7. Distribution of chondrosarcomas according to subtypes: Conventional chondrosarcoma was the most frequent in our series with 80%. These results corroborate with those reported in the review of Selma et al. who had noted a predominance of conventional chondrosarcoma with 70% [16].

8. Distribution of cases of bone tumors according to the nature of the tumor: Benign tumors were by far the most frequent in our series with 76% against 24% for malignant tumors. Our results are similar to those of Sunita et al. and Ab-dulkareem et al. as well as those of Obalum who had noted respectively 75.6%, 79.2% and 53% for benign tumors [10,14,15].

Conclusion

Our study is the first on primary bone tumors in the City of Kinshasa. It showed on the one hand that these remain very rare pathologies in our environment and are dominated by the high frequency of benign bone tumors. On the other hand, our study showed that children were more affected than other ages, that the femur was the most affected bone and finally osteosarcoma was the most dominant primary malignant bone tumor.

Suggestions: At the end of this study, we suggest a close collaboration between clinician, radiologist and pathologist so that the elements necessary for diagnosis appear on the anatomopathological request form. A clinical and radiological study in all orthopedic departments supported by anatomopathology throughout Kinshasa is necessary.

Acknowledgments: We thank the managers of the Department of Pathological Anatomy of the University Clinics of Kinshasa, the Kama Laboratory, the Cabinet of Cytology and Pathological Anatomy LEBOMA and the Department of Pathological Anatomy of the MONKOLE Hospital Center for granting us access to the data archives in order to carry out this present work.

References

1. Cabane F, Bonenfant JL. Pathological Anatomy: Principles of General Pathology, Special Pathology and Oetopathology. La-val University Press, Quebec and Maloine S.A; Paris, 1986; 586-595.
2. Grimer RJ, et al. Earlier diagnosis of bone and soft tissue tumors. J bone jointsurg (br), 2010; 92(11): 13.
3. Mazabraud A. Pathological Anatomy of Tumor Bone, Spring-verlag, Paris, 1994; 3-25.
4. Negash E, Admasie D, et al. Bone tumors at Addis Ababa University, Ethiopia: Agreement between radiological and histo-pathological diagnoses, Int J Med rad Sc, 2009: 1(4): 119-125.
5. Adeniran, et al. Bone malignancies in orthopedic hospital Igbobi Lagos, Nigeria, Postgrad Med J, 2014: 1(21): 66-67.
6. Alessandro F, et al. Epidemiology and classification of bone tumors, Journal List of clin. Cases, 2012: 9(2): 92-

95.
7. Kodjo, et al. Profile of malignant bone tumors in rheumatology consultation in Lomé (Togo), Tunisia Medical, 2016: 94(8): 546-550.
8. Ramzi S Cotran, Kumar Collins V, Robbins T. Anatomy Pathology: Morphological and physiological bases of diseases, Pic-cin Nuova Libraria S.PSA. Italy, 2000; 1453-1468.
9. Pillay Y, Ferreria N, et al. Primary malignant bone tumors: Epidemiological data from an orthopedic oncology unit in South Africa, SA orthopedic journal, 2016: 15(4): 12-16.
10. Obalum D, Giwa S, et al. Primary bone tumors in tertiary hospitals in Nigeria: 25 years review. Nigeria journal of clinical practice, 2009: 12(2): 169-172.
11. Mohamed A, Isa H. Pattern of primary tumors and tumors-like lesions of bone in Zaria, Northern Nigeria: A review of 125 cases, WAJM, 2007; 26(1): 37-41
12. Zomalhetho Z, Biaou O, et al. Profile of primary malignant bone tumors in adults in Cotonou. African Cancer Journal, 2015; 7-100, Doc: 10.1007/S 1255813-015.
13. Bahebeck J, et al. Bone tumors in Cameroon: Incidence, demographics and histopathology, International orthopedic (SI-COT), 2003: 27: 315-317.
14. Sunita A, Pagaro M, et al. Histopathological study of primary bone tumors and tumors-like lesions in medical teaching hos-pital, JKIMSI, 2015: 4(2): 46-55.
15. Abdulkareem F et al. Pathological study of bone tumors at the National orthopedic hospital, Lagos, Nigeria, West Africa. J Med, 2008; 26(4): 305-311.
16. Selma, Elomrani A. Primary malignant bone tumors: anatomoclinical aspects, Research. htt//dx.doiog/10.3070/rs.fr 1.649. https://doi.org/10.61585/pud-dkm-v68n101.