Pathologically confirmed breast cancer in Malawi: a descriptive study: Clinical profile of breast cancer

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Abstract

Background

Breast cancer is the most common female cancer in Africa, yet no published studies have investigated breast cancer in Malawi. Understanding the clinical profile of breast cancer is important to develop early diagnosis efforts.

Aim

To describe clinical and pathological characteristics of breast specimens from a pathology laboratory at a national teaching hospital.

Methods

Secondary analysis of pathology reports from July 2011 to September 2013.

Results

Among 85 breast cancer cases, 55% were < 50 years. Median tumor size was 4 cm and 49% were grade 3. Median symptom duration was eight months.

Conclusions

Malawian women with breast cancer commonly have long symptom durations prior to diagnosis, young age, and poorly differentiated tumors. Improved clinical and pathological characterization, including hormone receptor status, are urgently needed to better understand this disease in Malawi.

Introduction

Breast cancer is the most common cancer and the leading cause of cancer death in Africa[1]. The breast cancer burden has increased across the continent with significant geographic and socioeconomic variation[2]. Low cancer awareness and lack of screening or control programs lead to many women being diagnosed late[3]. Although most breast cancer studies in Africa are small, retrospective descriptions with limited follow-up, available data suggest that African women are frequently diagnosed with advanced disease and have poor clinical outcomes. Some studies in African settings have shown high frequencies of aggressive tumour types with poorly differentiated tumours that are often hormone receptor (HR) negative. However, HR status assessment is not routinely done in many countries including Malawi[4-6]. This is partly due to an extreme scarcity of diagnostic pathology services in Africa[7]. In Malawi's Central Region, pathology diagnostic services were bolstered by the establishment, in July 2011, of a diagnostic pathology laboratory at Kamuzu Central Hospital (KCH), a teaching hospital in Lilongwe[8]. At KCH, efforts are ongoing to routinely assess HR status for all confirmed breast cancers, leveraging clinical research collaborations which provide immunohistochemistry reagents and technical support for new staining procedures[8]. This institutional database provides important data for understanding breast cancer in the Malawian context.

Breast cancer accounts for 8% of female cancers in Malawi[9,10].

In a previous report from a histopathology laboratory in the Southern Region of the country, breast biopsies were the second most common type of biopsies sent to the laboratory, after esophageal specimens[11]. Understanding the clinical spectrum of breast cancer in Malawi is important to develop early diagnosis efforts to address high mortality rates. This cross-sectional study aimed to describe the pathological characteristics of breast specimens submitted to the KCH Pathology Laboratory, along with the clinical features corresponding to these specimens.

Methods

We reviewed KCH pathology reports from July 2011 to September 2013. KCH is a tertiary referral hospital for the Central Region of Malawi and the only hospital with pathology services in this region. Suspected breast cancer may be diagnosed after a core biopsy, fine needle aspiration (FNA), excisional or incisional biopsy, or surgical specimen. The KCH pathology database includes information on age, sex, HIV status, nature of the specimen, date of collection, date of receipt, date of report, clinical notes, macroscopy, microscopy, and diagnostic conclusion. For confirmed breast cancers, we abstracted data on tumor size, grade, lymph node involvement, and symptoms when available. HR status was not routinely available during this period and clinical data from patient charts were unavailable for review. To minimize errors during data abstraction, two co-authors independently reviewed reports of all specimens and discussed discrepant results to reach consensus. We excluded specimens from men and inadequate or non-representative specimens. We used descriptive statistics to report proportions and frequencies assessed, and used Pearson's Chi-square and t-tests to determine statistical significance. All analyses were performed using Stata version 12. This study was reviewed by the Malawian National Health Sciences Review Committee and exempted of patient informed consent due to the nature of secondary analyses of routinely collected data; it was also approved by the University of North Carolina institutional review board.

Results

There were 238 breast specimens in the pathology database during the 26-month study period. Eleven specimens from men (five were cancer) and 12 non-diagnostic specimens were excluded. We included one specimen per woman using the largest submitted specimen as the definitive report, leaving 193 women as shown in Table 1. The age range of patients was 12-89 with a median of 34 years. Fifty-five percent (106) of the reports had a non-cancer diagnosis; two women were diagnosed with lymphoma. Fibroadenoma made up 87% of the benign breast diagnoses. Women without cancer were younger than those with cancer (median age 24 vs 46 years, p < 0.001).Characteristics of the 85 confirmed breast cancer cases are displayed in Table 2. Fifty-five percent of cases occurred in women < 50 years old. Invasive ductal carcinoma was the most common histologic type (86%). Histologic grade was available for 53 cases and 49% were grade 3. Of 42 specimens with lymph nodes submitted to the lab, 83% had involvement by cancer. Among women with invasive cancer, two had Paget's disease and four women had ductal

carcinoma in situ. Clinical notes were available for 44 women. Although the notes indicated a palpable breast mass as the only symptom for 13 cases, many others included multiple symptoms. Commonly reported symptoms included fixed or mobile axillary lymphadenopathy (17), ulcerated lesion or mass (9), breast enlargement/swelling (5), peau d'orange (3), breast pain (3), multiple breast masses (2), nipple discharge (2), and nipple retraction (2). Of these, 30 had notes on symptom duration; the median reported length was 8 months (range 2-24 months) and 47% had symptoms for > 12 months. Median tumor size was 4 cm (range 1-10 cm) and 45% were ≥ 5 cm. TNM stage could not be assigned retrospectively for most confirmed cases using available data.

Table 1. Descriptive summary of breast biopsy reports at Kamuzu Central Hospital in Lilongwe, Malawi

	Breast Cancer 85 (44%)	No Breast Cancer 108 (56%)	Total 193	p-value
Age group				< 0.001
<30	9 (10.6)	75 (69.4)	84 (43.5)	
30-39	18 (21.2)	19 (17.6)	37 (19.2)	
40-49	20 (23.5)	9 (8.3)	29 (15.0)	
50-59	13 (15.3)	4 (3.7)	17 (8.8)	
≥60	25 (29.4)	1 (1.0)	26 (13.5)	
Specimen type				
FNA	17 (20.0)	23 (21.3)	40 (20.7)	
Tissue biopsy	27 (31.8)	36 (33.3)	63 (32.6)	
Tumor mass	41 (48.2)	49 (45.4)	90 (46.6)	

Notes: FNA, fine needle aspiration

Table 2. Clinical characteristics of confirmed breast cancer cases at Kamuzu Central Hospital in Lilongwe, Malawi

	<50 years old 47 (55.3%)	≥50 years old 38 (44.7%)	Total n=85
Histologic Type			
Ductal	31 (66.0)	25 (65.8)	56 (65.9)
Lobular	6 (12.8)	3 (7.9)	9 (10.6)
Missing	10 (21.3)	10 (26.3)	20 (23.5)
Tumor Size			
T1	3 (6.4)	1 (2.6)	4 (4.7)
T2	4 (8.5)	10 (26.3)	14 (16.5)
T3	4 (8.5)	3 (7.9)	7 (8.2)
T4	6 (12.8)	5 (13.2)	11 (12.9)
Missing	30 (63.8)	19 (50.0)	49 (57.6)
Tumor Grade			
1	7 (14.9)	1 (2.6)	8 (9.4)
2	8 (17.0)	11 (28.9)	19 (22.3)
3	11 (23.4)	15 (39.5)	26 (30.6)
Missing	21 (44.7)	11 (28.9)	32 (37.6)
Symptom Duration			
< 6 months	7 (14.9)	2 (5.3)	9 (10.6)
6 - 12 months	6 (12.8)	1 (2.6)	7 (8.2)
> 12 months	6 (12.8)	8 (21.0)	14 (16.5)
Missing	28 (59.6)	27 (71.0)	55 (64.7)
Lymph Node Status			
Involvement	15 (31.9)	20 (52.6)	35 (41.2)
No involvement	4 (8.5)	3 (7.9)	7 (8.2)
Missing	28 (59.6)	15 (39.5)	43 (50.6)

Notes: T1 ≤ 20 mm; T2 > 20 mm but ≤ 50 mm; T3 >50mm; T4 extension to chest wall or skin

Discussion

Malawian women with breast cancer have long symptom durations prior to diagnosis, a majority have poorly differentiated tumors of ductal origin, and they are commonly diagnosed at young ages. These findings are consistent with other studies in the region where many patients are diagnosed with advanced disease and aggressive clinical features. Nearly half of cases had high-grade tumours and over 80% of those with available lymph node information had lymph node involvement. One potential explanation for this may be that women with more aggressive tumours seek care and receive diagnostic services compared to women with slower progressing tumours[4]. A majority of cases occurred in women under 50 years of age, and the mean age was 48.6 years. This is similar to findings from Blantyre, where the mean age of 19 cases from the Southern Region of Malawi was 50.7 years[11]. It remains uncertain whether younger age at breast cancer diagnosis in African settings reflects environmental factors, genetic factors, differences in tumor biology, or the younger demographic profile of African countries overall. To our knowledge this is the first to attempt describe clinical features of breast cancer in Malawi, therefore this study provides essential baseline data regarding tumor biology and clinical presentations in our setting. We were unable to determine stage for most of the cancer cases due to limitations of available clinical records. We were unable to obtain detailed data regarding treatment and outcomes because patient charts were not accessible. However, these findings provide important insight into the local presentation of breast cancer. In particular, the absence of HR status testing in most African settings is a major deficiency in care that requires correction, not only in Malawi but throughout the region. HR positivity varies widely across Africa,[4,12,13] and routine testing would ensure that women with HR-negative cancers are spared ineffective hormonal therapy. It would also identify many women who would benefit from tamoxifen, which is relatively inexpensive, well-tolerated, and available in Malawi. Detailed prospective studies of breast cancer in Malawi are urgently needed.

Conclusions

Aggressive breast cancer affects many young and middle-aged Malawian women. There is a need for more expedient evaluation of breast masses to enable earlier diagnosis and treatment. Increasing breast cancer awareness is also imperative to address late diagnosis. Improved clinical and pathological characterization, including HR status, are needed to better understand this disease in our setting and improve outcomes. Such efforts are currently ongoing across Malawi and will hopefully lead to more detailed breast cancer data from Malawi moving forward.

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