Mastitis

Engorgement
Plugged Duct
Abscess

Background

1. Definition
   - Inflammation of the breast
     - Including cellulitis and abscess formation
   - May or may not involve bacterial infection
   - Can originate from Candida infection
   - Associated with pain
2. General information
   - Usually occurs in breastfeeding mothers
   - Most common in first 2-3 weeks, but can occur at any stage of lactation
   - Can occur in women who are not breastfeeding or pregnant
   - Can occur even in small babies of either sex

Pathophysiology

1. Pathology of disease
   - Localized cellulites caused by bacterial or fungal invasion through an irritated or fissured nipple
   - From this portal of entry, usually S aureus (typically originating from nursing child), Streptococci, Candida (less commonly) invade breast tissue
     - If bilateral, consider Group B strep
   - Milk stasis is main cause
2. Incidence, prevalence
   - 1-5% of lactating women
   - Higher risk with history of mastitis with previous child, nipple damage, and use of manual breast pump
3. **Risk factors**
   - Damaged nipples
     - Almost all damaged nipples are colonized with staph. aureus
   - Plugged milk ducts
   - Incorrect positioning of baby during breast-feeding
   - Irregular breast-feeding
     - Inadequate milk drainage
     - Prolonged separation from baby
   - Vigorous exercise- and work-related upper body activities
   - Breast abnormalities, such as those following breast surgeries, or piercing
   - Silicone/paraffin implants
   - Cigarette smoking
   - Conditions that lower resistance to infection
     - HIV
     - Anemia
     - Autoimmune diseases such as rheumatoid arthritis
     - Steroids
     - Stress

        - Diabetes
        - Maternal fatigue
        - Poor nutrition
    - Restrictive clothing or tight bra
    - Blocked nipple pore
        - Could be secondary to use of nipple creams
4. Morbidity/ mortality
    - Abscess formation
        - <10% of postpartum mastitis
    - Recurrent or chronic infections
    - Pain
    - Scarring
    - Rarely fatal in developed countries
        - Can lead to sepsis, death if untreated

Diagnostics

1. History
    - Recent delivery
    - Recently missed feeding or unusual separation
    - Breast symptoms
        - Localized pain, erythema, warmth, damaged nipples
    - Systemic symptoms
        - Fever, body aches, fatigue
    - Mammary candidiasis
        - Presumptive Dx by signs or symptoms
        - Infection may occur after antibiotic use by either mother or child
        - Newborn has oral thrush and/or a yeast diaper dermatitis
        - Persistently sore or cracked nipples that do not heal
        - Burning or shooting pain in the breast during and after feedings
2. Physical exam
    - Tender breast lump, fluctuant usually unilateral
    - Accompanied by localized pain, erythema, local edema
    - Fever, systemic malaise
    - Proximal lymphadenopathy
    - Nipple and skin retraction
    - Mammary candidiasis:
        - Skin of the breast presents as erythematous
        - Smooth and shiny scaly lesions of the inframammary or axillary folds
        - Classical findings of mastitis are absent (fever)
        - Findings of a local physical examination are often unimpressive
        - Infant may or may not have signs of mucosal or cutaneous candidiasis
3. Diagnostic testing
    - Laboratory evaluation:
        - CBC with diff in pts with suspected breast abscess
        - C&S of drainage to identify pathogens
            - Staph, Strep and anaerobic bacteria in non lactational mastitis
        - Mammary candidosis rarely confirmed by lab findings

- Diagnostic imaging
  - Ultrasonography
    - To determine solid versus cystic structures in breast
    - To direct needle aspiration for abscess drainage
  - Mammogram:
    - In non breastfeeding women with mastitis
    - Those who do not respond to treatment
  - Aspiration for culture
  - Fine needle aspiration (FNA) not accurate to exclude carcinoma
  - Breast biopsy if solid mass, to rule out breast cancer

Differential Diagnosis

1. Plugged ducts
   - Area of breast where milk flow is obstructed
   - Typically more painful before feeding, less tender afterward
   - Area will usually feel less lumpy or smaller after nursing
2. Breast engorgement
   - Painful overfilling of breasts with milk
   - Usually caused by an imbalance between milk supply and infant demand
   - Begins on 3rd to 5th day after birth
   - Subsides within 12-48 hrs if properly treated
   - Severely engorged breasts become increasingly hard, swollen, and tender
     - Nipples and areolae can become hard and flattened, making it difficult for baby to latch on to breast properly
3. Duct ectasia
   - Widening and hardening of duct
   - Characterized by thick green / black nipple discharge
   - Typically affecting women in their 40s and 50s
4. Extensive DDx
   - Local irritation or trauma
     - Can be differentiated from mastitis by obtaining a careful history
   - Inflammatory breast carcinoma
     - Can be mistaken for breast infection and treated with antibiotics
     - If no improvement after two full trials of antibiotics, breast biopsy or referral to a breast specialist
   - Paget's disease of the breast
     - Pruritus, scaling, and crusting of and/or discharge from nipple
     - Often unresponsive to topical steroid and antibiotics
     - Almost always, underlying breast carcinoma present
     - Diagnosis with a skin biopsy
   - Subareolar abscess
     - Commonly occurs in postmenopausal women
   - Mondor disease
     - Superficial phlebitis of the thoracoepigastric vein
     - Local tenderness and induration
   - Actinomycosis
     - Chronic bacterial disease
     - Characteristics:

        - Localized swelling with suppuration
        - Abscess formation
        - Tissue fibrosis
        - Draining sinuses
      - Oral and cervicofacial region infections
      - Thoracic, abdominopelvic regions, and CNS also often involved
  - Granulomatous mastitis
    - Tuberculosis in a case of non-puerperal mastitis
      - Primary, more commonly, secondary
      - Presence of breast or axillary sinus in up to half of patients
      - Sarcoid
      - Breast involvement <1%of cases
  - Syphilis of the breast
    - Rare
    - Hydatid cyst
    - Breast is a rare location
    - Mammography key examination
  - Sebaceous cyst
    - Is a closed sac or cyst below the surface of the skin
    - Forms in a hair follicle
    - Fills with a fatty white, semi-solid material called sebum
    - Usually slow- growing, painless, freely movable lumps
    - Common in the skin of the breast
    - May become infected
  - Fibroadenoma
    - Painless lumps
    - Easily mobile
  - Fat necrosis
    - Painless, round, and firm lumps
    - Formed by damaged and disintegrating fatty tissues
    - Typically in obese women with very large breasts
    - Often develops in response to trauma, even though the woman may not remember the specific injury

Therapeutics

1. **Acute**
   - Rest, fluids, analgesics/ antipyretics
   - Assess / correct mechanical causes of nipple pain
   - Frequent nursing/ pumping
   - Warm compress between nursing
   - Consider up to 24 hr of conservative management before starting antibiotics
     - If no fever or systemic dz
   - Antistaphylococcal antibiotics for 10-14 days
     - Dicloxacillin 500 mg q6h 1st
       - Difficult to take on empty stomach
     - Cephalexin 500 mg q6h or 1000 mg q12hr reasonable choice
     - Clindamycin 300 mg qid if allergic
   - Second line

        - Amoxicillin/ clavulanate 875 mg bid, or
        - Clindamycin 300-600 mg qid
    - If Candida infection
        - Treat both mother and baby, even if only one has symptoms
2. **Further mgmt (24 hr)**
    - Watch for evidence of breast abscess
        - Aspirate
    - Biopsy of all non-puerperal abscesses to rule out carcinoma
    - Continue breastfeeding, encourage thorough emptying of affected breast
    - If nipples severely damaged
        - Consider pumping until nipples heal
    - May feed baby at breast or feed expressed milk
    - If no response is seen within 24-48 hrs
        - Switch to cephalexin or amoxicillin/ clavulanate
    - If nipple pain worsens or burning
        - Combined bacterial and fungal infection may be present to which a topical antifungal such miconazole 2% can be added
    - Gentian violet 0.5-1% strength aqueous solution, works as fungicidal, can be painted on the nipples and areolae for 4-7 days
    - Gentian violet 0.25-0.5% can be used in the baby's mouth once or twice daily for 3-7 days to avoid oral mucosal ulceration
    - Fluconazole (diflucan) loading dose usually 400 mg followed by 100 mg twice daily for 2 wks, may be used when the previous fungal treatments fail
    - Above should be used in combination with Newman's topical nipple ointment (including Mupirocin 2% 15g, Betamethasone 0.1% ointment 15 g, and Miconazole powder 2%) as Fluconazole can take several days to start working
3. **Long-term care**
    - Correct latch problems
    - Treat damaged nipples
    - If recurrent, consider low-dose antibiotic prophylaxis
    - Wound care if surgically drained

Follow-Up

1. Return to office
    - 48 hours if no improvement
    - Earlier follow-up
        - Condition getting worse
        - Unable to take antibiotics
        - Signs of breast abscess
    - Follow up within 1-2 wks to make sure infection treated
    - Assure resolution to exclude carcinoma
2. Refer to specialist
    - Lactation consultant
        - Breastfeeding assistance
    - Surgeon
        - Concern for breast abscess

3. Admit to hospital
    - Toxic
    - Infection spread
    - Unable to take PO antibiotics

Prognosis

1. Most resolve with treatment
2. May recur
3. Complete healing expected in 8-10 d (if abscess can be incised and drained)

Prevention

1. Frequent feeding/ pumping
2. Latch and milk transfer adequate
3. Avoid excessive intravenous fluids in labor
4. Antibiotic prophylaxis for multiply recurrent cases
5. Treat damaged nipples with topical antibiotic such as mupirocin
6. Early treatment of mastitis with milk expression and compresses
7. Early treatment with antibiotics

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Evidence-Based Inquiry

1. For a nonlactating woman with breast inflammation, is a trial of antibiotics appropriate before imaging and/or biopsy?

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