

# Malignant Breast Diseases in Sokoto—A Histopathological Review

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**Abstract:** *Background:* Currently breast cancer remains the most commonly diagnosed female cancer globally with a significant geographic, racial and ethnical variation in its incidence. This article examines the frequency and histological types of breast cancer in a Tertiary Hospital in North-Western Nigeria. *Materials and Methods:* Haematoxylin and Eosin stained slides of mastectomies and biopsies diagnosed as breast cancer from 2006 to 2015 were retrieved and studied. Request forms and histology register were scrutinized for clinical bio data and histologic diagnosis. Data obtained were analysed using the Statistical Package for the Social Sciences version 20 statistical package (SPSS) Incorporated, Chicago, Illinois, USA, and value presented descriptively. *Results:* A total of 765 of breast cancer biopsies were received during the study period. This constituted 19.5% of all the malignancies in the same period. Out of this, 732(95.7%) were females and 33(4.3%) were males. The Mean age of Patients presenting with breast cancer was 45 with SD  $\pm 12.4$ ; the age range was 18-99. Top five histological types were Invasive Ductal Carcinoma account for 694(90.7%), Invasive Lobular Carcinoma 23(3%), Metaplastic Carcinoma 23(3%), Mucinous Adenocarcinoma 5(0.7%), and Papillary Carcinoma 5(0.7%). *Conclusion:* This study showed that Invasive Ductal Carcinoma was the most predominant morphologic presentation in our region. Education and public enlightenment on the importance of seeking medical attention are necessary tools to reduce the incidence, morbidity and mortality associated with malignancy of the breast.

**Keywords:** breast cancer, histopathology, Sokoto

## 1. Introduction

Breast cancer is the most common cancer among women. This is more so in developed countries [1]. It is estimated that there are over one million new cases per year worldwide (22% of all cancers diagnosed among women) [2]. One in 18 women developed breast cancer between birth and age 79 years [1]. It is now the most common cancer both in developed and developing regions with slightly more in less developed region (883,000) than in developed region (794,000). Incidence rates vary from 27 per 100,000 women in Middle East, Africa and Eastern Asia to 96 per 100,000 women in Western Europe [3].

It ranks fifth as a cause of death from cancer overall with 522,000 deaths and it is the most frequent cause of death among women [3, 4]. The mortality rates ranges between 6 in Eastern Asia to 20 per 100,000 in Western Africa [3]. It is three times more common than all gynaecologic malignancies put together and the incidence is increasing unabated [5]. It is also the most frequently diagnosed cancer in the majority (140 of 184) of countries and accounts for 25% of cancer cases and 15% of cancer deaths among women worldwide [6].

In Nigeria on the other hand, the number of women at risk of breast cancer increased steadily from approximately 24.5 million in 1990 to approximately 40 million in 2010 and is projected to rise to over 50 million by 2020 [7]. This denotes a rising incidence of the neoplasm in sub-Saharan countries including Nigeria [7-10]. The established risk factors for breast cancer include age, sex, age at onset of menarche, age at first full-term pregnancy, parity, breast feeding, age at onset of menopause, obesity and physical activity [11]. The trend of change in these risk factors in Africa is towards increasing incidence of breast cancer [12].

This is a 10-year descriptive retrospective study of breast cancer carried out at a Teaching Hospital in Sokoto, North-West Nigeria.

## 2. Materials and Methods

Haematoxylin and Eosin stained slides of mastectomies and biopsies diagnosed as breast cancer from 2006 to 2015 were retrieved and evaluated with a light microscope, using diagnostic criteria of the WHO. Request forms and histology register were scrutinized for clinical bio data and histologic diagnosis. Data obtained were analysed using the Statistical Package for the Social Sciences version 20 statistical package (SPSS) Incorporated, Chicago, Illinois, USA, and value presented descriptively

## 3. Results

A total of 765 cases of breast cancer were received during the study period. This constituted 19.5% of all the malignancies in the same period. Out of this, 732(95.7%) were females and 33(4.3%) were males. The Mean age of Patient presenting with breast cancer was 45 with SD  $\pm 12.4$ ; the age range was 18-99. Out of 765 cases of breast cancer, 332(43.4%) presented with right breast cancer, 308(40.3%) presented with left breast cancer, 80(10.5%) were bilateral breast cancer, and 45(5.9%) breast NOS. Top five histological types were invasive ductal carcinoma account for 694(90.7%), invasive lobular carcinoma 23(3%), metastatic carcinoma 23(3%), mucinous adenocarcinoma 5(0.7%), and papillary carcinoma 5(0.7%)

**Table 1:** Distribution of breast cancer according to location

| Histological Types         | Bilateral Breast | Breast NOS | Left Breast | Right Breast | Total      |
|----------------------------|------------------|------------|-------------|--------------|------------|
| Apocrine Carcinoma         | 2                | 0          | 0           | 1            | 3          |
| Comedo Carcinoma           | 1                | 0          | 0           | 2            | 3          |
| Invasive Ductal Carcinoma  | 72               | 40         | 278         | 304          | 694        |
| Invasive Lobular Carcinoma | 1                | 1          | 12          | 9            | 23         |
| Medullary Carcinoma        | 0                | 0          | 2           | 1            | 3          |
| Metaplastic Carcinoma      | 1                | 1          | 10          | 11           | 23         |
| Mucinous Adenocarcinoma    | 0                | 1          | 3           | 1            | 5          |
| Papillary Carcinoma        | 0                | 2          | 1           | 2            | 5          |
| Pleomorphic Sarcoma        | 2                | 0          | 0           | 0            | 2          |
| Sarcomatoid Carcinoma      | 1                | 0          | 2           | 1            | 4          |
| <b>Total</b>               | <b>80</b>        | <b>45</b>  | <b>308</b>  | <b>332</b>   | <b>765</b> |

**Table 2:** Sex Distribution of the various histologic types of breast cancer

| Histological Types         | Female     | Male      | Total      | Percentage |
|----------------------------|------------|-----------|------------|------------|
| Apocrine Carcinoma         | 3          | 0         | 3          | 0.4        |
| Comedo Carcinoma           | 3          | 0         | 3          | 0.4        |
| Invasive Ductal Carcinoma  | 664        | 30        | 694        | 90.7       |
| Invasive Lobular Carcinoma | 21         | 2         | 23         | 3.0        |
| Medullary Carcinoma        | 3          | 0         | 3          | 0.4        |
| Metaplastic Carcinoma      | 23         | 0         | 23         | 3.0        |
| Mucinous Adenocarcinoma    | 4          | 1         | 5          | 0.7        |
| Papillary Carcinoma        | 5          | 0         | 5          | 0.7        |
| Pleomorphic Sarcoma        | 2          | 0         | 2          | 0.3        |
| Sarcomatoid Carcinoma      | 4          | 0         | 4          | 0.5        |
| <b>Total</b>               | <b>732</b> | <b>33</b> | <b>765</b> | <b>100</b> |

**Table 3:** Age Distribution of cancers according to histologic type

| Histological Types         | ≤19      | 20-29     | 30-39      | 40-49      | 50-59      | 60-69     | 70-79     | 80-89    | ≥90      | Total      |
|----------------------------|----------|-----------|------------|------------|------------|-----------|-----------|----------|----------|------------|
| Apocrine Carcinoma         | 0        | 0         | 2          | 0          | 0          | 1         | 0         | 0        | 0        | 3          |
| Comedo Carcinoma           | 0        | 1         | 0          | 2          | 0          | 0         | 0         | 0        | 0        | 3          |
| Invasive Ductal Carcinoma  | 2        | 45        | 172        | 188        | 178        | 73        | 32        | 3        | 1        | 694        |
| Invasive Lobular Carcinoma | 0        | 1         | 7          | 6          | 5          | 2         | 2         | 0        | 0        | 23         |
| Medullary Carcinoma        | 0        | 0         | 1          | 2          | 0          | 0         | 0         | 0        | 0        | 3          |
| Metaplastic Carcinoma      | 0        | 1         | 7          | 4          | 7          | 3         | 0         | 1        | 0        | 23         |
| Mucinous Adenocarcinoma    | 0        | 0         | 2          | 0          | 1          | 2         | 0         | 0        | 0        | 5          |
| Papillary Carcinoma        | 0        | 0         | 0          | 1          | 1          | 3         | 0         | 0        | 0        | 5          |
| Pleomorphic Sarcoma        | 2        | 0         | 0          | 0          | 0          | 0         | 0         | 0        | 0        | 2          |
| Sarcomatoid Carcinoma      | 0        | 1         | 2          | 0          | 1          | 0         | 0         | 0        | 0        | 4          |
| <b>Total</b>               | <b>4</b> | <b>49</b> | <b>193</b> | <b>203</b> | <b>193</b> | <b>84</b> | <b>34</b> | <b>4</b> | <b>1</b> | <b>765</b> |

#### 4. Discussion

From our observations in this study, patients generally present at a much younger age group when compared with their Caucasian counterparts [13-15]. The mean age at presentation varies between Africa and Europe. It has been reported that the mean age is 48 years in Africa and approximately two-thirds are premenopausal [16, 17]. On the contrary, the majority of women present at post menopause in Europe [18-20]. In the United Kingdom, the median age at presentation for Black women is similar to African women at 46 years compared to 67 years in white British women [13]. African-American women have also been found to present at a significantly younger age than their Caucasian counterparts [14, 15]. The factors responsible for this are not fully understood, although it could be due to the breast cancer genes (BRCA 1 and 2) and their variants [21].

In this study, we observed that breast cancer occurred most commonly between the age group of 40 and 49 years. This accounted for 26.5% of all breast cases. A worrying issue is that 77% of all Breast Cancer patients were diagnosed between the 3<sup>rd</sup> to 5<sup>th</sup> decades. Based on this finding, it could be asserted that the majority of breast cancers are seen in pre-menopausal women in our environment thereby confirming previous studies [16, 17, and 22]. This observation is in contrast to data from Kano [5], which is in the same geographical area and have several religious and cultural similarities to our study area.

The study also highlighted that Invasive ductal carcinoma is the most predominant malignant neoplasm of the breast. This relates to others studies in Nigeria [22, 23], Africa [17,

24] and Europe [24-26] and may explain the aggressive biological behaviour of breast carcinoma found in Nigerian women [13]. Invasive lobular carcinoma and metaplastic carcinoma were jointly ranked 2<sup>nd</sup> in the study and is consistent with findings in several literatures.

It is apt to note that there was no case of carcinoma insitu in this study possibly because of lack of dedicated screening programmes for breast cancers. In contrast, this can be related to a study carried out in Jos [27]. This study also revealed that most of the Invasive ductal carcinoma occurred in the right breast, this finding is similar to other findings in Northern-Eastern Nigeria [23]; but at variance to data from the Southern part of Nigeria [28]. Other histological variants such as mucinous adenocarcinoma, papillary carcinoma, sarcomatoid carcinoma and others were just a handful.

Thirty three (4.3%) of breast cancers seen in this study were found in males. This is at par with studies from Uganda with a rate of 5% [29], higher than international data with a rate less than 1% [30] but relatively lower than rates found in Zambia with 15% [31]. These relatively high rates have been attributed to endemic infectious diseases causing liver damage, leading to hyperoestrogenism [32]. Risk factors for male breast cancer include genetics, obesity, alcohol intake, oestrogen intake, high ambient temperature, exhaust emissions and diseases [32, 33].

Our study also revealed that most of the patients present at an advanced stage. Most women in Africa present when the disease is at an advanced stage. In a study in East Africa, more than 70% of the patients presented at stage III or IV [17]. In studies in Libya and Nigeria, more than half of the patients presented at stage III or IV [24, 25]. However, in

Europe, women are more likely to present when the disease is still in its early stage [34]. In a Nigerian study, as high as 39% of the patients had fungating tumours while 13% had clinical evidence of systemic metastasis [16]. The reason for the advanced presentation in Africa could be due to lack of health care coverage especially in remote rural areas and poverty as healthcare is not free in most countries [35].

The relationship between breast cancer and dietary phytoestrogen intake in North-Western Nigerian women has been shown by Oricha *et al.*, [36] thereby implicating staple foodstuffs like *Sorghum bicolor*, *Manihotesculenta* and *Typhadomigensis*. Alatise and Schrauzer [37] have implicated lead exposure as a contributing cause of rising incidence due to its many domestic, industrial and automotive use. On a positive note, Vitamin D has been positively shown to possess anti-cancer properties and also alleviate morbidity and mortality [38].

Regardless of the fact that Breast Cancer is the most common cancer in females globally, there are ethnic and geographical variations in its age distribution and other characteristics worldwide. On the bright side, the incidence of the malignancy is still relatively low in Africa compared to the incidence in Europe. This has largely been attributed to a protective reproductive history including late menarche, early menopause, and high parity with prolonged breastfeeding, irregular menses, and fewer ovulatory cycles [39]

## 5. Conclusion

There is a likelihood that the burden of breast cancer may increase tremendously and therefore top priority should be given for early detection and treatment of the disease. In our surrounding, most cases present late due to poverty, lack of awareness, alternative medication and anxieties that mastectomy may interfere with their self-image. Provision of the most effective clinical therapies clearly need emphasis, with an ongoing focus on accurate accounting of cases of morbidity and mortality, within the context of development of a network of specialized histopathology, oncology among others in our institutions.

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