

# Bone Metastases: Experience of Rheumatology Unit of National Hospital University Hubert Koutoukou Maga of Cotonou

Zavier Zomaheto<sup>1\*</sup>, Olivier Biaou<sup>2</sup>, Patricia Yékpè-Ahouansou<sup>2</sup>,  
Sèdami Narcès Emery Gnankadja<sup>1</sup>, Martin Avimadje<sup>1</sup>

<sup>1</sup>Rheumatology Department of National Hospital, University Hubert Koutoukou Maga, Cotonou, Benin

<sup>2</sup>Medical Imaging Department of National Hospital, University Hubert Koutoukou Maga, Cotonou, Benin

Email: [\\*zozaher@yahoo.fr](mailto:zozaher@yahoo.fr)

Received 1 January 2015; accepted 21 January 2015; published 27 January 2015

Copyright © 2015 by authors and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

---

## Abstract

**Aim:** To determine the epidemiological, diagnosis and treatment of secondary bone cancer at the National Hospital University Hubert Koutoukou Maga of Cotonou. **Patients and Method:** It was a retrospective descriptive cross-sectional study carried out from January 1999 to December 2013 on the records of patients treated in the rheumatology department. The selected files had radiological images of tumor appearance objectified by two radiologists. The diagnosis of secondary bone cancer was confirmed after a bone biopsy or the discovery of a primitive tumor site. Patients with hematologic malignancy and incomplete or insufficiently explored records were excluded. **Results:** Among 10,292 patients followed in the service, 51 (0.5%) had documented bone metastasis. The sex ratio was 1.83. The mean age of patients was  $54 \pm 9$  [26 - 85] years, with 53% of those over 60 years old. Secondary cancers were on the spine (74.5%), pelvis (35.3%) and the long bones (39.2%). The primary cancer most frequently found was that of the prostate and breast (45.1% and 27.6%, respectively) followed by genital and digestive cancers (9.8% and 7.8%, respectively). Treatment was dominated by hormone therapy (83%) bisphosphonates (70.5%) and chemotherapy (57%). **Conclusion:** The profile of bone cancer in Benin hospital is very diverse and dominated by the types and osteolytic ostéocondensant. Primary cancers were dominated by the prostate and breast. Bisphosphonates took an important place in the treatment of the disease.

## Keywords

Metastases, Primary Cancer, Benin

---

\*Corresponding author.

## 1. Introduction

Bone is the third site of metastasis of cancer after the liver and lungs. This underpins that the bone is a good “soil” for the “seed” tumor. The inaugural metastases are common and represent 22.6% to 30% of bone metastases [1]-[3]. The primary focus of these metastases is often the prostate, breast, kidney, lung and thyroid. Cancers of the five foci represent between 80% and 96% of cancers responsible bone metastases [2]-[5].

The recognition of a secondary bone tumor based on the comparison of epidemiological, clinical, radiological and pathological. Imaging of bone tumors remains dominated by X-ray.

Their treatment requires a multidisciplinary approach. Radiation therapy is one of the key resources available to treat bone metastases near all medical or surgical arsenals [4]. According to Conroy, the median survival of bone cancer is five months after diagnosis with 5% at five-year survival and 1% at ten-year survival [3]. Many African studies have discussed the issue as reflected the recently published [6]-[11]. In Benin, no study has been done on bone metastases. The objective of this study was to clarify the epidemiological, diagnostic and therapeutic aspects of bone metastases in the Rheumatology Department of the National Hospital University Hubert Koutoukou Maga of Cotonou.

## 2. Patients and Method

It was a descriptive and retrospective cross-sectional study, carried out over 15 years from 1999 to December 2013 on the records of patients treated in the rheumatology department. Patients met the following criteria:

- Have consulted or been hospitalized in the rheumatology department during the study period;
- Have presented an inflammatory bone pain or pathological fracture of long or flat bones or bone swelling related to a secondary bone cancer.

The diagnosis of secondary bone cancer was confirmed after a bone biopsy or the discovery of a primitive cancer.

Patients with hematologic malignancy or with incomplete or insufficiently explored records were excluded from the study.

Variables evaluated were: socio-demographic (age, sex), therapeutic itinerary, clinical features (pain, fever, lameness), radiological, etiological and therapeutic parameters. The statistical analysis of results was performed using Epi info 7.0 software and STATA/IC 11.0.

This investigation was approved by the local Ethics Committee.

## 3. Results

### 3.1. Socio-Demographic Data

Among 10,292 patients seen in the unit of Rheumatology (about 750 patients per year), 51 (0.5%) had bone metastases. There were 33 men and 18 women (sex ratio = 1.83). The mean age of patients was  $54 \pm 9$  [26 - 85] years and 53% of those were over 60 years.

### 3.2. Therapeutic Itinerary

Before their arrival in the unit, 30 patients (59%) had preferred a traditional healer, 17 patients (33%) were referred by a city health officer and 4(8%) patients consulted directly by friends.

### 3.3. Clinical Features

The reasons for consultation cases of bone secondary cancers are shown in **Figure 1**. The pain was seen as a frequently symptom with 44 cases, or 86%.

### 3.4. Paraclinical Features

X-ray was the main radiological examination performed in patients. Bone metastases frequently sat at the spine (lumbar and thoracic), long bones and pelvis. **Table 1** shows the breakdown by site of bone metastases. **Figure 2** shows the distribution by site and the nature of the primary cancer that gave bone metastasis. The bone lesions were essentially condensing and lysis. **Table 2** shows the radiographic features of bone lesions. The prostate

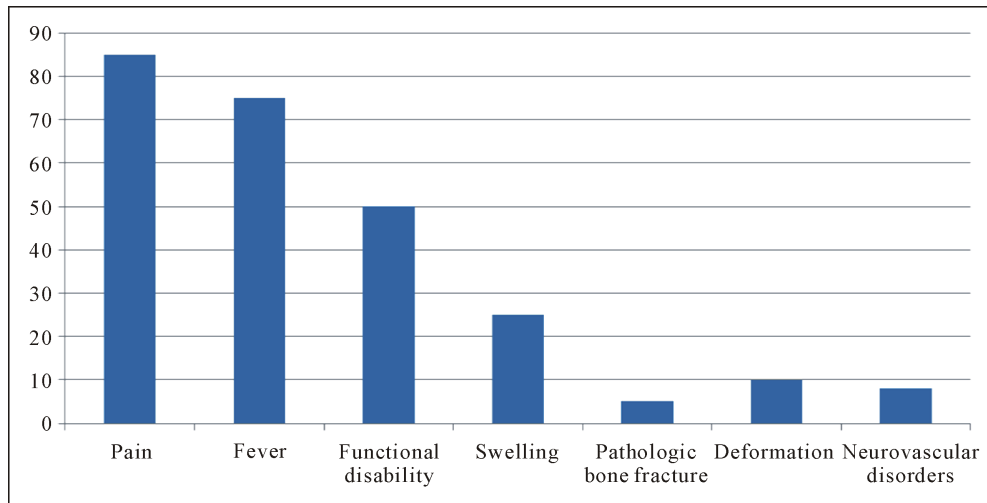


Figure 1. Distribution of the patients according to the symptoms.

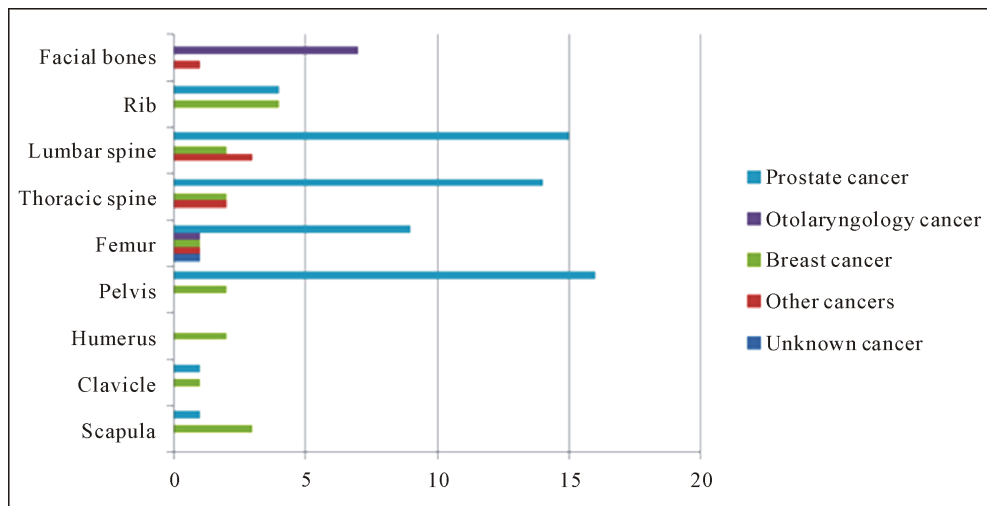


Figure 2. Distribution of the patients according to the primary cancer.

Table 1. Distribution of bone metastases.

	Effective	%
Scapula	4	7.8
Clavicle	2	3.9
Humerus	2	3.9
Pelvis	18	35.3
Femur	14	27.4
Spine		
Thoracic	18	35.3
Lumbar	20	39.2
Rib	8	15.6
Facial bones	7	13.7

cancer gave mostly bone condensing metastases while breast cancer gave exclusively bone lysis metastases. **Figure 3** shows the distribution of the type of injury according to the nature of the primary tumor that gave bone metastasis.

Metastases were inaugural in 16 cases leading to the realization of a surgical biopsy in 5 cases and percutaneous in 4 cases. Tumor markers were assayed in all patients and was contributory in 35 cases (Prostatic Specific Antigen in 23 cases, CA 15.3 in 5 cases, CA 125 in 4 cases, Alfa Foeto Protein in 2 cases and carcinoembryonic antigen in 1 case). Primary cancers are reported in **Table 3**.

Other secondary outbreaks were found. It was lung metastasis (18 cases), mediastinal lymphadenopathy (4 cases), and liver metastases (9 cases).

Radiation therapy is not available in our country, different therapeutic methods used were surgery (9.8%), chemotherapy (57%), hormone therapy (83%) and the use of bisphosphonates (70.5%).

Eleven (11) patients died during hospitalization and survival at 6 months was estimated at 71.4%.

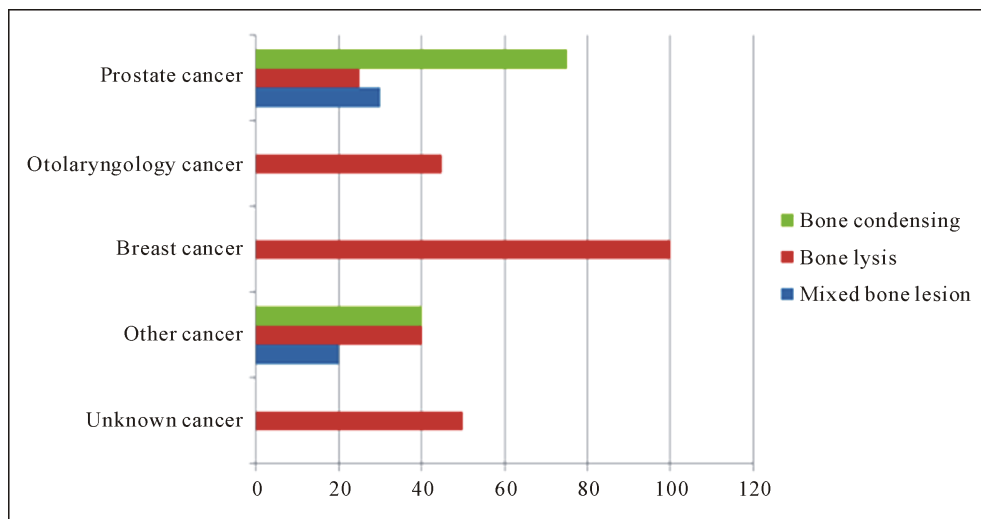
**Table 2.** Radiological features of bone metastases.

	Effective	%
Number of lesions		
Unique	7	13.7
Multiple	44	86.3
Radiological lesion		
Bone lysis	21	41.2
Bone condensing	22	43.1
Mixed bone lesion	8	15.7
Cortical periosteal reaction		
a	27	52.9
b	1	2.0
Damage of soft tissue	14	27.4

a: discontinuous thin cortical blowhole; b: spiculated periosteal cortical destroyed with discontinuous reaction.

**Table 3.** Distribution of patients according to the primary cancer.

	Number (%)
Prostate cancer	23 (45.1)
Breast cancer	14 (27.6)
Cervix cancer	5 (9.8)
Otolaryngology cancer	3 (5.9)
Liver cancer	2 (3.9)
Gastro-intestinal cancer	2 (3.9)
Broncho-pulmonary cancer	1 (1.9)
Unknown primary cancer	1 (1.9)
Total	51 (100)



**Figure 3.** Type of radiological lesion of bone according to the primary cancer.

#### 4. Discussion

Although Tubiana-Hulin has reported that bone metastases accounted for over 90% of malignant disease of the bone [5], they are relatively rare in our series (51 patients had bone metastases over 15 years) and other African series like the recently published works (77 cases in 19 years in Togo and 81 cases in 7 years in Congo) [6] [7]. The frequency of bone metastases is certainly underestimated in the world. Indeed, some post-mortem series seeking to determine the prevalence of bone metastases at death revealed it can reach up to 73% [5]. Male predominance has been reported by the same authors in their series. This dominance is classic as described by many authors [8]-[12]. It seems to be explained by the frequency of prostate cancer which diagnosis is easy in our professional context [13] [14].

The mean age of patients was  $54 \pm 9$  [26 - 85] years. These data were found in African work such as Kouakou in Cote d'Ivoire in 1994 [15], Ntsiba in Congo in 2013 [7] and Oniankitan in Lome in 2014 [6]. Bone metastases appear later in the Western series represented by Houze *et al.* and Vandecandelaere *et al.* who reported 77 and 63 years old for mean age of their patients respectively [14] [16].

Clinically, the main symptom was inflammatory bone pain. For Ntsiba *et al.* bone pain was the main mode of discovery of metastases (67.9% of cases), followed by neurological manifestations compression (17.1%) [7]. Oniankitan *et al.* [6] meanwhile, found themselves bone inflammatory pain (76.6%), impaired general condition (75.3%) and the compression of the spinal cord (34 cases; 44.1%).

In X-rays, radiological lesions were usually multiple with an equal proportion of osteoblastic and osteolytic lesions. These lesions mainly sit on pelvis, spine and femur. This distribution of the lesions was found by Oniankitan [6]. The achievement of the long bones was present in 18.2% of their patients. The same observations were made in the series of Ntsiba with a majority reached at the lumbar spine (33.3%), femur (19.0%) and pelvis (14.3%) [7]. These African data are similar to those published by other Maghrebien and Western authors [12] [16]. This appears as geographic distribution in the case of prostate cancer. Prostate is located in the pelvis and its cancer metastasis in pelvis, thoracolumbar spine and the femur. On the other side, the geographical distribution is less obvious in breast cancer cases. However, the extraordinary mass and exchange surface that forms the spine appears to be one explanation for the preponderance of spinal disease [16].

The distribution of the primary cancer is the same as African [6]-[12] and Western series [5] [16]. It was unknown in 1.9% of cases in our series unlike the Ntsiba where it was 6.2% [7].

#### 5. Conclusion

The occurrence of bone metastases was relatively frequent in carcinomas of the prostate, breast and stomach. In our country, a good physical examination of the patient combined with radiological images allows referral to the primary tumor.

## References

- [1] Lebreton, T. and Méjean, A. (2008) Physiopathology, Diagnosis and Management of Bone Metastases from Prostate Cancer. *Progrès en Urologie*, **18**, S349-S356. [http://dx.doi.org/10.1016/S1166-7087\(08\)74566-4](http://dx.doi.org/10.1016/S1166-7087(08)74566-4)
- [2] Destombe, C., Botton, E., Le Gal, G., Roudaut, A., Jousse, S., Devauchelle, V. and Saraux, A. (2007) Investigations for Bone Metastasis from an Unknown Primary. *Joint Bone Spine*, **74**, 85-89. <http://dx.doi.org/10.1016/j.jbspin.2006.05.009>
- [3] Conroy, T., Malissard, L., Dartois, D., Luporsi, E., Stines, J. and Chardot, C. (1988) Natural History and Development of Bone Metastasis. About of 429 Cases. *Bulletin du Cancer*, **75**, 845-857.
- [4] Lagrange, J.L., Pan, C., Calitchi, E., Diana, C., Muresan, M., Wu, J.F., et al. (2008) Practical Radiation Therapy for Painful Bone Metastases. *Revue Du Rhumatisme*, **75**, 530-535. <http://dx.doi.org/10.1016/j.rhum.2008.02.005>
- [5] Tubiana-Hulin, M. (1991) Incidence, Prevalence and Distribution of Bone Metastases. *Bone*, **12**, S9-S10. [http://dx.doi.org/10.1016/8756-3282\(91\)90059-R](http://dx.doi.org/10.1016/8756-3282(91)90059-R)
- [6] Oniankitan, O., Kakpovi, K., Kpoti, M., Houzou, P., Fianyo, E., Koffi-Tessio, V.E.S., Tagbor, K.C. and Mijiyawa, M. (2014) Profile of Secondary Bone Cancer in Lomé (Togo). *Open Journal of Rheumatology and Autoimmune Diseases*, **4**, 192-197. <http://dx.doi.org/10.4236/ojra.2014.43026>
- [7] Ntsiba, H., N'soundhat, N.E.L., Ndounga, E. and Ondzal, A.E. (2013) Profile of Secondary Bone Cancer in Brazzaville. *Open Journal of Rheumatology and Autoimmune Diseases*, **3**, 251-254. <http://dx.doi.org/10.4236/ojra.2013.34039>
- [8] Bileckot, R., Miakoundoba, R.C. and Nkoua-Mbon, J.B. (2008) Two Brazzaville Series of Bone Metastases. *Carcinol Prat Afrique*, **8**, 57-60.
- [9] Bahebeck, J., Atangana, R., Eyenga, V., et al. (2003) Bones Tumors in Cameroon: Incidence, Demography and Histopathology. *International Orthopaedics*, **27**, 315-317. <http://dx.doi.org/10.1007/s00264-003-0480-7>
- [10] Abdulkareem, F.B., Evesan, S.U., Akinde, O.R., et al. (2007) Pathological Studies of Bone Tumors at the National Orthopaedic Hospital, Lagos, Nigeria. *Western African Journal of Medicine*, **26**, 306-311.
- [11] Ly, M., Ly, A., Rodrigues, M., et al. (2010) Cancer in Africa, a New Health Challenge. Examples of Mali and Mali Onco Association. *Bulletin du Cancer*, **97**, 965.
- [12] Belaksir, L., Seknaji, N., Touimy, M., Janani, S., et al. (2010) Bone Metastases: Experience of Rheumatology CHU Ibn Rushd at Casa. *Revue Du Rhumatisme*, **77**, A131-A325.
- [13] Seknaji, N., Touimy, M., Belksir, L., et al. (2010) Contribution of Bone Biopsy in Search of Primary Cancer of Bone Metastases. *Revue Du Rhumatisme*, **77**, A131-A325.
- [14] Houze, P., Ranaivosoar, R., Prost, A.C., et al. (1995) Bone Metastases of Prostate Cancer: Contribution of Specific Determination of Bone Alkaline Phosphatase. *Immuno-Analyse & Biologie Spécialisée*, **10**, 27-33.
- [15] Kouakou, N. (1994) Bone Metastasis in Ivory Coast Hospital. *Rhumatologie (Aix-les-Bains) A*, **46**, 243-245.
- [16] Vandecandelaere, M., Filipo, R.M., Cortet, B., Catanzariti, L., Duquesnoy, B. and Delcambre, B. (2004) Bone Metastases Revealing: A Comparative Study in 30-Years Intervals. *Revue Du Rhumatisme*, **71**, 390-396. [http://dx.doi.org/10.1016/S1169-8330\(03\)00304-1](http://dx.doi.org/10.1016/S1169-8330(03)00304-1)