Male Breast Carcinoma: A Case Study

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Citation

Abstract

Though male breast carcinoma is a rare disease, it is crucial that the nurse practitioner include assessment of the male breast during physical examinations. Male breast carcinoma, when identified at a late stage, has a poor prognosis with a high potential of mortality and morbidity. Prompt referral of any breast mass is essential in reducing deaths related to male breast carcinoma. This case study highlights an incident of preventable death from male breast carcinoma in a 29-year-old patient.

INTRODUCTION

The National Cancer Institute (NCI) reported 2,240 new diagnosed cases of male breast carcinoma (MBC) and 410 deaths in the United States (US) in 2013.[1] Lack of awareness that a male breast mass could be associated with a medical problem delays the timeliness and diagnosis of male breast carcinoma. Male breast carcinoma accounts for about 1% of breast cancers in the US.[1, 2,3] The patient in this case study lacked awareness of possible male breast carcinoma, did not seek early medical attention or screening, and unfortunately died from metastasis of breast cancer to other organs of the body. The nurse practitioner (NP), as a frontline primary care practitioner, has a very critical role of making early referrals, and must include any suspicious breast mass as breast carcinoma in the differential diagnosis until ruled out.[4] Additionally, the NP has an essential role in including breast examination during a male physical examination.

CASE REPORT

History of Present Illness
A healthy 29-year-old male who was an established patient of a primary care clinic presented to his primary care provider, a nurse practitioner. The patient presented with a chief complaint of a painless, rubbery lump in the right breast at the 4 o'clock location. The patient reported no alleviating or aggravating factors and stated that this lump was smaller in size 2 months ago, but had grown in size by 4 centimeters.

History, Review of Systems, and Physical Examination (see Tables 1 and 2; only pertinent positive and negative findings noted in review of systems with all other systems unremarkable).

Table 1

History and Review of Systems

History	
Past Medical History	Negative
Past Surgical History	Appendectomy
Social History	Married, had one child. American-born Hispanic male. Denied any exposure to radiation, or tobacco use. Admitted drinking 4 glasses of red wine every weekend. Denied substance drug abuse or any illicit drug use.
Family History	Noncontributory. Denied any family history of any type of cancer including breast cancer.
Allergies	No known drug allergies.
Current Medications	Denied any use of prescribed or over-the-counter medications.
Review of Systems	
General	Denied any weight loss, loss of appetite, or having night sweats or fatigue.
Cardiovascular	Denied any chest pain or cardiac problem
Respiratory	Denied shortness of breath or respiratory distress
Breast	Growth of mass in right breast and a small skin tag in left areola.
Lymphatic/Immunologic	Unremarkable
Skin	Denied any skin lesions.

Abnormal findings highlighted

Table 2

Physical Examination

System	Findings
General	Alert and oriented to person, place, and time. In no distress, but was very concerned about painless lump in right breast. Vital Signs: Temperature 97.6º Fahrenheit, heart rate 86 beats/minute and regular, respirations 18 breaths/minute and unlabored, blood pressure 128/80, height 5 feet 7 inches, weight 200 pounds, body mass index 31.3.
Cardiovascular	Audible regular heart rate and rhythm S1, S2.
Lungs	Breath sounds clear to auscultation in all lobes.
Neck and lymph nodes	Negative. No palpable lymph nodes in neck, axillary, or groin area.
Chest	**Right breast:** right lower quadrant of breast at 4 o'clock position had a hard, nontender nodule approximately 5.3 cm x 1.8cm in diameter of well-confined mass noted with deeper palpation of tissue. No nipple discharge or exudate. Rubbery fixed texture of nodule. **Left breast areola:** 0.6cmx1.0 cm soft nontender mass noted. No nipple discharge or exudate. Rubbery fixed texture of nodule.

Abnormal findings highlighted

DISCUSSION

Prognosis and Survival Rate

Prognosis or survival from diagnosis of male breast carcinoma is determined by stage and by pathologic findings. Mortality related to male breast carcinoma (MBC) has a potential to be increased with lymph node involvement.[1,2,3,5] Landero et al.[6] reported that the survival rate of breast cancer is determined by the stage of breast cancer at the time of diagnosis: stage I=78%, stage II=67%, stage III=40% and stage IV=19%. In describing the criteria for staging, the American Joint Committee on Cancer[7] provided a plan for categorizing patients with respect to prognosis. Therapeutic decisions are articulated by the stage of the tumor. Unfortunately, in 80-90% of the cases, male breast carcinoma is diagnosed at a later stage of the disease.[1-3,5-9] The American Cancer Society (ACS)[2,3] reported the most common type of breast cancer found in men is the invasive ductal carcinoma (IDC). This type of breast cancer is prevalent in men and metastasizes to other parts of the body.[3] MBC prognosis is very poor when discovered at the later stage of the disease.[1, 3, 5-7]

Pathophysiology of MBC

The actual etiology of MBC is not precise or well-understood, and primary care providers have been challenged to determine the exact risk factor associated with MBC.[1-3,6-11] Several hypotheses try to describe the pathophysiology and etiology of MBC. These theories may be linked to the development of MBC: (a) mutations or inherited DNA changes;, (b) disruptions of transduction in DNA pathways; (c) mutations in the BRCA 1 and BRCA 2 genes;

(d) Klinefelter syndrome; (e) testicular disorders; (f) exposure to radiation; (g) changes in lifestyle; or (h) alcohol intake.[1-14] However, more research in this area is required. Alterations in the BRCA2 may be a cause for some male breast cancers. White et al.[8] reported that men with inherited gene mutations in BRCA2 are associated with a potential risk of developing male breast cancer. Other hypotheses suggest that MBC is cultivated from alterations in tumor suppressor genes as a consequence of contact with cancer triggering chemicals or radiation in the environment.[2-3, 5-8]

Differential Diagnoses

The following lists of differential diagnosis below were considered by the NP after a comprehensive history, review of system, and physical examination of the patient. These differential diagnoses could be possible but not confirmed. Therefore a diagnostic workup was still required to distinguish and confirm the actual presenting problem of the physical findings.

1. Ductal carcinoma in situ - These tumors are a category of breast cancer in men. The cancer cells are in the breast ducts but do not advance through the wall of the breast into fatty tissue. The ACS[2,3] reported only 1 out of every 10 cases develop into male breast carcinoma.
2. Invasive lobular carcinoma - Infiltrating or invasive lobular carcinoma (ILC) is a category of breast cancer in men. The malignant cancer cells begin in the breast lobules that produce milk ducts and grow into fatty cells.[2,3] Two out of every 100 cases develop into MBC. [2,3]
3. Carcinoma in situ - Carcinoma in situ is cancer in an early stage. Tumor cells have not invaded into adjoining tissue. [2,3]
4. Infiltrating or invasive ductal carcinoma - Infiltrating or invasive ductal carcinoma (IDC) is the most prominent category of breast cancer found in men. The ACS[2,3] reported these cancer cells migrate from the ducts and metastasize to other parts of the body. The ACS[2,3] reported 8 out of every 10 cases develop into infiltrating or invasive ductal carcinoma (IDC).
5. Gynecomastia – This condition is the most frequent presentation in men,[2,3,5-14] and refers to an increase in breast tissue that is noncancerous. Presentation is a button-like or disk-like lump beneath the nipple and areola.[2, 3]

Diagnostic Workup

The ACS[2,3] guidelines for management of a male patient with any suspicious lesion or growth require that the provider must get a baseline for his/her patient's condition.

The ACS2,3 and the National Comprehensive Cancer Network (NCCN)5 guidelines for breast cancer screening for men include obtaining selected laboratory testing. These tests include mammograms, aspiration biopsy, computerized tomography (CT) scans, and Human Epidermal Growth Factor Receptor 2 (HER2) testing.1,2,3,5 Diagnostic workup is essential to identify the suspicious mass in the patient's breast because it is an unusual finding and may be cancerous; a diagnostic work-up will help confirm exact diagnosis of this patient's breast mass. For this case patient, the first step made to determine if the patient had breast cancer was to order a mammography, aspiration biopsy, estrogen and progesterone receptor test, HER2 test, and CT of the abdomen and chest to check for metastases of the disease.1,-3,5 This diagnostic workup was done through a referral oncologist. These tests were selected to determine the most accurate diagnosis of breast malignancy. Landero et al.6 reported that mammogram is over 90% sensitive and specific in determining the difference between malignancy and gynecomastia. The biopsy is considered a very definitive test. Breast tissue biopsy is a very precise diagnostic test for analyzing breast cancer cells.2, 3, 5, 6, 9-11

Diagnostic Findings (see Tables 3, 4, and 5)
Diagnostic findings were consistent with those for invasive ductal carcinoma grade III patient, but the left breast tissue was a benign soft tissue which was confirmed as noncancerous.

Table 3

Laboratory Reports

Lab Test	Results
HER2	Negative
Progesterone Receptor test	Negative
Estrogen Receptor test	Positive

Abnormal findings highlighted

Table 4

Pathology Biopsy Report

Test	Results
Biopsy of right breast	Positive for malignancy- The needle biopsy result reported a grade III invasive ductal carcinoma.
Biopsy of left breast	Negative for malignancy but has benign soft fibroid tissue

Abnormal findings highlighted

Table 5

Radiology Report

Test	Results
Mammogram	The mammography indicated non-calcified high density mass of the right breast.
Chest x-Ray	Clear
(CT) of abdomen	Negative
CT of chest	Negative

Abnormal findings highlighted

Assessment
The severity, rate of progression, and characteristics of MBC depends on the category of the disease. MBC may be divided into 5 different categories: (1) benign breast tumors; (2) ductal carcinoma in situ; (3) invasive lobular carcinoma; (4) carcinoma in situ; and (5) invasive ductal carcinoma.1-3,5
Diagnoses
1. Invasive Ductal Carcinoma grade III in right breast
2. Benign soft breast tissue neoplasm in left breast. These lumps are noncancerous based on the pathology findings. According to the ACS2,3, benign soft breast tissue neoplasm may present as a bulk of tissue like fibroadenomas or papillomas.
The decision and assessment of invasive ductal carcinoma was made based on the diagnostic, pathology findings and the physical examination. These findings were consistent with the clinical presentations discussed for MBC.2,3,5,10-14 The patient's pathology findings were identified as late stage breast carcinoma. This patient had a grade III MBC in right breast.

Treatment
Family and Patient Education
The patient and wife were informed of the diagnosis of male breast carcinoma and prognosis based on the pathology findings, medications, and the plan for radiation and chemotherapy. The patient was referred to the oncology team for more evaluation and treatment. Patient education materials were provided regarding the diagnosis, the staging of breast cancer, and the pathological results. Genetic testing for presence of BRCA 2 gene for the patient was done and the result was negative.

Collaborative Surgical and Medication Treatment Plan
Surgery
For the diagnosis of invasive ductal carcinoma, the NCCN5 and the ACS2,3 guidelines recommend modified radical mastectomy of the right breast and retro-areolar lumpectomy

of the left breast. Surgery was recommended for this patient by the oncology team. The patient was referred to a surgeon and plans were made to prepare for surgery.

Radiation therapy

  Post-surgery radiation is recommended for patients diagnosed with invasive ductal carcinoma.2,3,5-7,9-14 Radiation therapy was recommended by the oncologist to aid in blocking the development of potential cancer cells.

Medications

  Systemic adjuvant chemotherapy and drug combination systemic therapy was prescribed to inhibit cancer cell activity. Systemic adjuvant chemotherapy is a combination of cyclophosphamide, methotrexate, and fluorouracil (CMF). Acetaminophen and diphenhydramine were to be taken prior to administration of CMF to reduce side effects 2, 3,5,11-14 of hypersensitivity or allergic reactions like itching, to provide comfort, and for analgesic effects during therapy.

A combination of medication and systemic adjuvant therapy was recommended by the oncology team as treatment after surgery to improve the survival rate of cancer after surgery. CMF treatment was administered and monitored by the oncologists. This evidence-based practice of systemic chemotherapy is recommended by the NCCN5 and the ACS2,3 guidelines. CMF chemotherapy has a 5-year or more survival rate following surgery. The oncology team made adjustments to chemotherapy treatments as needed to manage and control the cancer cells.

Hormone Therapy

  Tamoxifen has been the first line of treatment for the past 5 years.1-3,5,9-12 Tamoxifen is an anti-estrogen hormone therapy that blocks estrogen receptors. This evidence-based practice is recommended by NCCN 5 and ACS 2,3 to increase survival rates and block the estrogen-positive receptor cells from multiplying. NCI,1 NCCN5, and ACS2,3 guidelines recommend that patients with cancer expressing hormone receptors (estrogen or progesterone positive) have adjuvant hormone therapy with tamoxifen for 5 years. This patient's laboratory tests revealed a positive result for estrogen receptors. Tamoxifen 5 year therapy has a 15 year decreased risk of mortality from breast cancer and cardiovascular events.1-3,5   However, extending tamoxifen therapy to 10 years instead of ending at 5 years further reduces the patient's risk of death from breast carcinoma.15

Continuity of Care

Patient/ Family Education/Follow up/

Referrals/Interdisciplinary Care

In light of the diagnosis of grade III breast cancer, the patient and wife were very emotional. Counseling referral for emotional and psychiatric support was recommended by the NP. Benefits of continuing treatment plan with the oncologist was stressed during patient education and need for follow-up treatment was discussed. Referrals were made to patient education websites to learn more about breast carcinoma. Information on support groups was given to the patient and family. Patient education was also given about chemotherapy side effects to watch for such as changes in appetite, mucositis, signs of alopecia, and other possible side effects of therapy. In addition, information was given for management of care when chemotherapy side effects occur.

Outcome of Intervention/Interdisciplinary Care

The patient followed the plan of care with the oncology team and continued to receive chemotherapy treatments supervised by the specialty team. Six months after surgery, the oncology team reported that the cancer cells had metastasized to the lungs and bone in the thoracic region. The patient had a 64 pounds weight loss. The patient was later referred to hospice care due to deterioration in health status. The patient died 2 years from the time of diagnosis of disease.

CONCLUSION

The assessment of the male breast by the NP is essential during any physical examination for early detection and reduction of mortality and morbidity related to male breast cancer. The patient in this case study did not realize the importance of seeking prompt medical advice when the breast mass initially developed. When the breast mass was evaluated it was already at the late stage of breast carcinoma, and unfortunately the patient died at a young age. The NP as a frontline primary care provider has a significant role of thorough assessment and patient education to promote the awareness of male breast cancer which could increase early identification of disease and result in a significant reduction of deaths related to MBC. Limited awareness of MBC could have a potential of being fatal.2,3, 6,8-12 However, prognosis for a higher survival rate can be improved with the establishment of monthly male self-breast examination, increased breast cancer awareness, and timely diagnosis.

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