

What to do when a patient presents with breast pain

Most breast pain is due to hormonal and fibrocystic changes, with conservative measures and patient reassurance prioritized. Here, types of breast pain, when imaging and referral are required, and management strategies.

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IN THIS ARTICLE

Types of breast pain

page 45

Managing breast pain and abnormal clinical exam

page 48

Managing breast pain and normal clinical exam

page 50

Breast pain is one of the most common breast-related patient complaints and is found to affect at least 50% of the female population.¹ Most cases are self-limiting and are related to hormonal and normal fibrocystic changes. The median age of onset of symptoms is 36 years, with most women experiencing pain for 5 to 12 years.² Because the cause of breast pain is not always clear, its presence can produce anxiety in patients and physicians over the possibility of underlying malignancy. Although breast cancer is not associated with breast pain, many patients presenting with pain are referred for diagnostic imaging (usually with negative results). The majority of women with mastalgia and normal clinical examination findings can be reassured with education about the many benign causes of breast pain.

What are causes of breast pain without an imaging abnormality?

Hormones. Mastalgia can be focal or generalized and is mostly due to hormonal

changes. Elevated estrogen can stimulate the growth of breast tissue, which is known as epithelial hyperplasia.³ Fluctuations in hormone levels can occur in perimenopausal women in their forties and can result in new symptoms of breast pain.⁴ Sometimes starting a new contraceptive medication or hormone replacement therapy can exacerbate the pain. Switching brands or medications may help. Another cause of mastalgia may be elevated prolactin levels, with hypothalamic-pituitary dysfunction.^{5,6}

Diet. There is evidence to link a high-fat diet with breast pain. The pain has been shown to improve when lipid intake is reduced and high- and low-density lipoprotein cholesterol levels are normalized. As estrogen is a steroid hormone that can be synthesized from lipids and fatty acids, elevated lipid metabolism can increase estrogen levels and exacerbate breast pain symptoms.^{7,8} Essential fatty acids, such as evening primrose oil and vitamin E, have been used to treat mastalgia because they reduce inflammation in fatty breast tissue through the prostaglandin pathway.^{9,10}

Caffeine. Methylxanthines can be found in coffee, tea, and chocolate and can aggravate mastalgia by enhancing the cyclin adenosine monophosphate (cAMP) pathway. This pathway stimulates cellular proliferation and fibrocystic changes which in turn can exacerbate breast pain.¹¹

Smoking. In my clinical practice I have clearly noted a higher incidence of breast



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The majority (95%) of breast pain is caused by benign hormonal and fibrocystic changes, which can be managed conservatively, with no breast imaging necessary. Conservative measures include reassurance and education, supportive bra, and diet and lifestyle modification. Topical vitamins and analgesics and oral therapies are second- and third-line treatment options.

pain in patients who smoke. The pain tends to improve significantly when the patient quits or even cuts back on smoking. The exact reasons for smoking's effects on breast pain are not well known; however, they are thought to be related to acceleration of the cAMP pathway.

Large breast size. Very large breasts will strain and weaken the suspensory ligaments, leading to pain and discomfort. It has been shown that wearing a supportive sports bra during episodes of breast pain is effective.

Types of breast pain

Cyclical

Women with fibrocystic breasts tend to experience more breast pain. Breast sensitivity

can be localized to the upper outer quadrants or to the nipple and sub-areolar area. It also can be generalized. The pain tends to peak with ovulation, improve with menses, and to recur every few weeks. Patients who have had partial hysterectomy (with ovaries in situ) or endometrial ablation will be unable to correlate their symptoms to menstruation. Therefore, women are encouraged to keep a diary or calendar of their symptoms to detect any correlation with their ovarian cycle. Such correlation is reassuring.

Noncyclical

Noncyclical breast pain is not associated with the menstrual cycle and can be unilateral or bilateral. Providers should perform a good history of patients presenting with noncyclical

breast pain, to include character, onset, duration, location, radiation, alleviating, and aggravating factors. A physical examination may elicit point tenderness at the chest by pushing the breast tissue off of the chest wall

while the patient is in supine position and pressing directly over the ribs. Lack of tenderness on palpation of the breast parenchyma, but pain on the chest wall, points to a musculoskeletal etiology. Chest wall pain may be related to muscle spasm or muscle strain, trauma, rib fracture, or costochondritis (Tietze syndrome). Finally, based on history of review of systems and physical examination, referred pain from biliary or cardiac etiology should be considered.

Should I order breast imaging for my patient with breast pain and a normal clinical breast exam?

Breast pain is not associated with breast cancer. Most breast cancers do not hurt; they present as firm, painless masses. However, when a woman notices pain in her breast, her first concern is breast cancer. This concern is re-enforced by the medical provider whose first impulse is to order diagnostic imaging. Yet less than 3% of breast cancers are associated with breast pain.

There have been multiple published retrospective and prospective radiologic studies about the utility of breast imaging in women with breast pain without a palpable mass. All of the studies have demonstrated that breast imaging with mammography and ultrasonography in these patients yields mostly negative or benign findings. The incidence of breast cancer during imaging work-up in women with breast pain and no clinical abnormality is only 0.4% to 1.8%.¹⁻³ Some patients may develop future subsequent breast cancer in the symptomatic breast. But this is considered incidental and possibly related to increased cell turnover related to fibrocystic changes. Breast imaging for evaluation of breast pain only provides reassurance to the physician. The patient's reassurance will come from a medical explanation for the symptoms and advice on symptom management from the provider.

Researchers from MD Anderson Cancer Center reported imaging findings and cost analysis for 799 patients presenting with breast pain from 3 large network community-based breast imaging centers in 2014. Breast ultrasound was the initial imaging modality for women younger than age 30. Digital mammography (sometimes with tomosynthesis) was used for those older than age 30 that had not had a mammogram in the last 6 months. Breast magnetic resonance imaging was performed only when ordered by the referring physician. Most of the patients presented for diagnostic imaging, and 95% had negative findings and 5% had a benign finding. Only 1 patient was found to have an incidental cancer in the contralateral breast, which was detected by tomosynthesis. The cost of breast imaging was \$87,322 in younger women and \$152,732 in women older than age 40, representing overutilization of health care resources and no association between breast pain and breast cancer.⁴

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When breast pain occurs with skin changes

Skin changes usually have an underlying pathology. Infectious processes, such as infected epidermal inclusion cyst, hidradenitis of the cleavage and inframammary crease, or breast abscess will present with pain and induration with an acute onset of 5 to 10 days. Large pendulous breasts may develop yeast infection at the inframammary crease. Chronic infectious irritation can lead to hyperpigmentation of that area. Eczema or contact dermatitis frequently can affect the areola and become confused with Paget disease (ductal carcinoma in situ of the nipple). With Paget, the excoriation always starts at the nipple and can then spread to the areola. However, with dermatitis, the rash begins on the peri-areolar skin, without affecting the nipple itself.

When breast pain occurs with nipple discharge

Breast pain with nipple discharge usually is bilateral and more common in patients with significant fibrocystic changes who smoke. If the nipple discharge is bilateral, serous and nonbloody, and multiduct, it is considered benign and physiologic. Physiologic nipple discharge can be multifactorial and hormonal. It may be related to thyroid disorders or medications such as antidepressants, selective serotonin reuptake inhibitors (SSRIs), mood stabilizers, or antipsychotics. The only nipple discharge that is considered pathologic is unilateral spontaneous bloody discharge for which diagnostic imaging and breast surgeon referral is indicated. Women should be discouraged

from self-expressing their nipples, as 80% will experience serous nipple discharge upon manual self-expression.

Management of mastalgia

Appropriate breast pain management begins with a good history and physical examination. The decision to perform imaging should depend on clinical exam findings and not on symptoms of breast pain. If there is a palpable mass, then breast imaging and possible biopsy is appropriate. However, if clinical exam is normal, there is no indication for breast imaging in low-risk women under the age of 40 whose only symptom is breast pain. Women older than age 40 can undergo diagnostic imaging, if they have not had a negative screening mammogram in the past year.

Breast pain with abnormal clinical exam

In the patient who is younger than age 30 with a palpable mass. For this patient order targeted breast ultrasound (US) (**FIGURE 1,**

page 48). If results are negative, repeat the clinical examination 1 week after menses. If the mass is persistent, refer the patient to a breast surgeon. If diagnostic imaging results are negative, consider breast MRI, especially if there is a strong family history of breast cancer.

In the patient who is aged 30 and older with a palpable mass. For this patient, bilateral diagnostic mammogram and US are in order. The testing is best performed 1 week after menses to reduce false-positive findings. If imaging is negative and the patient still has a clinically suspicious finding or mass, refer her to a breast surgeon and consider breast MRI. At this point if there is a persistent firm dominant mass, a biopsy is indicated as part of the triple test. If the mass resolves with menses, the patient can be reassured that the cause is most likely benign, with clinical examination repeated in 3 months.

Breast pain and normal clinical exam

When women who report breast pain have normal clinical examination findings (and have a negative screening mammogram in the past 12 months if older than age 40), there

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are several management strategies you can offer (FIGURE 2, page 50).

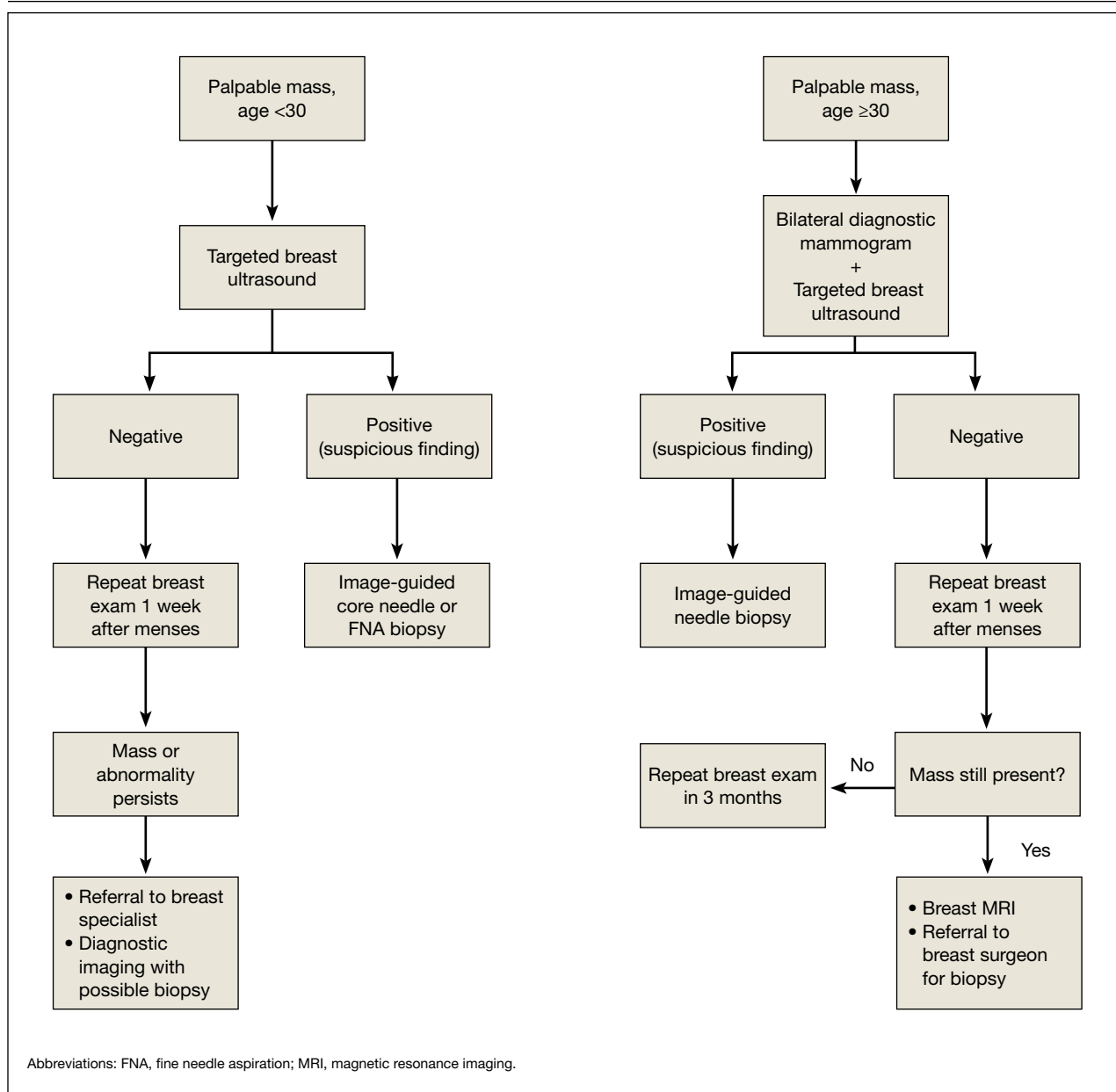
Reassurance and education. The majority of women with breast pain can be managed with reassurance and education, which are often sufficient to reduce their anxieties.

Supportive bra. The most effective intervention is to wear and sleep in a well-fitted

supportive sports bra for 4 to 12 weeks. In a nonrandomized single-center trial of danazol versus sports bra, 85% of women reported relief of their breast pain with bra alone (vs 58% with danazol).¹² A supportive bra is the first-line management of mastalgia (Level II evidence).

Symptom diary/calendar. Many women do

FIGURE 1 Treatment algorithm for breast pain with abnormal clinical exam and palpable mass



not know whether or not their symptoms correspond to their ovarian cycle or are related to hormonal fluctuations. Therefore, it is reassuring and informative for them to keep a calendar or a diary of their symptoms to determine whether their symptoms occur or are exacerbated in a cyclical pattern.

Diet and lifestyle modification. Women should avoid caffeine (especially when having pain). Studies on methylxanthines have demonstrated some symptom relief with reducing caffeine intake.^{11,13} One cup of coffee or tea per day most likely will not make a difference. However, if a woman is drinking large quantities of caffeinated beverages throughout the day, it will very likely improve her breast pain if she cuts back. This is especially true during the times of exacerbated pain prior to her menses.

In addition, recommend reduced dietary fat (overall good health). This is good advice for any patient. There were 2 small studies that showed improvement in breast pain with a 15% reduction in dietary fat.^{7,8}

Finally, advise that patients stop smoking. Smoking aggravates and exacerbates fibrocystic changes, and these will lead to more breast pain.

Medical management. Over-the-counter medications that are found in the vitamin section of a local drug store are *vitamin E* and *evening primrose oil*. There are no significant adverse effects with these treatments. Their efficacy is theoretical, however; 3 randomized controlled trials demonstrated no significant clinical benefit with evening primrose oil versus placebo for treatment of mastalgia.¹⁴

Topical or oral nonsteroidal anti-inflammatory drugs (NSAIDs; Voltaren gel, topical compound pain creams) are useful as second-line management after using a supportive bra. Three randomized controlled trials have demonstrated up to 90% improvement of mastalgia with topical NSAIDs.¹⁵⁻¹⁷

Tamoxifen is a selective estrogen-receptor modulator (SERM), which is an antagonist to the estrogen receptor (ER) in the breast and an agonist to the ER in the endometrium. Tamoxifen has been found to reduce symptoms of mastalgia by 70% even at a lower

dosage of 10-mg per day (for 6 months), or as a topical gel (afimoxifene). The oral form can have some adverse effects, including hot flashes, and has a low risk for thromboembolic events and endometrial neoplasia.¹⁸⁻²⁰

Danazol is very effective in reducing breast pain symptoms (by 80%), with a higher relapse after stopping the medication. Danazol is less tolerated due to its androgenic effects, such as hirsutism, acne, menorrhagia, and voice changes. Both danazol and tamoxifen can be teratogenic and should be used with caution in women of child-bearing age.²¹

Finally, *bromocriptine* inhibits serum prolactin and has been reported to provide 65% improvement in breast pain. Its use for breast pain is not US Food and Drug Administration-approved and adverse effects include nausea, dizziness, and hypotension.²²

Tamoxifen, danazol, and bromocriptine can be considered as third-line management options for severe treatment-resistant mastalgia.

In summary

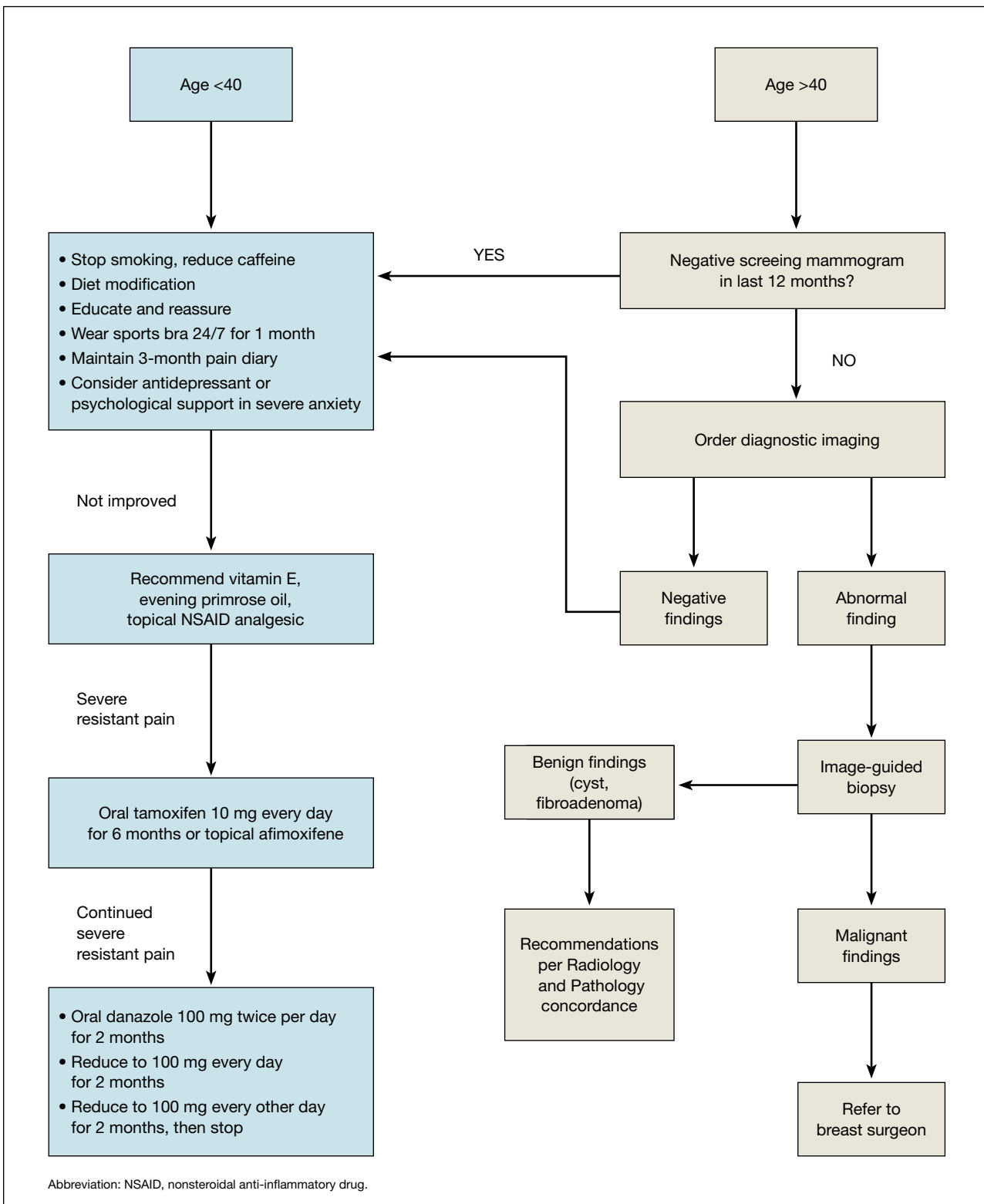
Evaluation and counseling for breast pain should be managed by women's health care providers in a primary care setting. Most patients need reassurance and medical explanation of their symptoms. They should be educated that more than 95% of the time breast pain is not caused by an underlying malignancy but rather due to hormonal and fibrocystic changes, which can be managed conservatively. If the clinical breast examination and recent screening mammogram (in women over age 40) results are negative, patients should be educated that their pain is benign and undergo a trial of conservative measures: wear and sleep in a supporting bra; keep a calendar of symptoms to determine any relation to cyclical changes; and avoid nicotine, caffeine, and fatty food. Topical pain creams with diclofenac and evening primrose oil also can be effective in ameliorating the symptoms. Breast pain is not a surgical disease; referral to a surgical specialist and diagnostic imaging can be unnecessary and expensive. ●

FAST TRACK

First-line management strategies for breast pain include: reassurance and education, wearing a supportive bra, keeping a symptom diary to identify patterns, and diet and lifestyle modification

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FIGURE 2 Treatment algorithm for breast pain with normal clinical breast examination



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