

Pattern of Patients Presentation with Metastatic Breast Cancer for Palliative External Beam Radiotherapy in the University College Hospital Ibadan

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Abstract

Background: Breast cancer is the most common cancer among Nigerian women. In Nigeria and indeed Africa as a continent, majority of patients present to the hospital with advanced diseases. This event is a major source of morbidity and mortality in our poor-resource setting and can significantly decrease patient's quality of life. **Materials and Methods:** Patient's case notes with advanced breast cancers referred for palliative radiotherapy were retrieved from the departmental archives. Patient's biodata was extracted, which included age, sex, and year of referral. Other information extracted includes histology types diagnosed at primary sites, presenting symptoms, type of imaging modality used for confirmation of metastasis, and sites of metastasis. Data collected were analyzed using SPSS version 20. **Results:** A total of 584 patients with advanced breast cancers were seen during the study period (January 2005 to December 2009), representing an annual referral rate of about 84 patients/year from various centers across the country. Four hundred and twenty-one patients were eligible for the study. The mean age of patients was 45.9 years with only two male patients. Bone was the most common site of metastasis (66.7%) followed by lungs (17.1%). Pain due to bone metastasis accounted for 62.7% of presenting symptoms, followed by dyspnea and cough from lung metastasis (17.1%), multiple symptoms (7.4%), and symptoms associated with brain metastasis (6.2%). Conventional X-ray remained the dominant imaging modality for the confirmation of metastasis in both bones and lungs which accounted for 69.8% of used imaging modalities. **Conclusion:** Breast cancer metastasis to the bone and lungs remain the major source of morbidity and mortality, with majority of patients presenting with pain and dyspnea. Conventional X-rays remain the common imaging modality for confirmation of metastases in our environment despite advanced imaging techniques (positron emission tomography (PET)–computed tomography and ¹⁸F-fluoro-2-deoxyglucose-PET) used for the similar purpose in other parts of the world.

Keywords: Breast cancer, metastasis, palliative external beam radiotherapy

INTRODUCTION

The incidence of breast cancer in Africa continues to increase and is projected to double by 2050.^[1] Similarly, an increase in the incidence of breast cancer was also noted in Nigeria from 13.8–15.3/100,000 in 1999 to 33.6/100,000 in 2000.^[2] Campbell *et al.* in Ibadan found breast cancer to be the most common malignancy, accounting for 23% of 5000 cancer cases seen in radiotherapy departments.^[3] Majority of breast cancer presentations are either locally advanced or metastatic diseases.^[2] Combinations of poor health education, poverty, and a high patronage of nonorthodox healing centers among the populace contribute to late presentation of breast cancer in many hospitals, with a high number of metastatic disease and poor disease survival.^[2,4-6] The burden of caring for these

large number of patients in a low-resource country like ours is enormous.

In many centers in Western communities, there is an increasing effort on routine screening toward early detection of the disease over the past two decades which resulted in marked reduction in late presentation and incidence of metastatic disease.^[7] In fact, in some countries, distant metastasis is now found

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in <10% of patients at initial presentation.^[8] However, in some developing countries such as Nigeria, routine screening for breast cancer is not yet commonly practiced and a large number of patients still present late. Blood-borne metastasis occurs even though the primary is small or impalpable and most breast cancers have distant metastasis at the time of first detection. Despite the lack of accurate estimates, it is generally believed that 27% of patients who die of carcinomas would have had bone metastases.^[9] Ketiku and Azodo in 1996 using X-ray and radioisotope bone scan reported that 26% of 38 patients with stage III breast cancer have detectable bony metastasis.^[10] Propensity to develop bone metastases was recorded in breast and prostate cancer patients, and in most cases, they were multiple.^[11] Common sites of metastasis include spine, pelvis, femur, ribs, humerus, and skull.^[12] Patanaphan *et al.* in 1988 found that the most common sites of distant metastasis were bone (51%), followed by lungs (17%) and liver and brain (6% each).^[13] Schneider *et al.* reported 14.7% to the bone, 2.6% to the lungs, and 5.7% to the liver.^[14] The frequency of bone metastases is rising as a result of increasing frequency of breast cancer diagnoses.

MATERIALS AND METHODS

Patients

Patients' case notes with advanced breast cancers referred for palliative radiotherapy were retrieved. Biodata including age, sex, and year of referral were extracted. Other information included is histologic type of primary tumor, presenting symptoms, type of imaging modality used for confirmation of metastasis, and sites of metastasis. Patient's data collected were grouped according to the year he or she was referred for the treatment. Presenting symptoms were grouped according to affected sites, such as pain from bone metastasis, sensory and motor deficits from spinal cord compressions and pathological fractures. Others include cough, dyspnea, and hemoptysis from lung deposits, symptoms from brain metastasis were headache, blurring of vision, and nausea. Right hypochondrial pain and jaundice were symptoms related to liver deposits.

Presenting symptoms and their sites of origin guided us for the choice of investigations required, and majority of bone and lung deposits were confirmed using conventional X-rays except in suspected multiple deposits where bone scans were requested. Computed tomography (CT) scan or magnetic resonance imaging (MRI) was requested when brain deposits were suspected; ultrasound scan was reserved for abdominal visceral metastasis like liver deposits.

Statistical methods

The collected data were analyzed using SPSS version 20.0 (Chicago IL) for windows.

RESULTS

Four hundred and twenty-one patients with metastatic diseases out of 584 with advanced breast cancer were considered eligible for the study. Case notes retrieved between

January 2005 and December 2009 were retrospectively reviewed. Table 1 shows the mean referral records of about 84 patients/year. Their mean age was 45.9 years with only two male patients. Table 2 shows histologic types of the breast cancer diagnosed at presentation, with invasive ductal constituting 46%, invasive lobular (28.3%), mucinous carcinoma (13.1%), metaplastic (5%), inflammatory carcinoma (3.1%), leiomyosarcoma 2.1%, and others (2.4%). Table 3 shows that pain due to bone metastasis accounted for 62.7% of presenting complaint, followed by dyspnea and cough (17.1%) due to lung metastasis, then multiple symptoms (7.4%), symptoms associated with brain metastasis accounted for 6.2% and that of liver deposits accounted for 1.7%. Table 4 shows imaging modalities, with conventional X-rays accounting for 69.8%, followed by bone scan (10.9%), combination of mostly X-rays and bone scan (7.4%), MRI (3.1%), and ultrasound scan (1.9%). Table 5 shows sites of metastasis, with bone having 66.7%, followed by lungs (17.1%), multiple organs (7.4%), brain (6.2%), and liver (2.6%). Of 584 advanced breast cancer patients seen, 72.1% were found to be metastatic and 27.9% were locally advanced disease [Figure 1].

Table 1: Demographics

Characteristics	n (%)
Total number of patients	421 (100)
Female	419 (99.5)
Male	2 (0.5)
Mean age (range) in years	45.9 years (23-93 years)

Table 2: Types of breast cancer histology diagnosed at presentation

Histology types of breast cancer	Number of patients (%)
Invasive ductal carcinoma NOS	194 (46.0)
Invasive lobular carcinoma	119 (28.3)
Mucinous carcinoma	55 (13.1)
Metaplastic carcinoma	21 (5)
Leiomyosarcoma	9 (2.1)
Inflammatory carcinoma	13 (3.1)
Others	10 (2.4)
Total	421 (100)

NOS: Not otherwise specified

Table 3: Clinical presentations

Presenting symptoms	Number of patients (%)
Multiple symptoms	31 (7.4)
Cough/dyspnea/hemoptesis	72 (17.1)
Headache/loss of vision and or vomiting	26 (6.2)
Pain	264 (62.7)
Pain and sensory deficit	8 (1.9)
Pain and sensory motor deficit	13 (3)
Pain and abdominal mass/jaundice	7 (1.7)
Total	421 (100)

Table 4: Imaging modalities used for confirmation of metastatic sites

Types of imaging modalities	Number of patients (%)
Conventional X-rays	294 (69.8)
CT scan	29 (6.9)
MRI	13 (3.1)
Ultrasound scan	8 (1.9)
Bone scan	46 (10.9)
Combined modalities	31 (7.4)
Total	421 (100)

MRI: *Magnetic resonance imaging*, CT: *Computed tomography*

Table 5: Metastatic sites

Treated sites	n (%)
Uncomplicated vertebral metastasis	89 (21.1)
Spinal cord compression	18 (4.3)
Pathological fracture	9 (2.1)
Impending fracture	11 (2.6)
Multiple bone metastasis	154 (36.6)
Brain metastasis	26 (6.2)
Liver metastasis	11 (2.6)
Lung metastasis	72 (17.1)
Multiple organs metastases	31 (7.4)
Total	421 (100)

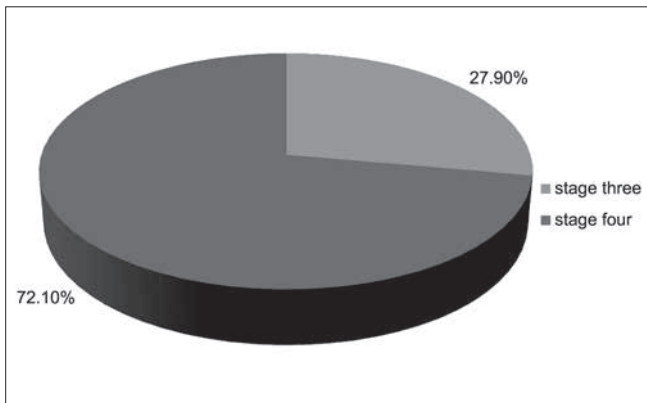


Figure 1: Tumor stage distribution of 584 patients with breast cancer

DISCUSSION

Majority of patients in Nigeria present with advanced disease which is either locally infiltrative or metastatic disease.^[2] Bone metastasis remained a common complication of end-stage cancers, even though their incidences were difficult to be determined with any certainty. The most common metastatic sites in our study were bones (66.7%) and 36.6% of them were multiple bony metastasis. This is supported by a study which showed that 27% of patients who die of carcinomas will have bone metastases and in most cases are multiple.^[9,11] Similarly, Patanaphan *et al.* in 1988 reported the most common site of distant metastasis to be bone (51%), followed by lungs (17%) and liver and brain (each 6%),^[13] their findings are similar to ours with 66.7% to the bone, 17.1% to the lungs, 2.6% to the

liver, and 6.2% to the brain. Another study by Schneider *et al.* reported 14.7% to the bone, 2.6% to the lungs, and 5.7% to the liver.^[14] Ciatto *et al.* also reported 2.5% to the bone, 1.3% to the lungs, and 0.7% to the liver,^[15] all in support of bone as the most common site of metastasis. Spinal cord compressions were found to occur in 2.5%–5% of patients with terminal cancer;^[11] we also recorded 4.3% which is within the stated range. Patients with impending and pathological fractures constituted 4.7% in this study; however, high figures between 9% and 29% were reported in other previous studies.^[16,17] The differences in the incidence of bony fractures between this study and previous ones might be due to variation in their sample sizes. Good standard of care may also be considered as a factor in the Western world, which enables their patients to survive long enough to manifest with such problems. In addition, we were able to find metastasis to multiple organs in 7.4% of patients.

The most frequent consequence of bone metastases was pain,^[12] and it constituted 50% of all cancer pain due to bone metastasis.^[18] Similarly, we reported 62.7% as pain experienced by our patients due to bone metastasis, especially to the vertebral spine. This is supported by a study which reported a frequent pain affecting the spine and the chest with rare affectations of hip, girdle, and shoulder.^[18]

Breast cancer is a heterogeneous disease with multiple subtypes, variable sizes, grade, and metastatic potential associated with varying prognosis.^[19] Approximately 12.5% of all breast cancers in the US are of the more aggressive triple negative (TNBC) subtype and is commoner among African American women.^[20] The TNBC have a high frequency of metastasis to the lung, liver and brain and survival is generally poor.^[21] Despite the fact that immunohistochemistry tests were not routinely conducted among our patients, we observed that majority of patients in this study had high-grade invasive ductal carcinoma not otherwise specified, invasive lobular carcinoma, and metaplastic carcinoma which are believed to be of poor prognosis with early metastatic potential to lungs and brain.^[21] Despite some challenges in this study which include rejection of files without histological confirmation of the primary disease and those patients without radiological confirmation of the metastatic sites, results reported in this study are similar to other previous observations that were reported.

CONCLUSION

Breast cancer metastasis remains a dreaded morbidity that significantly decreases patient’s quality of life. Predilection for bone metastasis with consequences of pain remains the predominant clinical presentation. Conventional X-ray and occasional bone scan are still the major imaging modalities for confirmation of metastases in our environment. Invasive ductal and lobular carcinomas are the most common histological subtypes seen among our patients. Radiotherapy facilities required to cater for this large number of patients are needed to avoid unnecessary physical and psychological suffering of patients.

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Conflicts of interest

There are no conflicts of interest.

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