SAS Journal of Medicine
Abbreviated Key Title: SAS J Med
ISSN 2454-5112
Journal homepage: https://saspublishers.com

OPEN ACCESS

Radiology

CT-Scan and Anatomopathological Profile of Breast Cancer at the ''Mother-Child'' University Hospital Center in Luxembourg

Ousmane Traore[1*], Alassane Kouma[2], Mamadou N'diaye[3], Aboubacar Sidiki Cisse[2], Issa Cisse[2], Souleymane Sanogo[2], Ouncoumba Diarra[4], Cheick B Traore[5], Hawa Thiam[6], Adama Diaman Keïta[1]

[1]Radiology Department of the "Point G" University Hospital Center in Bamako-Mali
[2]Radiology Department of the Mother-Child Hospital Center "Luxembourg" Bamako-Mali
[3]Radiology Service of the Health Center of the Military Camp
[4]Radiology Department of the Reference Health Center of Commune III, Bamako-Mali
[5]Anatomy and Pathological Cytology Department of the "Point G" University Hospital Center in Bamako-Mali
[6]Reference Health Center of Commune V of the District of Bamako-Mali

DOI: 10.36347/sasjm.2023.v09i02.010 | **Received:** 05.01.2023 | **Accepted:** 13.02.2023 | **Published:** 17.02.2023

***Corresponding author:** Ousmane Traore
Radiology Department of the "Point G" University Hospital Center in Bamako-Mali

Abstract **Original Research Article**

Introduction: Breast cancer results from an anarchic malignant proliferation of abnormal cells of the mammary gland and is the first most common cancer in women in developed countries with 50,000 new cases estimated in 2008. The aim of our work was to describe the socio-demographic characteristics of the patents, to determine the different sites and the frequency of metastases and to describe the scanographic and histological aspects in the diagnosis of extension; therapy and assessment. ***Materials and Methods***: Our study was a descriptive retrospective over a period of 12 months from January 2020 to December 2020 at the radiology and medical imaging department of CHUME Luxembourg. It concerned all patients with histologically confirmed breast cancer who had undergone a CT scan before treatment, during treatment or during therapeutic follow-up. The examinations were carried out by a HITACHI SUPRIA 16 BARRETTES brand CT scanner installed in 2015**.** ***Results***: During the period of our study, the frequency of breast cancer was 10.7% (130 cases) out of 1204 scans carried out with a female predominance of 98%, an average age of 52 years and extremes of 12 at 90 years old. The main metastases found on computed tomography were: lung (59%), followed by lymph node (66%), bone (51%), liver (29%) and brain (2%) metastases. The association of lung, lymph node, liver and bone metastasis represented 27% of the most frequent associations. As for the histological aspect, the infiltrating carcinoma of the non-specific grade II SBR and TNM type was the most frequent. ***Conclusion***: The scanner and the anatomopathology have a capital contribution in the diagnosis and the search for secondary localizations for a good management of the neo of the breast.

Keyword: Profile, imaging, histology, metastasis, location, breast cancer.

INTRODUCTION

Breast cancer results from anarchic malignant proliferation of abnormal cells of the mammary gland consisting of lobules and milk ducts and those from the secretory system (malignant phyloids and lymphomas) [1, 2].

A secondary localization or metastasis is the formation of secondary tumor foci, linked to the ability of tumor cells to detach from the primary lesion, to implant in a nearby or distant organ and to proliferate thus forming new tumor foci [3], it is a public health problem in both developed and developing countries [4].

Breast cancer is the most common primary cancer in women in developed countries with an estimated 50,000 new cases in 2008 [1].

In Africa and in developing countries, breast cancer is the second cancer after that of the cervix [5]. Since the last estimates in 2008 its incidence has increased by more than 20% [6, 7].

In Mali, its frequency is increasing, estimated from 5.7% in 2008 to 7.6% in 2001 of all cancers according to the national institute for public health research INRSP [8]. Death from breast cancer is mostly due to damage caused by metastasis. This is why it is important to diagnose early, before dissemination in the body [9].

Imaging plays an important role in diagnostic and therapeutic management, especially bilateral mammography- ultrasound in the event of ACR 4 ACR5 lesions and, in addition, other imaging examinations may prove necessary, CT, scintigraphy and see the MRI. [8]. The objective of our work was to study the epidemiological, scanographic and histological aspects of breast cancers at the Mother Child University Hospital Center in Luxembourg.

MATERIALS AND METHODS

Our study was a descriptive retrospective over a period of 12 months from January 2020 to December 2020 at the radiology and medical imaging department of CHUME Luxembourg. It concerned all patients with histologically confirmed breast cancer who had undergone a CT scan before treatment, during treatment or during therapeutic follow- up. The examinations were carried out by a HITACHI SUPRIA 16 BARRETTES brand CT machine equipped with a CARESTREAM DRY VIEW 5950 brand printer: commissioning 2015.

Data collection was carried out on an individual survey form filled in from the clinical breast cancer information that motivated the examination. But also the oncology medical file of the various patients bearing the histological diagnosis of the type of breast cancer and the contents contained in the device.

It concerned: Sociodemographic data, clinical and anatomopathological parameters and computed tomography data.

RESULTS

During the period of our study, the frequency of breast cancer was 10.7% (130 cases) out of 1204 scans carried out with a female predominance in 98% of cases against 2% of male cases (Figure 1).

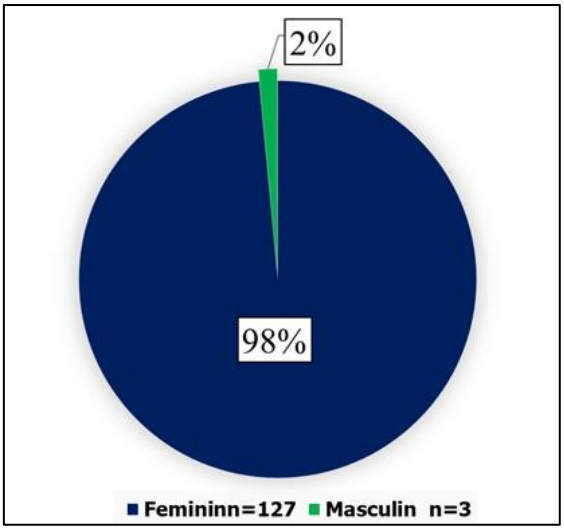

Figure 1: Distribution of patients by sex

The average age found was 52 years and extremes ranging from 12 to 90 years. The age group over 50 years was the majority with 36.2% of cases (Table I).

Table I: Distribution of patients by age

Age	workforce (n)	Percentage (%)
[10 - 15 years old]	2	1,5
[16 - 20 years old]	3	2,3
[21 - 25 years old]	8	6,2
[26 - 30 years old]	13	10,0
[31 - 35 years old]	21	16,2
[36 - 40 years old]	21	16,2
[41 - 45 years old]	9	6,9
[46 - 50 years old]	6	4,6
over 50 years old	**47**	**36,2**
Total	**130**	**100,0**

The Bambaras were in the majority with 33.8% of the cases followed by the Fulani with 28.5% of the cases and the Malinkés with 11.5% of the cases. Married people were the most prevalent with 80.0% of cases. We found that the most represented profession was housewives with 59.2% of cases. In our study, the majority of our patients were out of school with 63% of cases and the majority lived in Bamako with 94.6% of

cases. Arterial hypertension was the most common medical history with 10.8% of cases without surgical or family history.

The right breast was most affected with 36% of cases and the most represented quadrant was the left contralateral quadrant with 46.2% followed by the right contralateral quadrant with 39.2% of cases. The appearance of orange peel skin was the most common in our series with 48.8% of cases and the presence of nodules was the majority with 60% of our patients. In our study, the presence of non-specific infiltrating carcinoma was the majority histological type with 68.5% of our patients (Table II).

Table II: Distribution of patients according to histology type

Histology type	workforce (n)	Percentagee (%)
Ductal carcinoma in situ	11	8,4
Non-specific invasive carcinoma: CINS	**89**	**68,5**
Lobular carcinoma in situ	13	10,0
Invasive lobular carcinoma	14	10,8
Phyllodes tumor	3	2,3
Total	**130**	**100,0**

We found lymphadenopathy under the axillary mostly with 66.2% of cases and most of our patients were under chemotherapy with 85.4% of cases.

The main metastases found on computed tomography were: lung (59%), followed by lymph node (66%), bone (51%), liver (29%) and brain (2%) metastases (Figures 2, 3 and 4).

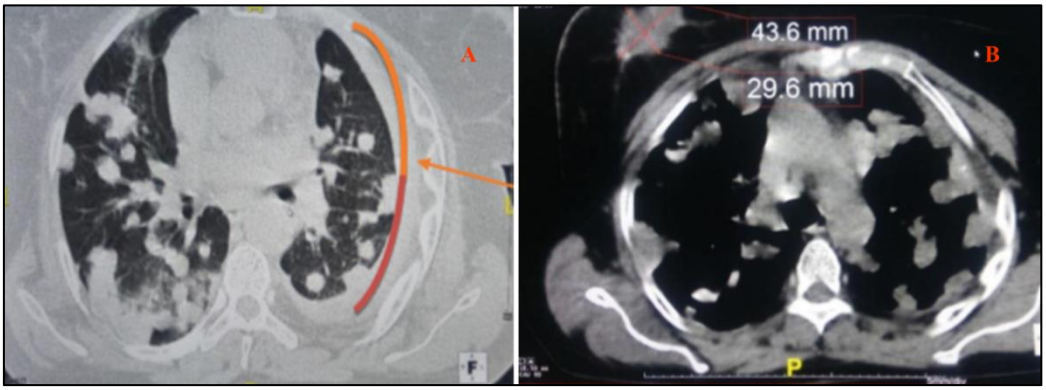

Figure 2 (A and B): Thoracic CT in axial section and parenchymal window (A): after injection of contrast product, bilateral parenchymal and subpleural nodules in balloon releases and pleurisy are evident. Thoracic CT in axial section and mediastinal window (B): after injection of contrast product, balloon releases show a right breast mass

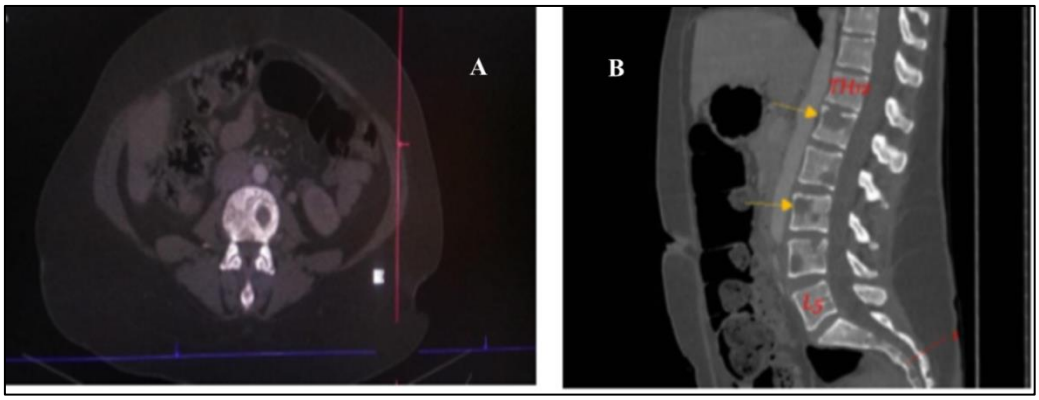

Figure 3: Abdominal CT in axial (A) and sagittal (B) section, in bone window without injection of contrast product, highlights multiple osteolysis on the lumbar spine (yellow arrow)

Figure 4: Cerebral CT in axial section and parenchymal window, with injection of contrast product, highlights a hypodense left frontal lesion surrounded by perilesional edema

The association of lung, lymph node, liver and bone metastasis represented 27% of the most frequent associations.

The TNM classification was made during the realization of the computed tomography in our patients and the majority was classified as stage 2 corresponding to the infiltrating carcinoma of the non-specific type with 53.1% of the cases.

DISCUSSION

Sociodemographic Data

The overall frequency of breast cancer found in our series was 10.7% of cases (s with a female predominance in 98% of cases. The low frequency of male sex (2%) observed in the workforce joins the Most authors who note that breast cancer is more common in women, the male sex accounted for 1% of cases [10].Sano D *et al.*, [11], found 4.16% male breast cancer in three years.

The average age was 50 years with an extreme ranging from 12 to 90 years slightly higher than that found by Traoré B [12] and Keita M [13] who obtained respectively 47 and 48 years. On the other hand, Kameny in the United Kingdoms [14] and Margaret [15] in California in the United States report an average age of 55 and 60 years respectively. This result could be explained by the young age of our populations.

In our study, 94.6% of our patients resided in Bamako and 5.4% come from rural regions and communes requiring enormous communication and awareness-raising efforts. Housewives represented 59.2% of our study. This same finding is found in the literature [2, 16, 17] this is due to illiteracy, lack of information or communication.

Clinical Data

Swelling was the main revealing sign with 42.5%. This result is found in most authors. Wélé A [17] and Thiam D [18] who respectively found 65% and 60% of cases. On the other hand, Traoré B [12] found 44%.

We found in our study 1.5% had a family history of breast cancer. It was unknown in 98.5% of cases. Traoré B [12] found 8% familial breast cancer. The occurrence of breast cancer does not seem to be linked especially to family history. In the literature, 5% of breast cancers are familial [17]. 43.1% of breast tumors in our series involved the right breast versus 36.9% the left breast, and bilateral localization involved 20% of cases. In the literature, both breasts can be affected differently from one study to another [17, 19]. This predominance of cancer in one breast compared to the other could be explained by breastfeeding habits [17].

On the anatomo-pathological results, non-specific infiltrating carcinoma was the most frequent histological aspect with 90% of cases. Infiltrating carcinoma is the most frequent histological type in the literature with eight out of ten cases [20]. The extension assessment was the most represented clinical information (56.9%) of the cases. This would be explained by good care once the clinical and histological diagnosis has been established in order to assess locoregional or remote locations.

CT Scan Data

Among the 130 patients included in our study, 103 had one or more secondary localizations, 79.2% of cases. In our study we found 66.2% of lymph node metastases distributed in different parts of the body, that is 86 cases. In the literature, lymph node metastases are found in more than two-thirds of patients with advanced Taourel P cancer [7]. 38% of our patients had multi-visceral metastases. The association of pulmonary, hepatic, bone and lymph node metastasis were the most common multivisceral involvement in 35% of cases. Bone metastasis represented 50.7%, which is slightly higher than that found in the study by Taourel P [7], which found 48% of cases. This multi-visceral involvement could be explained by the late diagnosis of breast cancer due to ignorance or poor compliance with treatment by patients. Pulmonary metastases from breast cancers occur by hematogenous and lymphatic routes. We noted 77 cases of pulmonary metastases, 59%, much higher than the study by Taourel P [7], which found a frequency of 26% of cases and parenchymal pulmonary nodules predominated in our study with multiple balloon release locations. We also found ground glass appearance, pleural and scissural thickening and latero-tracheal mediastinal lymphadenopathy in 25 cases or 24% of cases. These lesions were found in the study by Casey JJ *et al.*, [21] and Zidi *et al.*, [22].

Abdominal metastases concerned 38 of our patients that is 29% of cases. The lesions were of a tissue nature, hypodense, of variable size, mainly on the right lobe of the liver (43.1%). Taourel P *et al.*, [7] and Sheafor DH *et al.*, [23] found 30% and 26% respectively in the series of 784 and 300 patients with breast cancer. Bone metastases concerned 66 of our patients, that is 50.7% of cases. They were osteolytic and osteocondensing in nature. Multifocal involvement concerned the spine and pelvis with 7% of cases. These data are comparable to those in the literature [7, 24]. The multifocal location could be explained by the late diagnosis of our patients at an advanced stage. We found two cases of cerebral metastasis. The lesion was tissue in nature, unique, with rounded contours, spontaneously hypo-dense, enhanced after injection of contrast product and surrounded by perilesional edema.

This semiological aspect, similar to our study, was reported by Taourel P [7]. We have observed an increase in cerebral metastases in patients undergoing chemotherapy with Herceptin® due to the non-crossing of the blood-brain barrier by this molecule.

CONCLUSION

A metastasis is the formation of secondary tumor foci, linked to the ability of tumor cells to detach from the primary lesion, to implant in a nearby or distant organ and to proliferate thus forming new tumor foci. It is a public health problem in both developed and developing countries. Thoraco-abdomino-pelvic CT is the reference imaging examination of choice for this pathology. It had made it possible to highlight metastases in 74% of patients with a predominance of pulmonary lymph node and bone metastases. Histologically, non-specific infiltrating carcinoma was the most frequent. Thus, the scanner and the anatomopathological have a capital contribution in the diagnosis and the search for secondary localizations for a good management of the neo of the breast.

CONFLICT OF INTEREST

No conflict of interest

REFERENCES

1. Duyckaerts, C., Fouret, P., & Hauw, J. J. (2002). Anatomie pathologique: Pathologie Tumorale. *Université Pierre et Marie Curie*, 2003(202), 100-3.
2. Pivot, X., & Marty, M. (2006). Espié M-CHU de Besançon, hôpital Saint Louis – Paris: Diagnostiquer une tumeur du sein. *Mars*, 1 -3.
3. Lacave, R., Larsen, C. J., & Robert, J. (2005). Cancérologie fondamentale. Paris, John Libber Euro text limited, 437p.
4. Traoré. (2008). Cancer du sein au Mali: Anatomie clinique et suivi. Thèse de médecine FMOS, p23-4 n°
5. Parkin, D. M., Whelan, S. L., Ferlay, J., Teppo, L., & Thomas, D. B. (2002). Cancer in 5 continents Vol. VIII. *IARC Scientific Publications*, 155, 87-101.
6. Centre International de Recherche sur le Cancer (CIRC): Communique de presse N°223 du 12 décembre 2013; 3, 1-2.
7. Taourel, P., Cyteval, C., GranierGranier, C., Devaux, M., & Suar, A. Imageries de la maladie métastasique dans le cancer du sein ;66 :56-9.
8. Sacko, S. (1964). Le cancer au Sénégal. Thèse de médecine, Dakar, N°1.
9. Grogan, G. (2003). MAC: Les néoplasies mammaires non invasives et invasives. VII èmes journées Franco-Africaines de Pathologie. 1-3.
10. Diallo, S. (2006). Etude des facteurs de risque du cancer de sein diagnostiqués dans les hôpitaux de Bamako et Kati. Thèse de médecine. Bamako.
11. Sano, D., Dao, B., Lankoandé, J., Touré, B., Sakandé, B., Traoré, S. S., Wandaogo, A., Dakouré, R., & Sanou, A. (1998). Male breast cancer in africa, A propos of 5 cases at the Ouagadougou University Teaching Hospital. *Dakar Méd.*, 43(1), 9 –12.
12. Traoré, B. (2017). Cancer du sein : aspect clinques et thérapeutiques dans lr service de chirurgie A du CHU de Point G : thèse de médecine, 76, p (9 -70).
13. Keita, M. A. (2005). Etude des caractères Anatomo-cliniques des cancers du sein au Mali: *Thèse de med*, 72: p (7-62)
14. Kemenym, N., & Riverad, E. (1992). Chirpzf Fine Needle: Aspiration and cytologicfonding of

surgicalscarlesion in womenwith breast cancer. *Cancer*, 69(1), 148-152.
15. Kemeny, M. M., Rivera, D. E., Terz, J. J., & Benfield, J. R. (1986). Occult primary adenocarcinoma with axillary metastases. *The American journal of surgery*, *152*(1), 43-47.
16. Larra, F. (1984). Manuel de cancérologie. Doin éditeur Paris, p239.
17. Wélé, A., & Dit, A. (2004). Etude clinique du cancer du sein en chirurgie « B » à l'hôpital national du point « G »: À propos de 94 cas (98M 55).2. Boyle P & Ferley S. Cancer incidence and mortality in Europe. *Ann. Oncol*, 10(10), 93-1101.
18. Thiam, D. Cancer du sein étude clinique dans le service de gynéco obstétrique de l'hôpital national du point « G » : à propos de 43 cas. 02M122 Bamako.
19. Radesa, F., Dioc, R., & Zafy, A. (1979). Réflexion sur l'étude statistique des cancers du sein observés dans notre service (à propos de 117 cas). *Afr Méd*, *18*(173), 591-596.
20. Uzan, S., & Garet, R. (1998). Cancers du sein, épidémiologie, anatomie pathologie, évolution, principes de traitement. La revue du praticien (Paris), 48, 787-796.
21. Casey, J. J., Stempel, B. G., Scanlon, E. F., & Fry, W. A. (1984). The solitary pulmonary nodule in the patient with breast cancer. *Surgery*, *96*(4), 801-805.
22. Zidi, A., Souissi, B., Ridene, I., Hantous-Zannad, S., Baccouche, I., & Ben MiledM'rad, K. Métastases pulmonaires: sémiologie tomodensitométrique.
23. Théra, A. (2008). Aspect scanographique des tumeurs cérébrale. *Thèse de médecine*, 83, p (65-9)
24. Touré, P. (2003). Bilan de la prise en charge des cancers du sein chez la femme. Expériences annales de Pathologie. *Masson Paris*, 234, 92-5.