

## Inflammatory Breast Cancer

### Case Study

M.A., a 44-year-old female, is nulliparous, premenopausal, and single and has no chronic health problems. Four weeks ago, she had a small tattoo placed on the superior aspect of her right breast. She reports awakening one night with a severe aching pain in her right breast, rating it as a 4 on the 0–10 pain scale. The pain does not radiate and is not affected by activity.

The next day, her right breast appears erythematous compared to the rest of her chest wall and is painful to touch. She decides to seek treatment from an urgent care facility where she is examined by an internist who finds her afebrile; all other vital signs are normal. Review of systems is noncontributory other than the breast complaint. Examination reveals that M.A. is in no acute distress, with no abnormal findings except for the right breast's moderate erythema, increased warmth to touch, and mild (1+) edema. No discrete masses are discovered on clinical breast examination. The tattoo site is not draining and appears to be well healed. The complete blood count is normal. The internist diagnoses M.A. with cellulitis secondary to placement of the tattoo. He prescribes oral amoxicillin/clavulanate potassium 500 mg twice daily for 10 days and oral ibuprofen 600 mg three times a day as needed for pain. He asks M.A. to follow up with her gynecologist or internist if the symptoms worsen or persist.

One week later, M.A.'s pain has not increased, yet her right breast is now significantly larger than the left, with increased erythema and warmth, and the nipple appears to be flattening. She also notes that the skin pores seem more open and pronounced, but she remains afebrile. She has been compliant with the oral antibiotic therapy and has taken an average of two doses of ibuprofen daily, one in the morning and one in the evening before bed. M.A. calls her gynecologist and is scheduled for an appointment for the following morning. The gynecologist is unable to palpate any discrete mass but is concerned about the overall appearance of M.A.'s right breast, which now has pitting 2+ edema and *peau d'orange* (i.e., skin that resembles an orange peel) on the lateral surface. She

changes the antibiotic to levofloxacin, continues ibuprofen for pain management, and schedules a bilateral diagnostic mammogram to be done the following day. The mammogram does not show any nodules or masses but reveals skin thickening on the lateral aspect of the right breast. The gynecologist refers M.A. to a comprehensive breast clinic at a nearby academic medical center, where she is examined by a breast surgeon, medical oncologist, and radiation therapist. An incisional biopsy of the skin is performed, but only inflammatory, not malignant, cells are found. The treatment team makes a presumptive diagnosis of inflammatory breast cancer based on the clinical presentation.

### Clinical Problem Solving

Addressing this clinical challenge is Associate Editor Susan Moore, RN, MSN, ANP, AOCN®, an oncology nurse practitioner in the Division of Hematology and Oncology at Rush University Medical Center in Chicago, IL.

#### **Given the symptoms reported by M.A., what are the possible differential diagnoses that might delay a diagnosis of inflammatory breast cancer?**

M.A.'s case study is common among women with inflammatory breast cancer. Because no discrete breast mass exists and the presentation triad of pain, erythema, and edema is nonspecific, an infectious cause for the symptoms is usually the initial diagnosis and treatment is given accordingly. Only after the symptoms fail to respond to antibiotic therapy does further workup proceed, which can cause a delay of several weeks. The possible differential diagnoses for M.A.'s symptoms and presentation include mastitis, cellulitis, and inflammatory breast cancer.

**Mastitis** encompasses two distinct categories with respect to the timing of the onset: mastitis diagnosed during pregnancy or lactation and nonpuerperal mastitis. Mastitis can be chronic granulomatous or infectious. Regardless of the subtype, mastitis has several distinct characteristics on presentation: pain, swelling, and erythema in the affected breast. Women with mastitis may have a fever and complain of feeling ill. Leukocytosis also is

present (Johnson, 2003). Mastitis generally is unilateral and occurs with no tendency toward a particular quadrant of the breast.

Chronic granulomatous mastitis is a rare benign breast condition characterized by necrotizing granulomas and abscess, occurring primarily in women of childbearing age. Most women are diagnosed within five years of their last childbirth, but pregnant and lactating women are not immune to this disorder. Mammogram often reveals a radiographically visible mass. Chronic granulomatous mastitis mimics breast cancer in terms of physical and radiographic findings; however, definitive diagnosis can be confirmed only by histopathology (Azlina, Ariza, Arni, & Hisham, 2003). In a study of women with this diagnosis, breast-feeding, smoking, or hormonal treatment did not appear to be associated with patients' diagnoses (Azlina et al.).

Nonpuerperal mastitis, also termed duct ectasia, breast abscess, or simple mastitis, has the clinical presentation of erythema, swelling, and painful infiltrate in the breast. Fever rarely is present. Most cases are of bacterial origin that may be evident on microbiologic examination of aspirate from the infiltrated area, which often is located in the major milk ducts behind the areola (Peters, Kiesslich, & Pahnke, 2002). Smoking is a risk factor for this form of mastitis. Most women present with an abscess that is easily detectable on sonographic examination.

Although benign mastitis is not considered a risk factor for invasive breast cancer, in a study of 277 patients with nonpuerperal mastitis, 5 women were independently identified as having breast cancer within 12 months following the benign mastitis diagnosis (Peters

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