

BREAST CANCER-ASSOCIATED EMERGENCIES AT A TERTIARY HOSPITAL IN GHANA

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ABSTRACT

Background: People with breast cancer present late to health facilities leading to increased morbidity and mortality. A significant proportion of emergency department (ED) admissions are due to breast cancer-related emergencies. This study aimed at assessing the clinico-pathologic characteristics of patients presenting to the emergency department with breast cancer-associated emergencies.

Methods: This was a cross-sectional retrospective review of all breast cancer emergencies managed at the Komfo Anokye Teaching Hospital from January 1, 2021, to December 31, 2023. The medical records of patients treated for emergencies associated with breast cancer at the emergency and the oncology units were reviewed retrospectively, and data was analyzed. Continuous variables were presented as means and standard deviations. Frequencies and percentages were used to describe categorical variables and compared using the Chi-square test

Results: A total of 175 patients presented with breast cancer (histologically confirmed) associated emergencies at the oncology or emergency units. The majority were 171(97.7%) females. The age ranged from 24 to 91 years, with a median age of 51. Dyspnoea was the most common presenting complaint (41.7%). Distant metastasis to the chest (43%) was the most common diagnosis (lung parenchyma 16%, Pleural cavity 18.9%, and lung plus pleura 8%).

Conclusion: The most common reason for breast cancer patients presenting to the emergency department is dyspnoea, with the predominant region of distant spread being the chest. The length of stay of these patients at the ED could have economic implications, and early presentation, detection and treatment of breast cancer can mitigate this problem.

Keywords: Breast Cancer emergency, Ghana

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INTRODUCTION

Breast cancer currently ranks as the most frequently diagnosed cancer globally. In 2020, an estimated 2.3 million cases and 685,000 deaths were attributed to breast cancer¹. Furthermore, it constituted approximately 24.5% of all cancer cases and 15.5% of cancer-related deaths among women, ranking as the top cancer in incidence and mortality across most countries globally in 2020¹. These numbers are expected to increase, with an expected 4.4 million cases of breast cancer by the year 2070². In Ghana, breast cancer constitutes the most common malignancy across both sex and age groups (18.7%) and ranked the second most common cause of cancer death, only to liver cancers^{3,4}. Like many cases in Sub-Saharan Africa and Low- and Middle-Income Countries (LMICs), breast cancer in Ghana is aggressive and characterized by late presentation in the relatively young group compared with that from Caucasians³. This is associated with poorer outcomes of breast cancer, leading ultimately to mortality. In Ghana and other low-resource settings, there is massive pressure on available infrastructure, including emergency bed space. Patients with breast cancer also compete with other emergencies for the limited space. Breast cancer emergencies may be reduced drastically with early presentation, and this will reduce the burden on the ED. To document this, there is a need to assess breast cancer-associated emergency patterns at the centre.

In sub-Saharan Africa, Akpoghor et al. established that the most common cause of breast cancer-associated emergency was metastatic disease, accounting for 76.47% of the total patients.⁵ In this study, the most common site for metastasis was the liver, with the majority of them occurring at more than one distant site. Breast cancer is a complex and heterogeneous disease, consisting of multiple subtypes, each with unique characteristics

and clinical implications, so the diverse patterns of metastasis can add complexity to disease management. As a result, adopting a personalized approach to breast cancer diagnosis, treatment, and follow-up is crucial to attain the best possible outcomes.⁶

In a review by Brook et al, the most common site for metastatic disease in breast cancer is the bone, with approximately 75% of stage IV breast cancer patients experiencing bone metastasis⁷. The study concludes that bone metastases in breast cancer patients are mostly incurable and associated with significant morbidity, negatively impacting their quality of life.

A study by San Susie et al. assessing the frequency of emergency department (ED) visits following outpatient surgery for breast cancer in the USA showed higher ED visit rates, especially among older and black patients than Caucasians. Although the study focused on the frequency and predictors of emergency department (ED) visits within 30 days following surgical treatment, examining all breast cancer-related ED visits regardless of treatment status would provide a broader understanding and contribute to improving breast cancer outcomes.⁸ Epidemiology, and End Results (SEER

There is a paucity of data on the patterns of breast cancer-associated emergencies in Africa, and there is a need to roll out articles to address these issues in the future. This study aimed to assess the clinicopathologic characteristics of patients presenting to the emergency department with breast cancer-associated emergencies.

MATERIALS AND METHODS

Study design

This was a cross-sectional retrospective review of all breast cancer emergencies managed at the Komfo Anokye Teaching Hospital from January 1, 2021, to December 31, 2023.

Study Site

The study was conducted at the emergency and the oncology unit of the Komfo Anokye Teaching Hospital. The hospital serves Ghana's middle and upper regions and receives referrals from neighbouring countries such as La Cote D'Ivoire and Burkina Faso.

Study Population

We identified all patients diagnosed with breast cancer between January 1, 2021, and December 31, 2022, seen at the accident and emergency and oncology units with emergencies associated with breast cancer.

Inclusion Criteria

Patients diagnosed with breast cancer within the study period, presenting with emergency associated with breast cancer.

Exclusion Criteria

Patients diagnosed with breast cancer presenting with emergencies not related to or associated with breast cancer.

Sampling Size and Sampling Technique

Consecutive patients diagnosed with breast cancer presenting at the accident and emergency and the oncology units with breast cancer-related emergencies were reviewed.

Recruitment Method /Data Collection

All clients diagnosed with breast cancer within the study period and who met the study criteria were included. The medical

records of patients treated for emergencies associated with breast cancer at the accident and emergency and the oncology unit were reviewed retrospectively. Relevant information of interest included demographic data, clinical presentation, histologic diagnosis, immunohistochemistry, clinical diagnosis and results of relevant investigations.

Data analysis

Data was analysed with SPSS version 28.0. Continuous variables were analyzed and presented as means and standard deviations. Frequencies and percentages were used to describe categorical variables and compared using the Chi-square test. A p-value of < 0.05 was considered statistically significant.

Results

Of the registered emergency admissions, 171(97.7%) were females. The mean age was 51.93 ± 13.56 years. The average length of stay was 5.8 ± 5.4 and showed a statistically significant association with admission outcome, as shown in Table 2. Of all the 175 managed emergency admissions of breast cancer, 99(56.6%) survived. Out of the observed cases, 89.7% were at an advanced stage of cancer (stage 4). The cancer stage was also statistically significantly associated with admission outcome ($P = 0.009$) at an α level of 0.005. Nearly all patients (92.5%) presented with **metastatic disease**. A **small number of patients (5, 2.9%) with Stage III disease were clinically recorded as metastatic but lacked confirmation of metastasis by staging investigation**, as shown in Table 2. **Distant metastasis to the chest was the most common, recorded in 72 (43%) patients**. Specifically, metastases involved the **lung parenchyma (16%), the pleural cavity (18.9%), and both the lung and the pleura (8%)**. Other sites included the **liver (21.2%), central nervous system (10.9%), and bone (3.4%)**. Ninety (51.3%) patients were receiving

chemotherapy at the oncology unit, out of which 20.5% died, while 85(48.7%) were not on chemotherapy, out of which 22.2% died. Immunohistochemistry test results were

available for 153 patients; 18 (11.7%) were *HER 2+* and 135 (88.2%) were *HER 2-*. Estrogen receptor status was positive in 100 (65.4%) patients and negative in 53 (34.6%).

Table 1. Clinico-pathologic characteristics of patients with breast cancer seen at the emergency.

Characteristics	Frequency	Percentage
Age Group		
20-29	5	2.7
30-39	27	15.4
40-49	41	23.6
50-59	59	33.7
60--69	26	14.9
70-79	9	5.1
80-89	6	3.4
90-99	2	1.1
Total	175	100
Gender		
Female	171	97.7
Male	4	2.3
Total	175	100
Presenting symptom		
Altered consciousness	20	11.4
Anaemia	11	6.3
Bleeding breast ulcer	15	8.6
Chest pain	6	3.4
Dyspnea	73	41.7
Fracture of femur	3	1.7
Fracture of humerus	4	2.3
General weakness	8	4.6
Jaundice	5	2.9
Seizure	5	2.9
Others	25	14.3
Total	175	100.0
Haemoglobin level g/dl (WHO)		
<7	21	12

7-9.9	68	38.9
10-11.9	46	26.3
≥12	40	22.9
Total	175	100

Histologic type of tumour

Invasive ductal carcinoma	169	96.6
Invasive lobular carcinoma	1	0.6
Phyllodes tumour	4	2.3
Papillary	1	0.6
Total	175	100

Immunohistochemistry

Negative

Estrogen	103	56
Progesterone	19	
HER 2/neu	18	136

Clinical Diagnosis

Anaemia	11	6.3
Lung metastasis	28	16
Pleural metastasis	33	18.9
Pleura +Lung metastasis	14	8
Liver metastasis	8	4.6
Liver +Others	29	16.6
Spine metastasis	4	2.3
Febrile neutropenia	2	1.1
Anaemia +Bone metastasis	6	3.4
Brain metastasis	15	8.6
Chest wall metastasis	3	1.7
Others	20	11.4
Pathological fracture	2	1.1
Total	175	100

Length of Hospital Stay

UP TO 7		136
8-14	28	16
15-21	6	3.4

21-28	4	2.3
>28	1	0.6
Total	175	100
Outcomes of Admissions		
Discharged	97	55.4
Discharged against medical advice	2	1.1
Died	76	43.5
Total	175	100

Table 2. Distribution of emergency admission outcome of cancer patients according to various parameters. *p-value <0.05 is statistically significant at df=1

Variable	Outcome of admission		χ² Value	p-value	Mean	SD
	Died(n%)	Survived(n%)				
Age						
<40	15(8.5)	17(9.7)	2.9	0.56	51.93	±13.56
40-59	40(22.9)	60(34.3)				
60+	21(12.0)	22(12.5)				
sex						
male	1(0.6)	3(7.7)	0.5	0.45		
Female	75(42.8)	96(54.8)				
Length of stay						
<3	41(23.4)	28(16.0)	12.5	0.00	5.81	±5.41
3+	35(20.0)	71(40.6)				
Stage of cancer						
II	0(0)	3(1.7)	4.6	0.009		
III	4(2)	11(6.2)				
IV	72(41.1)	85(48.6)				
Metastasis						
yes	73(41.7)	89(50.8)	2.37	0.12		
No	3(1.7)	10(5.7)				
Cancer site						
left	37(21.1)	43(24.6)	0.4	0.49		
right	39(22.3)	56(32)				

Chemotherapy treatment				
yes	36(20.5)	54(30.8)	0.9	0.35
no	40(22.5)	45(25.7)		
n=153				
HER 2 Status				
positive	6(3.9)	12(7.8)		
negative	58(37.9)	77(50.3)	1.4	0.48
Not available	12	10		
Hormonal status				
ER-	26(16.9)	27(17.6)	1.7	0.18
ER+	38(24.8)	62(40.5)		

DISCUSSION

In this study, the majority of the patients were females, constituting 97.7% of the study population, while males accounted for a smaller percentage at 2.3%. This underscores the fact that breast cancer is a disease of females, consistent with literature. The rate of male breast cancer in this study is higher than reported in developed countries but falls in line with literature from sub-Saharan Africa^{9,10}. The median age in this study is 51 years, with a range of 24 to 91 years. The most common age group at presentation was 50-59 years. It remains to be validated whether breast cancer metastasizes ten years after diagnosis in Ghana since available data shows that the most common age group for presentation for breast cancer is the 40-49-year-old group.³

The most prevalent presenting complaint at the emergency department was dyspnoea, accounting for 41.7% of cases. In comparison, a recent study by Akpoghor et al reported similar findings.⁵ Previous studies on the presentation of cancer in general to the emergency department reported pain as the chief complaint of these patients, with dyspnoea as the third most common

complaint.^{11,12} Although these studies are not specifically on breast cancer, they can be discussed because of the prevalence of breast cancer in the world. These findings depend on the extent and location of distant spread, as well as the presence or absence of comorbidities.

Histologically, invasive ductal carcinoma was the predominant tumour type, comprising 96.6% of cases, consistent with findings in the literature¹³.

In our study, we also analyzed patient diagnoses after assessment. Distant metastasis to the chest (43%) was the most common diagnosis (lung parenchyma 16%, Pleura cavity 18.6% and lung plus pleura 14%). This finding contradicts the findings in Nigeria⁵, where liver metastasis was reported as the most prevalent clinical diagnosis. The difference may be due to differences in tumour biology (molecular patterns). Molecular patterns have been used to predict the patterns of distant spread of breast cancer, with the luminal types more likely to spread to bones, and visceral metastasis more likely in triple-negative breast cancer.¹⁴ In our centre, Ki67 and bone scans are not routinely done. Only patients suspected of

bone metastasis will undergo investigation. This may account for the difference in the metastasis trend. Another reason for this trend may be due to a significant number of triple-negative breast cancers in our centre.

The study assessed patients' haemoglobin levels. Most patients fell within the 7-9.9 g/dl range, with over half having a haemoglobin level below 10g/dl. According to the World Health Organisation (WHO) classification of anaemia, the majority of these patients (77.2%) were considered anaemic, which is expected in people with cancer.

The length of hospital stay, with over three-quarters of patients admitted for up to 7 days, raises concerns about the economic impact and resource utilisation in managing breast cancer emergencies. Keeping patients in the emergency ward for an extended period increases the risk of hospital-acquired infections, thereby adding to the economic burden on patients, caregivers, and the nation. There is also a likelihood of decreased productivity among patients and their caregivers. Additionally, prolonged hospital stays put a strain on limited hospital resources and reduce bed availability for new cases. A previous study by Sun et al. highlights concerns about the adverse economic effects.^{9,10}

This study has some limitations. The centre has no bone scan and does not routinely test for bone metastasis unless there are signs and symptoms of bony involvement. This could account for a smaller proportion of patients with bone metastasis, contrary to the fact that bone involvement is the most prevalent in breast cancer. However, the prevalence of triple-negative breast cancer in our region can still explain the prevalence of visceral metastasis and make the study still valid. This study could not stratify the pattern of distant spread by the molecular patterns since the centre did not routinely test for Ki67 in the study period.

CONCLUSION

The most common reason for breast cancer patients presenting to the emergency department is dyspnoea, with the predominant region of distant spread being the chest. The length of stay of these patients at the ED could have economic implications, and early presentation, detection and treatment of breast cancer can mitigate this problem.

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CONFLICT OF INTEREST:

None declared

AUTHOR CONTRIBUTIONS:

Ishmael Kyei: Conceptualization(lead) Writing-original draft, review and editing,

Samuel Mensah: Conceptualization (supporting), Writing- original draft, review and editing, Data curation,

Chris Oppong: Writing- original draft (supporting), review and editing,

Michael Adinku: Writing- original draft (supporting), review and editing.

Joshua Ashiako: Data curation, writing, review and editing.

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Joseph Yorke: Writing- original draft, review and editing

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