Does Every Breast Lump Need to Be Worked Up Despite Previous Diagnoses?

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Case Study: Ms. L was 56 years old when she was first diagnosed with left breast cancer in 1998. During a routine examination, a 0.9 cm, hard, fixed, nontender mass was palpated below her left nipple in the areola. Ms. L previously had refused to have a mammogram because of a history of “mastitis” and felt that the clinician was concerned needlessly; nevertheless, she was referred to a surgery clinic where a fine needle aspiration (FNA) was performed. The FNA was positive for infiltrating ductal carcinoma; Ms. L underwent a modified radical mastectomy and was staged with a grade I (T1b N0 M0) malignancy.

In 2001, Ms. L experienced a recurrence of the cancer to her left breast at the mastectomy site and underwent excision of the mass followed by radiation and hormone therapy. In 2003, an abnormal mammogram of the right breast prompted her clinician to order an FNA, and the results were negative. During a routine breast examination in January 2005, a 5 mm, firm, nontender mass was palpated below the nipple in the areola. A mammogram was negative; however, a biopsy of the mass revealed acute inflammatory cells, histiocytes, and multinucleated cells compatible with a subareolar abscess. No further interventions were done because the patient was asymptomatic.

One year later, Ms. L indicated that, over the past two months, her right breast mass had enlarged; she was concerned about its rapidly increasing size and tenderness (see Figure 1). Although she was afebrile, she was taking prednisone and leflunomide for rheumatoid arthritis, glipizide for diabetes, isoniazid for tuberculosis exposure, and gabapentin for chronic postherpetic neuralgia, as well as hormone therapy. The patient was referred for an urgent FNA and surgery consultation, but a mammogram was not reordered because the test had been negative three months earlier.

Discussion

Pathophysiology

Two types of clinical breast infections exist: those associated with breast-feeding and childbirth, known as lactation or puerperal, and those identified as nonlactational (Vaidyanathan, Barnard, & Elnicki, 2002). Periareolar abscesses are the classic manifestation of nonlactational mastitis, with 90% of the infections causing subareolar breast abscesses (Vaidyanathan et al.; Versluijs-Ossewaarde, Roumen, & Goris, 2005).

Figure 1. Clinical Breast Infection

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Periareolar breast abscesses differ in a significant way from lactational infections in that they do not involve a breast lobe and are limited to the local periareolar area (Maier, Au, & Tang, 1994). Subareolar abscesses are caused when squamous metaplasia develops in the lining of the lactiferous ducts and the ampullae. The resulting keratinization that occurs with this process leads to the obstruction and dilation of the breast ducts. The thin lining of the lactiferous ducts ruptures and causes a retrograde flow of bacteria from the skin surface, leading to bacterial invasion that eventually results in inflammation and abscess formation beneath the areola. The organisms that most frequently cause nonlactational infections are *Staphylococcus aureus* and streptococcal bacteria (Bland, 1998; Maier et al.). An abscess may drain spontaneously and can form a chronic fistula, which causes recurrent infections (Vaidyanathan et al.; Versluijs-Ossewaarde et al.).

**Clinical Presentation and Risk Factors**

Nonlactational mastitis can present clinically as noncyclical mastalgia, nipple retraction, nipple discharge, periareolar abscess, a subareolar mass, cellulitis, or a mammillary fistula (Bland, 1998; Vaidyanathan et al., 2002; Versluijs-Ossewaarde et al., 2005). Certain medical conditions can predispose women to the development of nonlactational abscesses (see Figure 2). Smoking cigarettes has been found to be a risk factor for the development of nonlactational abscesses and may have a direct toxic effect on the lactiferous ducts or indirectly activate breast secretions (Vaidyanathan et al.; Versluijs-Ossewaarde et al.). Versluijs-Ossewaarde et al. found that 70% of 84 patients with subareolar breast abscesses smoked 10 or more cigarettes a day.

**Differential Diagnosis and Diagnostic Workup**

The differential diagnosis of nonpuerperal breast abscesses includes inflammatory breast cancer, cystic breast disease, tuberculosis, sarcoïdosis, duct ectasia, Mondor disease, and fat necrosis (Bland, 1998; Versluijs-Ossewaarde et al., 2005). Inflammatory breast cancer causes rapid onset of pain, redness, and induration (*peau d’orange*) of the skin; breast enlargement; and a unilateral presentation affecting the dependent portion of the breast (Brennan, Housami, & French, 2005; Vaidyanathan et al., 2002). Mondor disease, a benign condition that usually resolves spontaneously over a number of weeks or months, causes thrombophlebitis of the superficial veins of the breast and presents with a painful, visible, and palpable fixed fibrous cord along the anterior axillary line (Marchant, 2002; Soler-Gonzales & Ruiz, 2005; Vaidyanathan et al.). Sarcoïdosis of the breast, which results from nonspecific noncaseating granulomas that affect other organs of the body, can be confused with a malignancy because it can cause skin dimpling or have *peau d’orange* appearance (Ojeda, Sardi, & Totoonchie, 2000). Just as uncommon as sarcoïdosis of the breast and Mondor disease is tuberculous mastitis. It too can mimic a carcinoma and present as a unilateral entity with a painful or painless breast mass in the upper, outer quadrant, causing any of the following: breast swelling, edema, diffuse nodularity, nipple retraction, axillary lymphadenopathy, sinus and ulcer formation, or recurrent abscesses (Bani-Hani, Yaghan, Matalka, & Mazahreh, 2005; Khanna et al., 2002).

Although the conditions are uncommon, thorough diagnostic workup is warranted. Any suspicious breast lump or texture change in the skin should trigger the triple test, consisting of a physical examination, mammogram or ultrasound, and fine needle or core biopsy. If all three of the elements are negative, accuracy is 98% for a benign condition; conversely, if all three are positive, accuracy is 100% for a malignancy (American Cancer Society, 2006, Martelli et al., 1990; Santen & Mansel, 2005). A biopsy with cytology should include a gram stain and cultures to identify the infectious organism and determine antibiotic therapy, especially when the patient has a history of chronic recurrent subareolar breast abscesses (Bland, 1998; Vaidyanathan et al., 2002).

**Treatment**

Nonlactational mastitis is a rare condition with no clear guidelines for its treatment. Most studies concur that antibiotic administration is useful for the treatment of periareolar inflammation without abscess formation; a combination of amoxicillin and clavulanic acid or a combination of cephradine and metronidazole is advised because the infective organism can be aerobic or anaerobic (Versluijs-Ossewaarde et al., 2005).

A surgical referral is warranted for any mastitis that does not resolve fully after one month of antibiotic treatment to rule out inflammatory breast cancer, a draining abscess, or a duct that must be excised (Vaidyanathan et al., 2002). Other surgical modalities were identified in a review of the literature, but no one approach has been recommended uniformly; therefore, this area remains controversial. Suggested therapeutic surgeries include major duct excision, partial nipple resection, and even mastectomy (Bland, 1998; Versluijs-Ossewaarde et al., 2005).

**Nursing Implications and Patient Education**

Although oncology nurses may not be experts at diagnosing and managing breast lumps, the presence of a new lump in a patient with or without a diagnosis of breast cancer should be regarded as suspicious and needs to be worked up. Oncology nurses can play an important role in initiating the process.

Routine surveillance with mammography and breast self-examination is key to early detection for a malignancy. Oncology nurses perform clinical breast examinations and are instrumental in teaching patients how to perform monthly breast self-examinations and about the need for routine mammograms. Oncology nurses in any setting should be aware and report all new patient complaints of breast...
lumps. Communication of new nodules or masses to the healthcare team is essential to ascertain the presence of a new primary, recurrent, or metastatic cancer. Advanced practice oncology nurses should be aware of the triple test workup (i.e., clinical examination, imaging, and biopsy) and, in their specialty roles, can initiate many examinations to facilitate diagnosis and appropriate treatment.

Case Study Follow-Up

Ms. L underwent an FNA of her right breast; cultures for fungus and acid-fast bacilli were negative but significant for *Staphylococcus lugdunensis*, which proved to be resistant to ampicillin and penicillin. After incision and drainage of the abscess, the wound was packed and Ms. L was started on clindamycin. Within two weeks, the wound had healed. Given the recurrent nature of nonlactational mastitis and Ms. L’s risk factors (i.e., use of immunosuppressive agents, history of breast cancer and diabetes), she very likely will present again with mastitis. Every occurrence of nonlactational mastitis demands a thorough diagnostic workup to distinguish a benign process from a malignancy, and all benign processes should be followed to full resolution.

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