Managing Patients with Breast Pain (Mastalgia)

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Objectives:

- Prevalence of breast pain
- Learn how to evaluate breast pain
- Learn the causes of breast pain
- Learn when additional diagnostic testing is warranted
- Learn pharmacologic interventions and their recommended dosages that have been helpful for some patients with breast pain
- Learn recommendations for patient's self-care, non-pharmacologic, and complementary and alternative interventions that have been helpful in some patients with breast pain

Prevalence

- 70%-80% of women experience breast pain at least once in their lives.
- 10%-22% reporting moderate to severe pain.
- The prevalence of breast pain is believed to be higher, as it is reported that less than 50% of women with severe breast pain tell their doctors.
- It has been considered a relevant medical issue long before 1829 when breast pain was first reported in scientific literature.
Prevalence\textsuperscript{1-9} cont.
> It is one of the most common reasons or concerns for which women seek medical care.
> It is a significant source of anxiety for women, many of whom are fearful it is a sign of breast cancer.
> Women report that breast pain interferes with quality of life, activities of daily living, professional activities and sexuality.

Breast Pain as a Symptom of Breast Cancer\textsuperscript{1,5}
> Breast pain as the sole symptom of breast cancer occurs in less than 10% of breast cancer cases.
> Breast pain associated with breast cancer is usually related to advanced disease and is usually accompanied by other signs and/or symptoms.
> Occult cancer was found in 0.05% of women with breast pain who had normal clinical and radiological findings.

Evaluation of Breast Pain

\textit{History and Assessment}
> Is the pain uni-lateral or bilateral?
> Is the pain diffuse or occur in a specific location?
> Is the pain superficial or deep?
> Does the pain radiate to the chest wall?
> Is the pain associated with fever, skin abnormalities, palpable mass, nipple retraction?
> Has there been a significant change in the patient's weight over the last year
  > loss or gain of over 5kg
  > Obesity is a high risk factor for breast pain.\textsuperscript{1,2,6}
Evaluation of Breast Pain  
History and Assessment

- Evaluation of breast pain utilizing a daily diary has been found to be more accurate than retrospective reporting.¹

Determining the causality of breast pain
- Is it related to use of specific medications?¹²
  - Antidepressants
  - Methyldopa
  - Aldactone
  - Anti-hypertensives
  - Diuretics
  - Cardiac glycosides

- Does the patient smoke?
- Do the patient have excessive consumption of caffeine?²³⁻⁴⁻⁸
  - Coffee
  - Chocolate
Evaluation of Breast Pain cont.

History and Assessment

Remember, breast pain is rarely the presenting sign of breast cancer, but the possibility increases when the pain is accompanied by other findings, such as:

- A woman with breast pain who is postmenopausal and not taking hormone replacement therapy.
- Breast pain with a palpable abnormality or skin changes.
- Non-cyclical breast pain in only one area of one breast.¹

Are there other symptoms?

- Nipple discharge
- Breast lumps
- Changes to skin

Is there a previous history of benign or malignant breast disease?

- Family history, particularly of breast and ovarian cancer.
- Is there a previous history of breast surgery?
- Is she currently menstruating, pregnant or lactating?

Mastalgia can be a symptom of pregnancy.

Mastitis is the most likely diagnosis in a lactating women with breast pain accompanied by myalgia, inflammation, fever and chills.

- Occurs in approximately 33% of breast-feeding mothers.¹
Evaluation of Breast Pain

History and Assessment

Is the pain cyclical or non-cyclical?

Cyclical breast pain

- Most common and accounts for 2/3 of cases.
- Pain is bilateral and symmetrical, most often in the outer quadrants.
- Usually begins or increases in the luteal phases of menstrual cycle.
- 1 to 2 week prior to menses.
- Due to hormonal changes during menstrual cycle.
- Not higher levels of hormones, but a hypersensitivity to hormonal changes.
- Stabbing pain, heaviness or burning in the breast that may extend to the inner side of the arm.

Subsides with the onset of menses.

The median age of onset is 30 years.

Subsides with pregnancy or menopause.

More common during periods of hormonal imbalance which may affect fluid in breast tissue and worsen pain.

Puberty

Post-menopause

First trimester of pregnancy

Days before milk arriving after childbirth
Non-cyclical breast pain accounts for ~ 1/3 cases. It can be intermittent or constant, unrelated to the menstrual cycle, more likely to be unilateral, and most frequently occurs in women aged 40 years and older. Often peri-menopausal.

May be related to trauma which can lead to painful steatonecrosis several years later. May be related to stretching of the Cooper’s ligament. Resolves without treatment in 50% of cases. 22% of patients have persistent pain that requires medical assistance. Can be more difficult to treat.

Medical causes not related directly to the breast:

<table>
<thead>
<tr>
<th>GERD</th>
<th>Peptic Ulcer</th>
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</thead>
<tbody>
<tr>
<td>Alcohol Cirrhosis</td>
<td>Biliary Disease</td>
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<tr>
<td>Pulmonary Disease</td>
<td>Pneumonia</td>
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<tr>
<td>Spondylarthitis</td>
<td>Pericarditis</td>
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<tr>
<td>Rib Fracture</td>
<td>Fibromyalgia</td>
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</tbody>
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Evaluation of Breast Pain  cont.

History and Assessment

Is it chest wall pain?

1. Costochondritis
   - Inflammation of the cartilage where ribs attach to the sternum.
   - Costochondral or chondrosternal joints.
   - Second through the fifth costochondral junctions are mostly affected.
   - Can involve multiple areas on both sides of the sternum, but usually is on one side only.
   - Pain radiates to the middle of the breast.
   - Reproduced by palpating the ribs during clinical exam.

2. Tietze Syndrome
   - Inflammation of the cartilage where ribs attach to the sternum with the presence of swelling with or without erythema.

Is it Chest Wall Shingles 2,4

- Rib pain radiating across half of the circumference of the body and sometimes into the breast.
- Can be associated with intense burning that may develop several days before vesicular rash appears.
- May be difficult to diagnose before vesicular rash.

Is additional Diagnostic Testing Warranted?

- Pregnancy test
  - If indicated by patient’s history
Diagnostic imaging is not particularly helpful or indicated especially in bilateral, cyclical, asymptomatic pain unless a patient has a breast abnormality or mass in addition to breast pain.\textsuperscript{1,2}

\begin{itemize}
  \item Ultrasound
  \begin{itemize}
    \item Symptoms and mass are present \textsuperscript{1,2,4}
    \begin{itemize}
      \item Breast and axillary ultrasound are warranted.
      \item Distinguish a cystic structure from a solid mass
    \end{itemize}
  \end{itemize}

Is additional Diagnostic Testing Warranted? \textit{Cont.}

\begin{itemize}
  \item Mammography \textsuperscript{1,2}
  \begin{itemize}
    \item Controversial in younger women, as it has shown to reassure patients.
    \item Should be considered:
    \begin{itemize}
      \item in a woman 40 and over for screening.
      \item In women with suspicious clinical exam when nothing is seen on ultrasound.
      \item Utilized in a woman with focal breast pain and a family history of early breast cancer or other breast cancer risk factors.
    \end{itemize}
  \end{itemize}
\end{itemize}

- MRI²
  - Second line investigation
  - Usually used for staging of breast cancer and evaluation for response to treatment.

Cysts

- Cysts are common causes of breast pain
  - are shown as anechoic structures with posterior enhancement which are occasionally round and non-oval because of large volume of fluid.
  - Aspiration under ultrasound provides rapid pain relief.
  - Multiple cysts, fibrosis, adenosis and apocrine metaplasia, also known as fibrocystic changes, can present as a palpable mass and ultrasound is recommended for first-line imaging.

Juvenile Giant Adenofibroma

- Adenofibroma
  - Common between the ages of 20 and 40.
  - Notable, sudden onset generally around the time of puberty, can be painful due to breast tissue and skin under tension.
  - Ultrasound shows a solid homogeneous mass with regular margins and posterior enhancement.
  - Can reach up to 15-20 cm in size and push on the mammary glands.
  - Biopsy under ultrasound guidance before surgery to confirm diagnosis in older women or women with family history or early onset breast cancer.
Mondor’s Thrombophlebitis

- Localized unilateral breast pain associated with rapid onset breast swelling with a palpable abnormality.
- Often occurs after breast surgery, but may be idiopathic.
- Usually superior outer quadrant.
- Ultrasound shows a tabulated structure with no vascular flow.
- Spontaneous resolution, not requiring treatment.

Inflammatory Breast

- Red, painful, hot breast with skin or subcutaneous “peau d’orange”
- Rare and accounts for <1% of consultations
- May have benign origins
- But ALWAYS think about carcinomatous mastitis, as it is a therapeutic EMERGENCY.
- 50% cases due to infection
- 30% cases due to inflammation
- <10% cases due to inflammatory breast cancer

Clinical context of development is important

- Pregnancy or post-pubertal period?
- Immunosupression; HIV, diabetes, smoking which predisposes women to infections and abscesses.
- Breast biopsy, biopsies or surgery.
- Ultrasound first to look for solid mass or abscess.
- Mammogram if pain is not severe.
- Increased density and or subcutaneous thickening can confirm inflammatory breast.
- Malignant mass or tumoral calcifications confirm inflammatory cancer.
**Inflammatory Breast**

- If no abnormalities are seen on imaging:
  - Treat with antibiotic and/or anti-inflammatory treatment
  - Repeat ultrasound and mammogram in 15 days
- If no abnormalities are seen on imaging and symptoms persist, proceed with punch biopsy.
- Tumor infiltrate is found in the dermis in cases of inflammatory cancer.
- MRI is second line investigation after appropriate treatment.

**Pharmacologic Interventions**

- Modify dose or route of Hormone Replacement Therapy in postmenopausal patients.
- Assess length of time a woman has been on HRT
- Change contraception method or delivery
- Change from combined oral to ring or patch
- Change to hormonal contraception from diaphragm, IUD
- NSAIDs:
  - Can be effective in up to 80% of women and its usefulness is often underestimated.
  - Topical use of diflunisal (dibucaine) ointment 5% three times daily for six months found to help relieve non-cyclical and cyclical breast pain.

**Tamoxifen**

- 10 mg/daily
- Reported to relieve cyclical breast pain in 70-90% cases and 50% of non-cyclical cases.
- Treatment for 3-6 months
- Second-line treatment of choice.
- Some report significant side effects that lead many women to discontinuation and should be reserved for severe pain.
- Some report minimal side effects, with 4 months of use, and include irregular menses and hot flashes.
Pharmacologic Interventions cont.

Danazol 1-8
- Is a testosterone derivative and has mild androgenic effect.
- Reduces pain, tenderness and nodularity.
- Primary drug of preference for the treatment of severe symptoms.
- Only FDA approved drug for mastalgia.
- Should be reserved for women who have failed 3-6 months on Tamoxifen or Centchroman.

Danazol cont. 8
- 100 mg twice daily beginning 2nd day of menstrual cycle for two months.
- Breast pain and tenderness may be relieved significantly in one month and eliminated in two to three.
- Some may require three to four months of treatment before improvement in symptoms.
- Elimination of nodularity usually requires four to six months of continued treatment.
- If pain relief is maintained, reduce to 100 mg every other day.

Danazol cont. 1-8
- Some report minimal side effects with three months of use; these include irregular menses and hot flashes.
- Some report significant side effects that lead many women to discontinuation and should be reserved for severe pain.
- Menstrual irregularities, including amenorrhea, facial hair growth, hair loss, weight gain, oily skin, acne, elevated cholesterol levels, decreased breast size, deepening voice, sore throat, hirsutism, liver dysfunction, nervousness, depression and vaginitis.
- Contraindicated during pregnancy due to possible teratogenic effects.
Pharmacologic Interventions cont.

- Bromocriptine
  - Dopamine agonist and stimulates the dopaminergic receptors in the anterior pituitary and blocks the release of prolactin.
  - 2.5 mg twice daily.
  - 47-88% of patients reported significant long-lasting relief.
  - Some report significant side effects that lead many women to discontinuation and should be reserved for severe pain.
  - Most common side effects: nausea, vomiting and dizziness.

Alternative (nonpharmacologic) Interventions

- Clinician reassurance.
  - Found to be effective for up to 70-85% of women.
  - Most successful in women with mild to moderate symptoms.
- Physical exercise.
- Reduction in stress.
- Reduction in caffeine.
  - Reduction in coffee, black teas and chocolate.
- Reduction in dietary fats.
  - Diet and nutritional intervention have been found to reduce breast pain.

Alternative (nonpharmacologic) Interventions cont.

- Supportive garments
  - Found in some studies to be more effective than pharmacologic interventions.
  - Proper bra has been found to be more effective than Tylenol and SS MDs.
  - Sports garments relieve pain by the overstitching of the Cooper's ligament.
- Relaxation Techniques
  - Four weeks of relaxation therapy provided relief in 60% of patients.
Alternative (nonpharmacologic) Interventions cont.

- **Evening Primrose oil, capsules or massages**
  - A rich source of required omega-6 essential fatty acids (7-14% Gamma-linolenic Acid (GLA)) and inhibits prostaglandin activity.
  - Reduces the sensitivity of the breast against prolactin and prostaglandins especially in women with cyclical breast pain.
  - Conventional treatment for women with moderate to severe cyclical breast pain.
  - More likely to be effective as first-line treatment of cyclical breast pain when medications have failed or for women with non-cyclical breast pain. No significant side effects have been reported.

Reasonable therapy when non-pharmacological treatments have been unsuccessful.

- Response may take several months.
- Has also been found to be effective treatment alone and in combination with vitamin E.
- For severe cyclical mastalgia a short-duration trial at a daily dose of 3,000 mg of EPO has been found to be effective.
- Or in combination with 1,200 IU of Vitamin E.
- Some studies report it not to be an effective treatment.
- No significant side effects have been reported. Some report headache, abdominal pain, nausea and diarrhea.

Alternative (nonpharmacologic) Interventions cont.

- **Chasteberry**
  - AKA: FAC
  - Decreases serum prolactin level in premenstrual period by activating the dopamine receptors in lactotroph cells in the anterior pituitary.
  - Shows improvement in breast pain, and other premenstrual symptoms such as headaches, irritability and emotional liability.
  - Reported 80% reduction in pain levels.
  - Safe side-effect profile.
  - Most adverse reported: nausea, headache, itching and erythematous rash.
Alternative (nonpharmacologic) Interventions cont.

- Cinnamon
  - Mechanism of action is the same as evening primrose.
  - Used as pain reliever, energy provider and antispasmodic.
  - Used to treat respiratory failure and joint pain.
  - 400mg capsule daily has been found to reduce cyclical breast pain within 1 month, with continued relief with ongoing treatment.

- Vitamin B
  - B1 and B6 have been used, but there is no clinical evidence to support its use.
  - Vitamin B 6 supplementation has been reported to increase breast pain due to containing methylxanthines like coffee and chocolate.

- Vitamin E
  - Conventional treatment for women with moderate to severe cyclical breast pain.
  - Most commonly used vitamin for breast pain.
  - Use is controversial
  - Mechanism of action is thought to involve inhibition of prostaglandins that potentially contribute to breast pain.
Alternative (non-pharmacologic) Interventions cont.

- **Vitamin E**
  - Has been found to be an effective treatment alone and in combination with EPO.
  - For severe cyclical mastalgia a short-duration trial at a daily dose of 1,200 IU has been found to be effective.
  - Or in combination with 3,000 mg daily of EPO.

- **Recommended dose** 150 to 600 IU daily.
  - If no improvement is noted in two-three months patient should be instructed to discontinue.
  - Long term use may increase the risk of hemorrhagic stroke.
  - Contraindicated for women with hypertension, diabetes mellitus or cardiovascular disease due to fat solubility and slow excretion resulting in possible build up to toxic levels leading to constriction of blood vessels.

Surgery

- Rarely indicated for treatment
- Except for women with macromastia whose symptoms warrant reduction mammoplasty.
- Risks and benefits must be weighed.
- 50% of cases, breast pain will not improve.
References


