

## PUBLICATION 15

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### Recommended Conferences

- World Congress on Gynecology and Obstetrics  
 April 16-17, 2018 Dubai, UAE
- International Conference on Reproduction and Fertility  
 October 18-19, 2018 Abu Dhabi, UAE
- 2nd World Congress on Embryology and In Vitro Fertilization  
 March 30-31, 2018 Orlando, USA

## Hormone Sensitive Breast Cancers: Histological and Immunohistochemical Aspects at CHU-MEL and Hubert Koutoukou MAGA National Teaching Hospital (CNHU-HKM) of Cotonou-Benin

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### Abstract

**Introduction:** Breast cancer is a true public health problem; it is the first cause of female mortality from cancer in the world.

**Objective:** To study the epidemiological, clinical and immunohistochemical characteristics of patients with a hormone sensitive breast cancer (hormone dependent breast cancer).

**Material and methods:** It was a retrospective, descriptive and analytical study from 01/2013 to 01/2016, concerning the patients who had a mammary tumor exploration. Were regarded as hormone sensitive breast cancers those which expressed estrogen receptor(ER), progesterone receptor (PR) and HER2 oncoprotein.

**Results:** Forty-three patients (43) patients had a medical examination for a breast cancer confirmed by an anatomopathological and immunohistochemical examination; 12 patients (27.90%) had a triple negative type breast cancer and 31 (72.09%) had a hormone sensitive cancer. The average age was 49.91 years. The nodule discovered by self-examination was the main reason for the discovery of the tumor with a period of time of 10 months before the first medical consultation. Sixty-one per cent (61.3%) of the patients had tumors classified T4 with palpable lymphadenopathy N1 (67.7%) without metastasis for most of them (M0). The classified subtypes were luminal A (74.19%) and B (25.80%). The invasive ductal carcinoma (90.3%) was the most common with a SBRII histoprognosis grade.

**Conclusion:** Hormone sensitive breast cancers represented the majority of the breast cancers studied in our series. The diagnosis was late. The anatomopathological and immunohistochemical examinations were essential to classify this sub-type of breast cancer.

**Keywords:** Hormone sensitive breast cancers; Anatomopathological examination; immunohistochemical examination

### Introduction

With about 1.3 million of annual cases and around 465 deaths attributed to it, breast cancer remains the leading cause of female mortality from cancer worldwide despite therapeutic breakthroughs and progress in screening [1]. In developed countries, sub-clinical breast cancers currently represent 20% of newly diagnosed cancers [1]. The constant increase in this rate is connected with two phenomena: the deployment of organized screening and the improvement of imaging techniques, leading to the discovery of smaller and smaller sub-clinical lesions. The data of the National Institute of cancer noted for 2010 a rate of 38.2% of lesions less than 10 mm among invasive cancers detected and a rate of 15.2% in situ lesions among all the screened cancerous lesions [2]. In Benin, breast cancer is the most common cause of gynecological and breast cancer studied in the CHU of Cotonou 44.3% before cervical cancer, it is diagnosed at a very late stage [3,4]. The development of gene profiling by using the microarrays technique led to the description of distinct molecular sub-types of

breast cancer. These sub-types comprise cancers: Luminal A, Luminal B, Basal, and HER2 sub-types [5]. Hormone sensitive breast cancer is characterized by the presence of estrogen (ER) and progesterone receptors (PR); expression profile close to superficial mammary epithelial cells [6]. Very few anatomical pathology laboratories carry out the immunohistochemical examination in Benin to detect hormone receptors. The purpose of our study was to conduct the detailed review of hormone sensitive breast cancer at CHU-MEL and CNHU-HKM in Cotonou, Benin.

### Objective

To study the histological and immunohistochemical aspects of patients with a hormone sensitive cancer.

### Material and Methods

#### Definitions

- Several authors [7-10] proposed the first molecular taxonomy of breast cancers.

- Tumors expressing genes coding for proteins epithelial cells of the lumen of the ducts or breast lobules were classified in the type called “luminal”. The Luminal type A expresses most strongly ERs. The Luminal type B presents a weak or moderate expression of the specific genes of the luminal type, but more mutations of the p53 protein than type A. Type B is also characterized by the expression, in some cases, of HER2 and markers of proliferation.
- The basal-like type is associated with cancers called triple negative for ER-, PR- and HER2-, The HER2+ corresponds to the type expressing the eponymous protein with ER-s. The last two molecular types comprise high grade and high proliferation index cancers and represent cancers with very poor prognoses.
- **Type and period of study:** It was a retrospective, descriptive and analytical study carried out from January 2013 to January 2016, involving patients who were offered a histological and immunohistochemical exploration of mammary tumor. The series concerned Luminal A type breast cancers.
- **Inclusion/non-inclusion criteria were the following:** 1) To have a mammary tumor which underwent a biopsy 2) To have been offered an anatomopathological examination; 3) Estrogen receptors (ER), progesterone receptors (PR) and HER2 overexpression were explored. Patients who were offered the only anatomopathological examination and/or not expressing any hormone receptor. Sampling was exhaustive and the size of our sample was represented by 43 cases of breast cancer meeting the inclusion criteria, and having undergone biopsy and an anatomopathological and immunohistochemical exploration. The variables considered were namely the anatomopathological and immunohistochemical results. The identified mammary tumors were classified according to clinical classification T (tumor), N (palpable adenopathy, M (metastasis). Data analysis and statistical tests were carried out by means of the Epi Info version 3.5.1. software for averages calculation and standard deviation, the comparison of proportions by Pearson's chi square test accepting a significant statistical probability p<0.05.
- **Ethical consideration:** All the patients were informed in order to obtain consent. We ensured the confidentiality of the records which were used for the study with the approval of the Ethics Committee of the Faculty of Health Sciences of Cotonou, Benin.

## Results

### Prevalence

During the study period (36 months), 43 patients had a medical consultation for cancer confirmed by an anatomopathological and immunohistochemical examination: 12 patients (27.90%) had a triple negative type breast cancer and 31 (72.09%) had a hormone sensitive cancer. Our study focused on the 31 patients with a hormone sensitive cancer.

### Age

The age of our patients varied between 28 and 85 years, with an average age of  $49.91 \pm 15.906$ .

### Reproductive life

Essentially, 93.6% of the patients experienced breastfeeding, with an average duration of 11.34 months. The tumor was discovered after a self-examination of the breast which revealed the presence of a nodule

(48.4%), an inflammation (45.2%) or a mastodynia (6.4%). Out of the 31 patients, 43.3% had a period of consultation between 8 and 12 months, with an average of 10 months and extremes of 3 and 18 months.

### Clinical stage at diagnosis

Clinical stages shows that 61.3% had a tumor of a diameter  $\geq 5$  cm and classified T4; in 67.7% of cases, axillary lymph nodes were palpated (N1) as shown in Table 1.

Clinical stages	N(%)
<b>Tumor (T)</b>	
T0 (not palpated)	02(6.5)
T1 (<2 cm)	03(9.7)
T2 (2-3 cm)	04(12.8)
T3 (3-4 cm)	03(9.7)
T4 (3-5 cm)	19(61.3)
<b>Regional lymph nodes</b>	
Nx	01(3.2)
N0	04(12.9)
N1	21(67.7)
N2	05(16.1)
N3	
<b>Metastases</b>	
Mx	02(6.5)
M0	22(71.0)
M1	07(22.5)

**Table 1:** Clinical stage of the mammary tumor (N=31).

### Extension assessment

The chest, abdomen and pelvis scan revealed no metastasis (71.0% of cases) and 22.5% had metastases (M1) shown in Table 1.

### FIGO Classification

35.5% of the patients were classified Stage III shown in Table 2.

FIGO classification	N(%)
Stage I	02(6.5)
Stage II	09(29.0)
Stage III	11(35.5)
Stage IV	09(29.0)
Total	31(100)

**Table 2:** FIGO Classification (N=31).

### Distribution of hormone receptors according to the level of labelling

The average rate of the labelling of estrogen receptors was 82.32%, and that of progesterone receptors 39.46%. Four (04) patients out of 31 (12.9%) had an HER2 overexpression shown in Table 3.

Hormone receptor labelling	N(%)
<b>ER (Level of labelling%)</b>	
[10;30]	01(3.2)
[30;50]	01(3.2)
[50;70]	03(9.7)
[70;90]	11(35.5)
[90;100]	15(48.4)
total	31(100)
<b>PR (Level of labelling%)</b>	
[0;30]	13(50)
[30;70]	06(23.07)
[70;100]	07(26.92)
Total	26(100)

**Table 3:** Distribution of hormone receptors according to the level of labeling.

### Anatomopathological examination

Anatomopathological distribution and histoprognosis of hormone sensitive breast cancers are shown in Table 4.

Examination	N(%)
In situ ductal carcinoma	01(3.33)
Invasive ductal carcinoma	28(90.32)
In situ lobular carcinoma	01(3.33)
<b>SBR Grade</b>	
Grade I	2(6.89)
Grade II	24(82.75)
Grade III	3(10.34)

**Table 4:** Anatomopathological distribution and histoprognosis of hormone sensitive breast cancers.

## Discussion

### Prevalence and age

Over a period of 3 years, and out of 43 cases of all types of breast cancer, hormone sensitive cancers represented 72.09% of cases, that is to say an annual prevalence of 10.33 cases added to what was reported in other series [11] where frequency varied between 70 and 75% for hormone sensitive breast cancer. The patients' age was between 28 and

85 years with an average of 49, 91 years; Seshie et al. [12] reported an average of  $52.5 \pm 12.1$  years at the time of diagnosis etlhekwa [13] in Nigeria, in a total of 1842 patients noted an average age of 48 years.

### Patients profile in our series

Those with a hormone sensitive breast cancer were on average 49.91 years old; there was a period of 10 months between the discovery of the tumor and the first medical consultation; they had a nodule in their breast and adenopathy at the time of breast self-examination. These nodules expressed estrogen receptors in 82.32% and progesterone ones in 41.9%. The luminal A sub-type was represented in 70% of cases and HER2 overexpression one out of ten times; they were at FIGO stage III with an invasive ductal carcinoma and a predominant SBRII histoprognosis grade.

Franches et al. [14] reported that luminal breast cancers represented 70 to 80% of all breast cancers, but others [12] noted that almost half of the population of their series had triple negative tumors whereas luminal A, B, and HER2 non luminal breast cancers were 25.6, 12.2 and 12.8% respectively.

### Reproductive life

In our series, nine patients out of ten approximately (93.6%) experienced breastfeeding for 11.34 months on average. The nodule in the breast was the most frequent for consultation (48.4% of cases) and the presence of an inflammation was mentioned in 45.2% of cases. Several authors [15,16] agreed on the existence of a palpable tumor in symptomatology. In our series, it was most often a breast self-examination tumor clinically classified T4 (19/31), N1 (21/31) with an absence of distant metastasis M0 (22/31) confirmed at least by means of chest, abdomen and pelvis scan. Contrary to our findings, breast tumors can be discovered earlier at clinical stages T2 or T3 [17-19].

### Anatomopathological and immunohistochemical study

In our series, nine patients out of ten approximately (90.3% of cases) had an invasive ductal carcinoma of SBRII histoprognosis grade, which was close to what is reported in literature [18,19].

In our study, about three quarters of our patients had a luminal A type and a quarter had a luminal B type. In Franchet et al. [14], luminal A breast cancers represented 70 to 80% of all the breast cancers he studies and 20% for luminal B.

## Conclusion

Hormone sensitive breast cancer represents nearly three quarters of all cancers studied within 36 months at CHU-MEL and CNHU-HKM of Cotonou in Benin; The average age at diagnosis was 48 years. The majority experienced breast feeding for about one year. No history of family breast and ovarian cancer was mentioned in our series. Only a multicenter cohort study can specify the extent of hormone sensitive and luminal sub-types cancers in Benin.

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