

Breast Cancer as Isolated Axillary Lymphadenopathy

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Citation

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Abstract

Breast cancer presents commonly as a lump within the breast. Malignant cells from the primary tumor tend to infiltrate the nearest lymph node. Occasionally, breast cancer presents as an isolated lymphadenopathy, without an obvious breast primary site. This article describes a case of isolated axillary metastasis with no obvious primary site, otherwise called cancer of unknown primary (CUP). The management of isolated axillary metastasis from breast cancer is similar to that of primary breast cancer. The treatment approach involves definitive surgery, which could be mastectomy with sentinel lymph node biopsy plus or minus completion axillary lymph node dissection, chemotherapy, radiation, and endocrine therapy, as indicated. Follow-up care involves risk reduction strategies and lifestyle modification.

INTRODUCTION

The assessment of any patient should involve a thorough physical examination. Lymph nodes provide important diagnostic clues regarding the presence of localized and systemic disease. When a health care provider does not assess lymphadenopathy, diagnosis of disease is delayed. Delayed diagnosis can result in increased costs of treatment, increased morbidity, and greater risk of death. This article describes a case of isolated axillary metastasis with no obvious primary site, otherwise called cancer of unknown primary (CUP). Cancer of unknown primary site (CUP) is the detection of metastatic cancer in the body without being able to determine the primary anatomical location where the cancer began.¹

Cancer of unknown primary is relatively common, accounting for about 3-5% of all cancer cases.² Initial evaluation, including physical assessment, laboratory and radiologic studies, often fail to identify the primary site^{2,3}, posing a challenge to not only primary care providers but also to pathologists because, invariably, treatment depends on the histology. This article also describes a basic approach to evaluation of isolated axillary lymphadenopathy, management of metastatic findings, and areas of focus for the primary care nurse practitioner (NP) highlighting breast cancer prevention, early detection, patient education, and post-treatment care.

CASE STUDY

The patient was a 61-year-old Caucasian female who was

seen at an oncology clinic six years after her initial diagnosis of metastatic right breast cancer, which presented as an isolated axillary metastasis. Pertinent history began seven years ago when she presented to her gynecologist for an elective partial hysterectomy with bladder suspension. Pre-operative assessment included a chest x-ray that revealed a 1.5 cm nodule in the left mid-lung. A computed tomography (CT) scan of the chest indicated the presence of a 1.3 cm x 1.5 cm nodule in the left posterior mid-lung and an enlarged right axillary lymph node. A positron emission tomography (PET) scan showed no hypermetabolic activity in the lung, but instead revealed an intense hypermetabolic activity in the right axillary region corresponding to the finding on CT scan.

The patient was referred to a surgeon for biopsy. An excisional biopsy of the right axillary mass was performed. The pathology report was as follows:

Macroscopic exam showed a right axillary mass measuring 4.3 cm x 3.2 cm x 2.3 cm comprising of a markedly enlarged lymph node that measured up to 3.5 cm in greatest dimension with surrounding adipose tissue.

Microscopic exam showed extensive involvement of metastatic carcinoma in several foci measuring up to 1.3 cm.

The immunostain was positive for CK-7, GCDFP-15, Estrogen receptor (ER), Progesterone receptor (PR), and Her2/Neu overexpression and negative for CK-20 and TTF-1.

The pathology report with positive ER and PR was, therefore, consistent with metastatic carcinoma with primary breast malignancy.

Based on this report, the patient was taken back to the operating room for definitive surgery. She underwent right modified radical mastectomy. The following pathology report revealed no evidence of malignancy in either the breast or the 15 lymph nodes, but extensive fibrocystic changes and duct ectasia were present in breast tissue. The

patient was then referred to oncology for adjuvant treatment.

The patient received adjuvant chemotherapy, which included doxorubicin (Adriamycin), fluorouracil (5FU), and cyclophosphamide followed by docetaxol (Taxotere). She began endocrine therapy with an aromatase inhibitor, anastrozole (Arimidex) 1 mg orally daily for five years, which she completed.

HISTORY AND PHYSICAL EXAMINATION

Figure 1

Past Medical History	<ul style="list-style-type: none"> • Obesity • Fatty infiltration of liver with elevation in liver enzymes • Long granuloma
Past Surgical History	<ul style="list-style-type: none"> • Appendectomy • Tubal ligation • Partial hysterectomy with bladder suspension • Umbilical hernia repair • Left inguinal hernia repair • Fibrocystic breast disease with aspirations • Right modified radical mastectomy
Social History	Married with two children, tired with her spouse. Denied using tobacco and alcohol. Reported no exposure to high-risk sexual behaviors or intravenous drug use.
Family History	Maternal aunt had breast cancer at an unknown age. Mother died of small intestinal cancer at age 89. Father died of colon cancer (age not recorded). No other significant family medical history reported.
Obstetric/Gynecological History	Had two pregnancies, no abortions, no miscarriages, and no stillbirths. Menarche at age 12 years; first pregnancy at age 18 years; first delivery at age 19 years; and last menstrual period (LMP) at age 53 years, following hysterectomy.
Breast Cancer Risk History	Reported use of oral contraceptive pills in her twenties, did not use any hormone replacement therapy (HRT). Reported history of breast cyst aspirations but no history of breast biopsy. Did not breastfeed her children.
Personal History/Health Maintenance	Reported having yearly mammograms with no findings of malignancy. Last had colonoscopy performed in 2006 with no significant result.
Allergies	No known allergies.
Medications	No on-going medications.
Review of Systems	
Constitutional	Reported no weight loss, fatigue, loss of appetite, night sweats, fever, or chills.
Eyes	Reported no blurred vision and no double vision.
Ears	No report of ear pain, hearing loss, or ringing in ears.
Nose	No nasal congestion, nasal drainage, or nose bleeding.
Mouth and Throat	No sore throat, problem with swallowing or hoarseness of voice.
Cardiovascular	No chest pain, heart palpitations, light headedness, swelling in legs, or loss of consciousness.
Respiratory	No cough, sputum production, hemoptysis, or shortness of breath. Had no orthopnea or paroxysmal nocturnal dyspnea.
Gastrointestinal	Reported no nausea, vomiting, heartburn, dysphagia, constipation, diarrhea, abdominal pain, rectal bleeding, or bowel incontinence. Reported no exposure to undercooked meat.
Genito-urinary	Reported no burning on urination, pain with urination, blood in urine, frequent urination, and urinary incontinence.
Musculoskeletal	Reported no muscle pain, stiffness of muscles, joint pain, or joint swelling.
Skin/Breasts	Reported no skin changes, breast masses or nipple discharge. Denied having breast implants.
Neurological	Reported no headaches, seizures, dizziness, or loss of balance. No weakness of limbs, loss of sensation, tingling sensations, memory loss, or altered thought process.
Lymphatic	Reported no lump in her axilla, neck, or groin.
Psychiatric	Reported no anxiety or depression. Denied restlessness, hallucinations, or difficulty with sleeping.
Hematologic	Denied bruising or abnormal bleeding.
Physical Examination	
Vital Signs	Height 68 inches, weight 259 lbs, temperature 98.1° Fahrenheit, pulse 85 beats/minute, respirations 18 breaths/minute, blood pressure 145/84, Body Mass Index (BMI) 39.4.
General	Obese patient in no obvious respiratory distress. Appeared stated age.
Skin/Hair/Nails	Skin warm and dry. No bruises, petechiae, rash, or any abnormal skin lesions.
Eyes	Pupils equal, round, and reacted to light and accommodation. Extra-ocular movements intact; no jaundice or pallor noted. No redness or drainage in the conjunctivae.
Ears	Ear canals unremarkable, no excessive cerumen, no drainage. Inspection revealed an intact tympanic membrane, hearing grossly intact.
Nose	External nose unremarkable.
Mouth and Throat	Normal teeth and gums. No tonsils 2+ or exudates noted. No pharyngeal erythema, exudates or mucosal lesions. No lesions in mouth and oropharyngeal region.
Neck	Trachea midline. No jugular vein distention or lymphadenopathy present. Thyroid midline, not enlarged. Neck supple.
Lymphatic	No axillary, supra/infraclavicular, inguinal, or cervical lymphadenopathy bilaterally.
Chest/Lungs	Lungs clear to auscultation with no rales, rhonchi, or added sounds. Percussion and palpation of chest walls normal.
Cardiovascular	No murmurs gallop or rub, S1 and S2 present with regular rate and rhythm.
Breast/Chest wall	Well-healed right mastectomy scar. Chest wall without any nodules or skin changes; left breast without any masses, or skin changes, nipple without inversion or discharge.
Gastrointestinal	Abdomen soft, non-distended, and without masses. No ascites, hepatosplenomegaly, or hernia present. Bowel sounds present in all 4 quadrants.
Genitourinary	No supra-pubic tenderness noted on palpation.
Musculoskeletal	Dorsalis pedis pulses 2+. Full range of motion, muscle strength 5/5 in all extremities with no pain on palpation, steady gait and station.
Extremities	Mild right arm lymphedema noted. No cyanosis, digital clubbing, or discoloration. Distal pulses, radial/trichial 2+. No lesions or edema to other extremities.
Neurological	Memory intact. Gait steady. No hemiplegia or hemiparesis. Cranial (II-XII) nerves grossly intact. No sensory or motor deficits present. Oriented to time, place, and situation.
Psychological	Normal insight, exhibited normal/round judgment. Demonstrated appropriate mood and affect.

LABORATORY STUDIES (SEE TABLES 1 & 2)

Laboratory tests were performed on the day of follow-up. Subsequently, a hepatitis panel was performed to evaluate the elevated liver enzymes.

Figure 2

Table 1. Laboratory on Day of Follow-Up

Laboratory Test	Patient Value	Normal Range
Complete Blood Count (CBC) with differential		
White blood cell (WBC) count	5.1	4.5 – 10.5 K/UL
Hemoglobin	13.1	11-18 G/DL
Hematocrit	38.8	35.0 – 60.0%
Platelets	144	150 – 450 K/UL
MCV	89.3	80 – 99.9 fL
Neutrophils	63.9	42 -75%
Lymphocytes	30.8	20-51%
Monocytes	5.3	1.7-9.3%
Comprehensive Metabolic Panel (CMP):		
Sodium	145.6	136-145 MEQ/L
Potassium	4.82	3.5-5.1 MEQ/L
Chloride	107.3	98 -107 MEQ/L
Carbon dioxide	24.3	23-29 MEQ/L
Glucose	124	70-105 MG/DL
Blood Urea Nitrogen (BUN)	12	7-18 MG/DL
Creatinine	0.8	0.6-1.2 MG/DL
Phosphorus	2.2	2.7 – 4.5 MG/DL
Calcium	9.0	8.5-10.5 MG/DL
Aspartate Aminotransferase (AST)	80	5-34 U/L
Alanine Aminotransferase (ALT)	73	7-35 U/L
Alkaline phosphatase	72	35-123 U/L
Total Bilirubin	0.8	0.0-1.0 MG/DL
Total Protein	6.8	6.4-8.3 G/DL
Albumin	4.3	3.5-5.0 G/DL
Uric acid	5.9	2.6 – 6.0 MG/DL
Lactate Dehydrogenase (LDH)	176	103-227 U/L

^a Out of range findings highlighted in red

^a Out of range findings highlighted in red

Figure 3

Table 2. Hepatitis Panel

Hepatitis Panel Test	Result
Hepatitis A Antibody (IgM)	Negative
Hepatitis B surface Antigen (HBsAg)	Negative
Hepatitis B core Antibody (IgM)	Negative
Hepatitis C virus Antibody	Negative

DIAGNOSTICS

A CT scan was done to investigate the elevated liver enzymes. Resulted were:

Chest, abdomen, and pelvis showed left lower lobe benign calcified granuloma, fatty infiltration of the liver, but no evidence of malignancy.

PATHOPHYSIOLOGY

Cancers are thought to generally originate from a single cell that escapes the controls of normal cell division, forms a tumor at the site of origin, and eventually metastasizes to other organs.⁴ The pathophysiology for an occult primary breast cancer described in this case study may be explained using the hypothesis for cancers of unknown primary (CUPs). Many hypotheses have attempted to explain the pathophysiology of CUPs. These hypotheses include the following propositions:

The original tumor in some cases may remain small or undetectable at the time of metastasis, resulting in a clinical presentation of cancer of unknown primary origin.^{2,4}

The primary tumor regresses after seeding the metastasis.²

Cancer presentation where the primary has been contained or eliminated through activating the natural body defenses.² In other words, the individual's immunological response produces a regression or involution of the primary tumor before the metastases can manifest clinically.³

Acquisition of a "metastatic phenotype" soon after

oncogenesis which resulted in early metastases of cells before a clinically detectable tumor.³

Exposure of the primary tumor to local antiangiogenic factors, which stimulate the metastatic tumors, to acquire the angiogenic phenotype following a period of dormancy.³

Whether a specific genetic or mutational factor plays a role in the origin of cancer of unknown primary remains uncertain.^{2,4}

EVALUATION OF AXILLARY LYMPHADENOPATHY

FOCUS OF HISTORY

In many cases when individuals present with lymphadenopathy, a complete history and physical examination are often sufficient to establish cause of the adenopathy without further testing.⁵ In other cases, medical history, physical examination, specific laboratory tests and occasionally, excisional lymph node biopsy are required to determine the cause of lymphadenopathy.⁶

Patient history should focus on the following factors:

Associated symptoms are important clues⁶ that direct the clinician's suspicion towards simple conditions, such as a localized infection (e.g., for pain in the nodes) or more complex conditions such as malignancy (e.g., for fever, weight loss, and night sweats).⁵

The patient's age is important as incidence of malignant disorders increases above age 50.⁶

Duration: Benign lymphadenopathy may resolve within 4-6 weeks whereas persistent and progressive lymphadenopathies may raise suspicion of malignancy.⁵

The history of past illnesses, local trauma, injuries, or bites are used to investigate etiology of adenopathies. Their medical history, involving recent use of antibiotics, can explain a shrinking of adenopathy. Their social history will reveal any high risk sexual behaviors and intravenous (IV) drug use, potential for sexually transmitted diseases (STDs) and human immunodeficiency virus (HIV).⁵ A thorough review of systems can establish other aspects of cause of adenopathy even if the patient's history is unremarkable.

FOCUS OF LYMPH NODE ASSESSMENT

The location and extent of lymphadenopathy (localized or generalized) should be determined by thoroughly assessing all regional lymph nodes.⁶ Localized or regional

lymphadenopathy involves only a single anatomical area and represent pathology within the areas where the lymph nodes receive drainage; whereas, generalized lymphadenopathy involves three or more noncontiguous lymph node areas and may be caused by systemic infections such as HIV, drug reactions, or auto-immune disease.^{6,7} For example, localized occipital lymph node enlargement indicates an infection of the scalp⁶, exanthematous disease, outer ear infections, and toxoplasmosis.⁵ A unilateral axillary adenopathy could be caused by skin infections involving the upper extremity, including cat-scratch disease.⁷ The size of lymph nodes that are less than 1 cm diameter are almost always benign and secondary to nonspecific reactive causes⁶.

As a symptom, tenderness, in most cases, is suggestive of recent inflammatory process whereas nodes containing metastatic cancer are often nontender. However, some malignant cases such as acute leukemia can present with rapid lymph node enlargement and pain in the nodes.⁶

The texture of lymph nodes may provide important clues to the underlying cause of the adenopathy. Lymph nodes could be described as soft, firm, hard, or rubbery. A rubbery and firm lymph node is suggestive of lymphoma and a hard lymph node is suggestive of metastatic cancer.⁶ The nature of a lymph node (malignant or benign) can be determined by the node's adherence to surrounding tissues. Malignant lymph nodes may be fixed to adjacent tissues whereas normal lymph nodes are freely moveable.⁶

The coexistence of adenopathy with splenomegaly could be a differentiating factor between a localized disease and a systemic involvement. Lymphadenopathies that present with splenomegaly are suggestive of a systemic condition such as infectious mononucleosis, lymphoma, acute or chronic leukemia, toxoplasmosis, cat-scratch disease, or other less common hematologic disorders.⁶

DIFFERENTIAL DIAGNOSIS OF AXILLARY LYMPHADENOPATHY

NON-MALIGNANT CAUSES

Infection: Infections of the upper arm such as Cat Scratch Disease (CSD) are the most common causes of axillary lymphadenopathy.^{6,7} Other infections are also causes of axillary lymphadenopathy, such as the breast tissue, chest wall, and intrathoracic lesions.⁵ In cases of infections, adenopathy almost always presents with tenderness which results from stretching of the capsule which occurs during rapid enlargement of the lymph node.⁶

Injury: Injuries to the upper extremity could be the cause of an ipsilateral axillary lymphadenopathy.⁶

Silicone Breast Implants: Silicone in breast implants can cause axillary lymphadenopathy; this silicone adenopathy is thought to occur following the transit of silicone droplets by macrophages to the lymph nodes.⁸

Malignant Causes: Some of the malignant causes for axillary lymphadenopathy include breast cancer in women, lymphomas, and melanomas.⁶

RATIONALE FOR PHYSICAL EXAMINATION

The history of lymphadenopathy from this patient made a thorough physical examination imperative. Comprehensive physical assessment (including breast examination and total lymph node assessment) was performed to distinguish between localized and generalized lymphadenopathy in order to properly formulate a differential diagnosis (e.g., an associated splenomegaly could suggest enlargement of the organ and diseases affecting the spleen such as acute leukemia, chronic lymphocytic leukemia, and lymphoma).⁶ The healthcare provider should note the characteristics of the enlarged lymph node in order to formulate an accurate diagnosis. Laboratory tests and lymph node biopsy are considered only when history and physical exam fail to produce a diagnosis.^{5,6}

DIAGNOSTIC TESTING

Laboratory testing is performed in localized lymphadenopathy mainly to confirm the diagnosis suspected from history and physical examination. Clinicians should endeavor to perform the least invasive tests for the most information.⁵ More specific tests tailored to testing the most likely diagnoses are recommended and may include:

CBC for diagnosing leukemias, Epstein-Barr virus (EBV), or cytomegalovirus (CMV). For example, pancytopenia could suggest leukemia.⁵ Serum LDH determines turnover rate of cells in leukemias and lymphomas.⁵

Tuberculin skin test, Monospot, titers for EBV, CMV, or cat-scratch disease for evaluating specific etiologies.⁵

Chest x-ray to evaluate infections such as tuberculosis and pneumonias or hilar adenopathy in malignancy cases.⁵

An ultrasound (US) to establish etiology by distinguishing abnormality from normal anatomic structures when adenopathy is difficult to palpate.⁵ US is also used to determine the nature or structure of lymph node such as

whether the content of node is solid, as in metastatic cancers, or liquid, as in cysts.⁵

MANAGEMENT OF AXILLARY LYMPHADENOPATHY

OBSERVATION OVER TIME

If evaluation does not produce a diagnosis or suggest malignancy, patients with localized axillary lymphadenopathy can be observed for a period of two to four weeks within which the lymph node might resolve or the cause of lymphadenopathy becomes more obvious.⁶ The patient is instructed to return at the end of four weeks or sooner if there is an increase in the size of lymph nodes.⁶ Antibiotics are only recommended when there is a strong indication of infection as cause of adenopathy.⁶ If evaluation suggests a malignancy, biopsy should be performed earlier than later.⁶

IMAGING AND BIOPSY

Biopsy is recommended for suspicious cases of axillary lymphadenopathy: patients with hard, non-tender nodes, nodes more than 1 cm in size, and nodes persisting or increasing in size during observational period should undergo immediate excisional biopsy.⁶ Lymph node biopsy is also performed when diagnosis is uncertain despite history and physical examination and with no resolution after four weeks of observation.^{6,7}

Mammogram provides useful information and is recommended in women with suspicious isolated axillary adenopathy.³ Further breast imaging with ultrasound and/or magnetic resonance imaging (MRI) is recommended if mammographic evaluation is negative.^{1,2,3} Breast ultrasound and mammogram are not as sensitive as breast MRI in detecting invasive breast cancers.³ Identification of the primary breast cancer by MRI could affect the treatment decisions for example, radiation therapy to the ipsilateral breast is indicated when a breast MRI is positive.²

SURGICAL/ MEDICAL TREATMENT

Modified radical mastectomy is recommended for nondetectable primary breast cancer.^{1,3,9} A study indicated a lower disease recurrence rate among patients with occult breast carcinoma who received mastectomy than patients with no local treatment of the breast.⁹

Patients who decide not to undergo mastectomy should be treated for stage II or III breast cancer. These patients should also undergo radiation therapy if the breast MRI is positive.²

Post- mastectomy irradiation of the chest wall is recommended for women with four or more positive lymph nodes.³ Systemic adjuvant chemotherapy is also recommended for all patients with occult primary breast cancer metastatic to axillary lymph node. Studies have shown an increase in survival rate of women who received adjuvant systemic chemotherapy with axillary metastasis and occult primary breast cancer.³ Guidelines from the National Comprehensive Cancer Network (NCCN) and the International Consensus panel recommend that all women with a lymph node positive for malignancy (node-positive disease) should receive adjuvant chemotherapy.^{10,11} Patients whose cancer expresses hormone receptors (ER/PR) should receive adjuvant endocrine therapy that includes tamoxifen for premenopausal patients and aromatase inhibitor for postmenopausal patients for five years.¹¹ Cancers over expressing Her2/Neu currently require anti- Her2/neu targeted therapy after surgery.¹¹

FOLLOW-UP

Follow-up after completion of combined-modality treatment is mainly to monitor the course of the disease in order to detect and treat recurrences or metastases in a timely manner and to identify long-term sequelae of therapy.¹¹ However, follow-up using multiple tests, tumor markers, and imaging studies has not shown any significant difference in survival rate of patients when compared to patients followed up with fewer tests.¹¹ The recommendations of the American Society of Clinical Oncology¹¹ for follow-up care of patients with primary breast cancer are summarized below:

History and physical examination: following completion of primary breast cancer therapy, patients should be evaluated every 3 to 6 months for the first 3 years and then every 6 to 12 months for the 4th and 5th years. Thereafter, the evaluation would be annual.¹¹

Patients should be counseled about the symptoms of recurrence such as new masses, bone pain, chest pain, abdominal pain, dyspnea and persistent headaches.¹¹ Patients should be provided with helpful websites such as www.cancer.net and www.cancer.org, for adequate information and education.¹¹

Patients who qualify for genetic counseling should be referred.¹¹ The criteria include Ashkenazi Jewish ancestry; history of ovarian cancer at any age in the patient or any first- or second-degree relatives; any first-degree relative with a history of breast cancer diagnosed before age 50; two

or more first- or second-degree relatives diagnosed with breast cancer at any age; patient or relative with diagnosis of bilateral breast cancer; any history of breast cancer in a male relative.¹¹

Monthly breast self-examination should be encouraged for all women.¹¹

Patients should have a first post-treatment mammogram at 1 year after the initial mammogram that led to diagnosis of breast cancer.¹¹ The timing of this mammogram, however, should not be earlier than 6 months after definitive radiation therapy.¹¹ Subsequent mammograms should be obtained for surveillance of abnormalities as indicated; otherwise, annual surveillance mammography is recommended.¹¹

Continuity of care for breast cancer patients is very important and should be coordinated by a health care provider experienced in the surveillance of cancer patients and in breast examination, including the examination of irradiated breasts.¹¹ Primary care providers coordinating follow-up care for post-treatment breast cancer patients, as well as the patients (themselves), should be knowledgeable about the long-term options regarding adjuvant hormonal therapy.¹¹ This may necessitate referral for oncology assessment at an interval consistent with guidelines for adjuvant hormonal therapy.¹¹

Pelvic examination is important in the follow-up care of breast cancer patients.¹¹ Regular gynecologic evaluation is recommended for all women; patients, especially those who receive endocrine therapy such as tamoxifen, should be advised to report any vaginal bleeding to their health care providers.¹¹

Other important areas of health maintenance necessary to emphasize in the surveillance of breast cancer patients and for which the nurse practitioner (NP) plays an important role, include these recommendations:

Consume a balanced diet with an emphasis on fruits and vegetables.^{11,12}

Engage in a regular cardiovascular and strength-training exercise program.^{11,12}

Adhere to cancer screening guidelines.^{11,12}

Monitor bone mineral density and include appropriate interventions to prevent and treat osteoporosis.^{11,12}

BREAST CANCER PREVENTION AND EARLY DETECTION

Breast cancer is the most commonly diagnosed cancer among women and the second leading cause of cancer-related death in women.¹³ An estimated 50% of women present at diagnosis of breast cancer with obvious risk factors, other than gender and age.¹³ Women in many countries including the United States (US), lack adequate knowledge of breast cancer and screening necessary to improve health outcomes of breast cancer.^{14,15,16} Nurse practitioners can play very important roles in reducing breast cancer by recognizing the risk factors and adequately educating patients in ways to reduce these risks, especially those related to behavior and lifestyle.

RISK FACTORS OF BREAST CANCER RELATED TO BEHAVIORS AND LIFESTYLE

Obesity: Obesity has been associated with lower risk of breast cancer in premenopausal women, whereas in postmenopausal women, obesity is associated with increased risk of breast cancer.^{13,17} This difference lies in the lesser total estrogen exposure associated with premenopausal obesity versus a higher serum level of bioavailable estrogen associated with postmenopausal obesity.¹³

Exercise and Physical activity: Physical activity has been associated with decreased risk of certain cancers such as colon and breast cancers.^{12,17} An estimated 30 minutes of vigorous exercise for three or more days per week should be encouraged for all patients. Some data suggest that the decrease in risk of breast cancer, especially among postmenopausal women, is due to reduced body mass index (BMI) or reduced estrogen level associated with BMI.¹³ Though physical activity has not been proven to lower the incidence of cancer, exercise is associated with general health benefits.¹³

Diet: Healthy diets, such as those low in fat content and calories, may decrease the risk for breast cancer.^{11,12} Some research literature suggests that increased dietary fat consumption is associated with moderate increased risk of breast cancer.¹³

Alcohol: Breast cancer has been associated with moderate to heavy alcohol intake^{11,13,17}, and this relationship suggests that interventions to reduce alcohol intake may reduce the risk for breast cancer even though this hypothesis has not been specifically addressed in clinical trials for the purpose of breast cancer prevention.¹³

RISK FACTORS OF BREAST CANCER UNRELATED TO BEHAVIORS AND LIFESTYLE

Exposure to Endogenous Estrogen: Long-term exposure to endogenous estrogen due to early menarche, late menopause, nulliparity, and age of 30 years or greater at birth of first child has been associated with increased risk of breast cancer.¹³

Exposure to Exogenous Estrogen: Exposure to exogenous estrogen has mixed association with risk of breast cancer depending on age and currency of use. Past use of oral contraceptive pills (OCP) does not increase breast cancer risk in women over 40 years of age. Current OCP use increases breast cancer risk.¹³ Estrogen replacement therapy (ERT) in post-menopausal women is associated with a modest increase in breast cancer risk, especially in current users.¹³ Some population studies have associated decrease in use of hormonal therapy with a decrease in the incidence of breast cancer.¹⁸ Post-menopausal women who stopped ERT more than five years ago are not at increased breast cancer risk compared to those who have never used ERT.¹³

Radiation: Exposure to moderate to high doses of radiation therapy, especially during pre-pubertal and pubertal years, is associated with increased breast cancer risk.¹³

Benign Breast Diseases: Proliferative benign breast diseases such as hyperplasia and sclerosing adenosis are associated with increased breast cancer risk.¹³

SCREENING FOR BREAST CANCER

The frequency in the rate of treatment failure and breast-cancer-specific death is directly related to the stage of disease at the time of presentation.¹¹ Nurse practitioners have important roles in increasing early detection of breast cancer. In addition to obtaining an adequate history and physical assessment, recommending and encouraging adequate screening for all patients is essential. The screening recommendations for breast cancer include the following practices:

Monthly breast self-examination has been advocated for early detection of breast cancer, though no evidence exists that breast self-examination reduces the mortality rate from breast cancer.^{12,19} A significant proportion of breast cancers are first detected by patients¹² and an estimated 15% of all breast cancers are detected during clinical breast examinations.¹⁹

The American Cancer Society and the National Cancer

Institute recommend mammography screening every 1 to 2 years for women beginning at age 40 years of age and annually from age 50 years and older.^{17,19} The benefit of screening women over age 70 has not been established.¹⁹

Patients from families with a high risk for breast cancer, especially families with the BRCA1 and BRCA2 gene mutations, are advised to undergo mammograms starting from age 25 or 5 years earlier than the age of another family member diagnosed with breast cancer.¹⁹

Breast MRIs are more sensitive than mammograms and breast ultrasound and have been found to be more accurate than mammography in screening young women, women at higher risk due to genetic predisposition (e.g., BRCA1 and BRCA2 mutations), and women with very dense breast tissue.^{12,19}

PRE-TREATMENT EDUCATION FOR BREAST CANCER PATIENTS

Breast cancer is prevalent among American women today and is ranked second as the most common form of cancer in women.²⁰ Many patients with breast cancer have disruption in their lymphatic drainage system due to nodal dissection, performed because of metastatic disease, which increases the risk of lymphedema.²⁰ The importance of pre-treatment patient education regarding actions that can be taken to reduce the risk of lymphedema cannot be over-emphasized.

Education pertaining to lymphedema risk reduction includes avoiding exposure of the affected arm to extreme heat (e.g., hot tubs and saunas) for greater than 15 minutes, limb constriction, venipuncture, or infection.²¹ Along with lymphedema reduction, the patient should be instructed to continue monthly self-breast exams and yearly mammograms. Although there has been recent controversy on the frequency and benefits of self-breast exams (BSE) and mammograms, it is still important for patients to assess for signs of recurrence of breast cancer. The US Preventative Task Force does not recommend monthly breast exams but does recommend biannual screening mammograms for women between the ages of 50 and 74 years.²² However, the BSE controversy does not apply to patients at higher risk due to genetic predisposition for breast cancer, women who have received chest radiation, or those with a breast cancer history.²²

Lifestyle modification is another important subject that needs to be addressed with the patient. Research has demonstrated that diet and exercise may be beneficial in

preventing the recurrence of malignancy.²³ Adequate intake of fruits and vegetables and physical activity can increase breast cancer survival rate. Fruits and vegetables like carrots and apricots have carotenoids and flavonoids which contain antioxidants that help prevent an increase in tumor cells. Physical activity, as well as diet modification, may help in lowering estrogen levels; therefore, lowering the patient's risk for recurrence.

Addressing all aspects of the patient's physical and psychological needs after diagnosis and surgery for breast cancer is a crucial matter. The stress and trauma after a mastectomy may cause increased anxiety and depression for many women.²⁴ Greater psychological distress has been associated with pronounced breast asymmetry after breast cancer surgery.²⁵ Joining support groups has been shown to be therapeutic following mastectomy.²⁴ The patient and the patient's family should be made aware of services available to them online and within their local community. Pre-surgery education about breast reconstruction options should include consultation about plastic surgery.

CONCLUSION

This patient presentation underscores the importance of a thorough physical exam at the primary care level in order to prevent cases, such as the one presented here, from relying entirely on imaging for detection of disease. Had this patient not required a chest x-ray for pre-operative work-up, the right axillary metastasis would have gone undetected, and the patient could have presented with more advanced systemic disease and a poorer prognosis. Although not all cases of cancer can be detected through palpable lymph nodes, in this instance, the size of the node was palpable. Patients need a complete assessment, including examination of the lymphatic system. In addition, all practitioners need to determine the cause of persistent lymphadenopathy.

Thorough history and physical examination in the primary care setting remains crucial for early detection of primary breast cancer and breast cancer recurrence.^{12,19} Nurse practitioners in the primary care setting have important roles in prevention and early detection of breast cancer. When breast cancer presents with axillary lymphadenopathy, the NP needs to be equipped with information necessary to recognize cases in need of further evaluation and follow the proper sequence of work-up in order to provide patients with an adequate diagnosis and subsequent referral necessary for appropriate treatment. In addition, investments in programs such as breast cancer prevention, early detection, patient

education, and post-treatment care are likely to have the greatest impact in lowering productivity losses to the society.²⁶

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