Current Management and Treatment Options for Breast Pain

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Abstract

Breast pain is a commonly experienced symptom in women of all ages and can significantly impact quality of life. Fear of cancer prompts many patients to report their pain, although risk for malignancy is low in the absence of a palpable mass or other abnormal finding on breast examination. All patients with breast pain should have a thorough history and physical examination to determine if diagnostic imaging is indicated. Management of breast pain without anatomic or radiographic abnormalities depends on pain type and severity. Often, no intervention is required. However, for women with pain that adversely impacts daily living, short-term therapies may be considered. For mild to moderate pain, a trial of conservative, non-pharmacologic strategies should be tried first. For those with severe symptoms impacting quality of life, a trial of pharmacologic therapy can be considered after appropriate counseling for medication-related adverse effects. Herein, we have provided a concise summary of a generalized approach to classification, assessment, and management of breast pain.
Breast pain, or mastalgia, is a commonly experienced symptom in women of all ages. Approximately 70% of healthy pre- and postmenopausal women will experience breast pain at some point in their lives, with many reporting moderate to severe symptoms that substantially impact quality of life. In a study of premenopausal women, patients with breast pain had significantly more anxiety and reported lower quality of life than healthy control patients.

Although fear of breast cancer prompts many women to report breast pain, only 2% to 7% of those patients will have breast cancer. Despite this information, a role remains for diagnostic imaging in certain cases. A detailed, systematic assessment is needed to ascertain when additional diagnostic testing is indicated and which modality may be most appropriate. Management of breast pain without anatomic or radiographic abnormalities depends on pain type and severity.

Although extensive descriptions of breast pain have been reported, in this review we aim to provide a concise summary of a generalized approach to classification, assessment, and management of breast pain.

### CLASSIFICATION

Evaluation of breast pain entails differentiating the pain as focal or nonfocal. The pattern of breast pain is further characterized as cyclic or noncyclic. Noncyclic pain can be attributed to mammary or extramammary etiologies (Figure).

#### Cyclic Breast Pain

Cyclic breast pain typically occurs during the 1 to 2 weeks before a woman’s period and is relieved with the onset of menses. Pain is usually bilateral and generalized, although it may be unilateral and can radiate into the axilla. Patients often report associated breast swelling and nodularity. Timing with the menstrual cycle suggests a hormonally mediated cause, although evidence showing measurable hormonal abnormalities in women with cyclic breast pain has been inconsistent.

Breast cancer does not generally cause cyclic breast pain, and studies have not identified a causative relationship between symptoms and breast cancer risk.

#### Noncyclic Breast Pain

Noncyclic breast pain tends to be more focal than cyclic breast pain and is often limited to a specific quadrant of the breast, although the pain may be diffuse. In contrast to patients with cyclic breast pain, patients with noncyclic pain are typically older, with the age of onset in the 40s to 50s. Noncyclic pain is thought to be related less commonly to hormonal fluctuations, is often attributed to anatomic causes, and is more frequently associated with radiographic or histologic findings. Noncyclic breast pain has a variety of causes, most commonly trauma, inadequate breast support, mastitis, duct ectasia, pregnancy, medications, and benign tumors.

A matched case-control study designed to evaluate the role of diagnostic imaging in women with breast pain showed no differences between imaging findings and frequency of malignancy in the two groups.

A detailed history should be obtained and a physical examination performed to help determine whether a patient’s symptoms are from mammary or extramammary structures. Although a primary breast disorder is often suspected, new-onset breast pain can also be caused by extramammary issues such as cardiac disease, chest wall syndromes, musculoskeletal disorders, and gastrointestinal disease. For women with new breast pain, both pain sources should be considered and evaluated, as indicated by the history and physical examination.

### ASSESSMENT

All patients presenting with new-onset breast pain should have a thorough history and physical examination. The history should focus on asking the patient about the location, radiation of pain, severity, duration, and relationship of pain to the menstrual cycle. Risk factors for breast cancer should also be reviewed and considered. The clinical breast examination should...
include careful inspection and palpation of each breast and regional lymph nodes. Any abnormalities detected, such as a mass, thickening, suspicious skin changes, or nipple discharge, should be evaluated promptly regardless of the description of pain.

If no palpable mass is found, breast imaging is unlikely to reveal a cause; however, depending on the type, location, and duration of the pain, targeted imaging should still be considered to evaluate focal pain.\(^4\) In a prospective study of 110 ultrasonography examinations performed to evaluate focal breast pain without an associated mass, cancer was not identified in any patient: 77% were negative findings, 14% showed cysts, and 3% revealed a benign solid mass.\(^7\) The remaining 6% of patients had either edema or focal fluid collection. Another study of more than 900 women with breast pain showed that breast imaging in patients without abnormalities on physical examination did not identify malignant tumors.\(^8\) There was also an increased likelihood of false-positive results, which required additional imaging, biopsy, or additional visits, or a combination.

Further diagnostic workup of patients without abnormalities on physical examination should be based on type, location, and duration of pain, as well as an individual’s risk for breast cancer.

### Cyclic Breast Pain

Without abnormal findings on physical examination or focal pain, premenopausal women presenting with cyclic breast pain generally do not require radiographic imaging. Laboratory studies, including serum

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**FIGURE.** Algorithm for treating patients with focal or nonfocal breast pain.
estrogen, progesterone, and prolactin levels, are not helpful and are not recommended for evaluation of breast pain.

**Noncyclic Breast Pain**

For noncyclic breast pain, careful medical and social histories should be taken, with a detailed review of systems and assessment of pain severity. For patients with new, noncyclic focal breast pain without an obvious cause, diagnostic breast imaging should be considered. Patients older than 30 years should have both diagnostic mammography and targeted ultrasonography. For patients younger than 30 years, ultrasonography alone is recommended as the initial imaging study because breast density is generally greater in younger patients, and mammography is limited in evaluating dense breasts.

When findings are negative on breast imaging, additional diagnostic studies should be targeted to the suspected cause, as appropriate.

**MANAGEMENT**

Most women presenting with breast pain are reassured when evaluation produces negative findings and do not pursue interventions to alleviate pain. In a randomized study of 121 women with breast pain, 70% were satisfied with reassurance. The success rate was higher in those who had mild or moderate pain than in those with severe pain.

For patients with severe pain or for those not relieved by reassurance, management strategies for cyclic and noncyclic pain overlap, although cyclic pain is often more responsive to treatment, with success reported in up to 92% of patients compared with 64% of those with noncyclic pain.

**Nonpharmacologic Interventions**

For mild to moderate pain, a trial of nonpharmacologic therapy should first be attempted. Although evidence for such measures is limited, the relative harm is minimal to none. Women with breast pain have increased levels of anxiety, and emotional stress can exacerbate the pain response. Strategies that focus on stress management and relaxation may therefore be beneficial for patients with mild to moderate pain. A report of 45 patients with cyclic or noncyclic breast pain requiring intervention showed that women who were randomly assigned to receive relaxation therapy had significant improvements in overall pain level and number of pain-free days at 8 weeks follow-up compared with control patients.

The recommendation for mechanical support for breast pain has been made widely for many years, although the evidence for benefit is surprisingly sparse, with no well-designed randomized controlled trials showing pain relief. Nevertheless, wearing a well-fitted, supportive bra can reduce pain for many women. In a prospective study by Hadi, patients with reported breast pain were treated for 12 weeks with danazol (200 mg/d; n=100) or with use of a sports bra (n=100) during regular daily activities. For patients treated with medication, 58% had reduced pain, but 42% reported adverse effects of therapy. All patients treated with a sports bra had some initial pain relief; 85% had complete relief. There are conflicting opinions on methylxanthine avoidance, and studies, including small randomized studies, have shown no consistent reduction in breast pain.

**Nutritional Supplements**

Various nutritional and vitamin supplements have been considered for managing breast pain, although benefit remains questionable. Vitamin E and vitamin B₆ have been suggested to have potential benefits from their antioxidant effects. In one study, 80 patients with cyclic breast pain were randomized to receive vitamin E (200 IU/d), vitamin B₆ (40 mg/d), or placebo for 2 months. The study showed that patients who received the vitamins had significantly improved pain scores compared with control patients after their first and second menstrual cycles following intervention, and the reduction in score was similar between the two intervention groups. However, other randomized controlled trials of vitamin E and vitamin B₆ have shown no change in breast...
Although differences in outcomes may be due to differences in study design, dosages, or duration of follow-up, or a combination, the evidence at this time is insufficient to support routine use of vitamins for management of breast pain.

Cyclic breast pain has been reported to be associated with abnormal metabolism of fatty acids. Evening primrose oil, a nutritional supplement rich in the essential fatty acid γ-linolenic acid, has been proposed as a possible treatment because of its potential to reduce hypersensitivity and has been used with some success. However, a meta-analysis showed that the benefit in pain reduction was similar to that achieved by placebo.

Flaxseed, another supplement suggested to improve breast pain because of its anti-inflammatory properties, has shown some potentially promising results. Mirghafourvand et al reported that daily intake of 25 g of flaxseed relieved cyclic breast pain 2 months after intervention. Further study is needed to clarify its long-term effectiveness.

In general, a trial of herbal or vitamin supplementation for women with mild to moderate breast pain who request intervention is a reasonable treatment. Patients should be reassessed by their providers after a short trial and supplements adjusted or discontinued, as appropriate.

Pharmacologic Therapies
A trial of pharmacologic therapy may be considered when patients have severe pain or when conservative measures fail. A patient’s medical history and risk factors must be carefully considered before a specific medical therapy is prescribed. Nonsteroidal anti-inflammatory medications may be used to manage breast pain with minimal risk. In a randomized trial, topical diclofenac was shown to significantly reduce pain scores after 6 months for patients with both cyclic and noncyclic breast pain as compared with placebo. No significant adverse effects occurred in either group.

The most effective and researched options of prescription medications are danazol, bromocriptine, and tamoxifen.

Danazol. Danazol is an antigonadotropin agent with mild androgenic effects. It is currently the only pharmacologic agent with US Food and Drug Administration approval for management of breast pain (standard dosage, 100-400 mg/d). In clinical studies, danazol was effective in reducing breast pain symptoms in up to 77% of patients with cyclic breast pain and 31% of patients with noncyclic breast pain. Unfortunately, adverse effects including weight gain, deepening of the voice, menorrhagia, male-pattern hair loss, acne, and muscle cramps, limit the use of danazol. Patients who are or plan to become pregnant should avoid danazol because of teratogenic effects.

Maddox et al reported that standard-dose danazol could be reduced to a lower, maintenance dosage (mean, 800 mg/mo taken during the luteal phase) for patients who benefitted from the standard dose. On this lower dose, 44% of patients had complete relief, and the others had substantial relief. Adverse effects decreased from 85% to 12% of patients.

Bromocriptine. Bromocriptine, a dopaminergic agent, acts by inhibiting the release of prolactin from the anterior pituitary gland. In a randomized, placebo-controlled, multicenter trial, bromocriptine (2.5 mg twice daily) was effective in reducing breast pain with significantly higher response rates than placebo, and its effects persisted even 3 months after discontinuation of the drug. Common adverse effects of bromocriptine are headaches, dizziness, and nausea.

Studies comparing danazol and bromocriptine showed danazol to be superior for patients with cyclic and noncyclic breast pain. Nevertheless, bromocriptine can be considered for patients who do not respond to danazol, but patients should always be appropriately counseled regarding the risk for adverse effects.

Tamoxifen. The selective estrogen-receptor modulator tamoxifen is most widely known and used for its role in the adjuvant treatment of breast cancer, but it has also been
studied for the management of breast pain at a dose of 10 to 20 mg daily. Existing randomized controlled studies of tamoxifen showed efficacy in 71% to 96% of patients with cyclic breast pain and 56% of those with noncyclic breast pain. In a randomized study of 60 women with breast pain, 90% of patients experienced improved pain after 6 months of 10 mg tamoxifen therapy. However, nearly 50% reported symptom relapse, usually within 2 to 3 months of discontinuing tamoxifen.

Tamoxifen use is often limited by potential adverse effects, including thromboembolism and endometrial cancer, both of which have been reported in trials of breast cancer patients treated with tamoxifen for 5 years. Patients also should be counseled about common adverse effects, including vasomotor symptoms, menstrual irregularity, vaginal discharge, hair thinning, and weight gain. Premenopausal women should be counseled about the potential for reduced bone density, and bone health measures should be strongly encouraged. Tamoxifen is a teratogen, and women of childbearing age should be appropriately counseled.

Kontostolis et al. compared danazol, tamoxifen, and placebo in a randomized controlled trial of 93 women with cyclic breast pain. Pain relief (defined as >50% reduction in pain score) was achieved in 65% of those who received danazol; 72%, tamoxifen; and 38%, placebo. Statistically, no difference existed between danazol and tamoxifen, and both were superior to placebo. One year after study completion, more patients taking tamoxifen reported continued resolution of symptoms than those taking danazol.

CONCLUSION
Breast pain is a common symptom experienced by women of all ages. In most cases, breast pain is mild and not associated with serious medical conditions or cancer. A thorough history and physical examination should be performed to determine if diagnostic imaging is indicated. Most women can be reassured that they do not have breast cancer if their examination findings are negative and imaging findings are normal. Often, no intervention is required. However, for some women with severe pain that adversely impacts daily living, short-term therapies may be considered. For patients with mild to moderate pain, a trial of conservative, nonpharmacologic strategies should be tried first. For those with severe symptoms impacting quality of life, a trial of tamoxifen should be considered. If tamoxifen is ineffective, danazol or bromocriptine can be considered. Patients should be counseled regarding medication-related adverse effects, and short-term follow-up should be coordinated to assess the need for continued therapy.

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