

BREAST DISORDERS

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OBJECTIVES: Upon completion of the presentation each participant should be able to:

1. Review anatomy and physiology of the breast.
2. Review self-breast exam and clinical breast exam.
3. Discuss the signs and symptoms, etiology, diagnosis, differential diagnoses and treatment for the common benign breast conditions: fibrocystic changes, fibroadenoma, intraductal papilloma, mammary duct ectasia, and mastitis.
4. Discuss the incidence and death rate caused by breast cancer.
5. Discuss risk factors, prevention, and diagnostic modalities for breast cancer, including factors which may decrease risk and treatment measures currently used for breast cancer, relating these to survival rates.

CONTENT:

I. Anatomy

A. Nipple

Pigmented, cylindrical structure at 4th intercostal space

B. Areola

Pigmented, circular area surrounding the nipple

C. Glands of Montgomery or Areolar Glands

Tiny sebaceous glands located within the areola that aid in lubrication of the nipple during lactation.

D. Internal Tissue - Glandular Tissue, Fibrous Tissue, and Fatty Tissue.

Glandular tissue is arranged in 15-20 lobes around the nipple.

Each lobe is composed of 20-40 lobules containing acini or milk producing cells that empty into lactiferous ducts.

E. Lymphatic Network

The lymphatic network drains the breast deeply into underlying lymph nodes. Palpate both the axillary and clavicular nodes during breast examination. There is a firm ridge of tissue (like a shelf) in the lower curve of each breast.

II. Breast Exam

(Remember after menses is the best time to perform breast exam.)

Abnormal findings include:

1. Raised area on breast
2. Sores or ulcers not caused from injury
3. Dimpling, puckering or pulling of skin
4. Veins which protrude or are larger in one breast
5. Change in color
6. Change in shape or size of either breast
7. Change in areolar skin - thickening, scaling, and crusting
8. Change in direction of nipple
9. A lump or knot in the axilla
10. Change in the appearance of moles or skin
11. Persistent discomfort or pain
12. Change in nipple drainage
13. A change in incision area if there has been previous surgery for breast cancer

III. Common Breast Conditions

A. Fibrocystic Changes or Physiologic Nodularity

This term describes a variety of breast changes characterized by grainy, palpable, small lumps, which fluctuate with the menstrual cycle. This may be exaggerated response to cyclic ovarian hormones.

1. Etiology/Incidence

- a. Most frequent benign breast condition, noticed by 50-80% of menstruating women, found at autopsy in over 90% of women.
- b. 30-50 years of age most frequent incidence.
- c. Theoretically caused by progesterone changes with menses.

2. Assessment

- a. Mobile, well-defined cystic masses
- b. Singular or multiple, but occur bilaterally
- c. Upper, outer quadrant of breast most frequent location
- d. Pain and tenderness last half of menses, subsides at menopause (Helps differentiate from carcinoma or fibroadenoma)
- e. May have clear, green, or brown nipple discharge
- f. Diagnosis based on biopsy
- g. Mammography may be helpful, but breast tissue may be too dense for accurate study
- h. Aspiration and sonogram can differentiate cystic mass from solid mass

3. Treatment

- a. Local heat/cold
- b. Mild analgesics
- c. Support bra
- d. Low sodium diet
- e. Eliminate caffeine and chocolate (research inconclusive)
- f. Evening primrose oil (research inconclusive)
- g. Diuretics (research inconclusive)
- h. Vitamin E (research inconclusive)

- i. Bromocriptine or tamoxifen (only in severe instances)
- j. Combined oral contraceptive pills may decrease cyclic changes

B. Fibroadenoma

The second most common benign breast condition

1. Etiology

- a. More common in black women
- b. Occurs in late teens and early adulthood, rarely after menopause
- c. May grow rapidly during pregnancy
- d. Abnormal growth of fibrous and ductal tissue in response to hormones
- e. No significant correlation with breast cancer

2. Assessment

- a. Generally firm, rubbery, discrete, round, mobile, painless, non-tender, solitary, well-circumscribed lump
- b. Usually upper outer quadrant
- c. 1-5 cm in diameter.
- d. Diagnostic tests
 - 1) Fine needle aspiration to determine if solid or cystic
 - 2) Cytologic study of any solid tumor aspirate or bloody fluid
 - 3) Sonogram to differentiate solid from cystic mass
 - 4) Mammography less common in woman under 30
 - 5) Definitive diagnosis by excisional biopsy and tissue examination

3. Treatment
 - a. Excision of mass
 - b. Reoccur in 20% of women after excision
 - c. If under 30 and assured that not malignant by exam and cytology, may monitor without excision

C. Cystosarcoma Phyllodes

1. Rare fibroepithelial tumors that grow rapidly
2. May get as large as 10-15 cm
3. One in four is malignant; one in ten metastasizes
4. Most common in women in their 40's and 50's
5. Treatment is local excision with a wide margin of surrounding normal tissue

D. Fat Necrosis

1. Rare lesion of the breast
2. Trauma is presumed cause
3. Resolves without treatment
4. Generally firm, dominant irregular mass
5. Usually tender
6. May have swelling, erythema, echymosis
7. Difficult to distinguish from carcinoma
8. Excisional biopsy with removal of entire mass if the lesion does not regress in a few weeks

E. Intraductal Papilloma

1. Slow growing, cauliflower (wart-like)-lesion in lining of mammary duct near the nipple
2. Do not know the cause.

3. Greatest incidence is 40-50 years.
4. Single papilloma has a low cancer risk
5. Produces a watery, serous, serosanguineous or bloody nipple discharge that occurs spontaneously, usually unilateral, often tender
6. Often from a single duct
7. A mass may or may not be palpated
8. Diagnosed with mammography in women over 30
9. Cytologic analysis (pap smear) of discharge has a false negative rate of 20%
10. Ductogram may identify filling defect
11. Treatment is biopsy and excision of the duct.

F. Mammary Duct Ectasia

1. Inflammation and enlargement of the ducts in subareolar area
2. Does not increase risk of breast cancer
3. Unknown etiology
4. May result in rupture of the duct and a palpable mass
5. Usually during or after menopause
6. Multi-colored discharge, serous or thick, white, green, greenish-brown or serosanguineous
7. Intermittent and without pattern
8. Occurs bilaterally from multiple ducts
9. Non-cyclical, burning, pain, itching and inflammation of nipple
10. May have a mass in subareolar area (1-2 cm, firm)
11. Mammography if older than 30
12. Treatment is biopsy and excision of ducts, antibiotics if infection develops

G. Mastitis

1. Breast infection caused most commonly by staph aureus, occasionally by E. coli or streptococcus in lactating women, multi-microbial if not lactating
2. Occurs most often with lactation - but may occur at any age.
3. Lactation mastitis
 - b. Usually painful, nipple discharge of pus, serum or blood, may have an area of localized induration. May have fever.
 - c. Can decrease incidence of lactational mastitis with early and unrestricted nursing, preventing cracked nipples, and wearing a supportive bra. Follow-up examination in 2-3 weeks for postpartum women.
 - d. Continue breastfeeding. Apply heat to affected breast. Treat with amoxicillin, dicloxacillin, or nafcillin for 10 days. Follow-up after treatment.
 - e. If breast abscess occurs, must refer for incision and drainage.
4. Non-lactation mastitis
 - a. Non-lactating woman may have tender, erythematous, indurated mass and nipple inversion or retraction. Usually they do not present with fever or malaise.
 - b. Fine needle aspiration for culture may or may not be performed
 - c. Treatment is with incision and drainage of abscess and antibiotics.
 - d. Subareolar abscesses may reoccur and may require duct excision.
 - e. Persistent erythema needs to be further evaluated for inflammatory breast cancer.

H. Galactorrhea

1. Multiple ducts, milky nipple discharge. May be caused by increase in production of prolactin
2. Etiology
 - a. Physiologic (excessive breast manipulation).

- b. Pharmacologic (phenothiazines, antihypertensives, antidepressants, amphetamines, oral contraceptives, marijuana, etc.)
 - c. Pathologic (hypothyroidism, hypothalamic disorders, pituitary adenoma, chronic renal failure, chest wall lesions, surgical scars, herpes zoster, and others)
 - d. Idiopathic (no demonstrable cause)
3. Assessment
- a. Spontaneous milky unilateral or bilateral nipple discharge
 - b. No associated mass
 - c. May have irregular menses
 - d. May have headaches and visual changes with pituitary tumor
 - e. May have symptoms of underlying condition
 - f. Diagnostic tests
 - 1) Serum prolactin
 - 2) CAT or MRI as indicated by prolactin level (above 100) and symptoms
 - 3) TSH
 - 4) Other tests per underlying conditions
4. Management
- a. Discontinue or reduce physiologic precipitating factors
 - b. Eliminate causative drugs when reasonable
 - c. Treat underlying causes (hypothyroidism)
 - d. Bromocriptine or dopamine agonist may be prescribed
 - e. If normal PRL and regular menses, may manage expectantly with periodic PRL levels

Summary of Management of Common Breast Problems

Cyst	<ol style="list-style-type: none"> 1. Ultrasound or cyst aspiration to differentiate solid and cystic mass 2. If mass does not disappear with aspiration or if fluid is bloody send for cytology and refer to surgeon 3. Otherwise, re-examine in 6 weeks. 4. If cyst reoccurs, refer to surgeon.
Solid	<ol style="list-style-type: none"> 1. Refer solid, dominant or persistent mass to surgeon. 2. A normal mammogram does not eliminate need for further evaluation of a clinically suspicious mass.
Diffuse Nodularity	<ol style="list-style-type: none"> 1. If significant doubt exists about the nature of mass, consider mammogram or ultrasound and fine needle biopsy. 2. If mass appears benign, recheck in 2-3 months. 3. Refer to surgeon if mass persists for 3 months.
Mastalgia	<ol style="list-style-type: none"> 1. Perform clinical breast exam and mammography if age appropriate. 2. If above negative, fibrocystic changes are likely. 3. Refer to surgeon for persistent localized pain not relieved by conservative measures.
Skin/Nipple Change Nipple Discharge	<ol style="list-style-type: none"> 1. Refer women with skin breakdown on the nipple or areola to breast surgeon. 2. Refer women with palpable mass and any nipple discharge to a surgeon. 3. With discharge, may need medical work-up for galactorrhea. 4.

Breast Cancer

A. Warning Signs:

1. A painless lump in the breast is typical, but there may be pain, although breast pain is generally not the first symptom of breast cancer.
2. Any change in the shape, color or texture of the breast (thickening, swelling, distortion or tenderness.)
3. Nipple pain, scaliness or retraction
4. Discharge or tenderness in the nipple
5. The earliest detection may be mammography before signs and symptoms appear.

B. Tumor Types

1. 90% of cases arise in ducts and the rest in the lobes. Lobular carcinoma in situ has a slightly higher tendency to occur in both breasts, and is usually asymptomatic, with diagnosis being made by mammography.
2. 80% are nonspecific infiltrating duct carcinoma - many times stony hard to palpation
3. Other rarer duct cancers are medullary, mucinous, tubular, and papillary types - several patterns may exist in a tumor.
4. Paget's disease - 3% of breast cancers and an intraductal carcinoma, produces red, scaly lesion involving the nipple and areola unilaterally, usually appears around age 55
5. Inflammatory breast cancer - warmth and redness of the overlying skin and induration of the surrounding breast tissue.

C. Staging

1. Stage 1 The tumor is no larger than 2 cm and has not metastasized.
2. Stage 2 The tumor is from 2-5 cm and/or has metastasized to under the arm.
3. Stage 3 The tumor is larger than 5 cm and involves the underarm lymph nodes to a greater extent and/or has spread to the lymph nodes or other tissues near the breast.

4. Stage 4 The tumor has metastasized to other organs of the body, most often to the lungs, bones, liver, or brain. Skin involvement is automatically classified as Stage 4.

D. Tumor Markers

1. Estrogen Receptor Assay (ERA) - done on biopsy specimens to see if tumor is sensitive to estrogen. These tumors are usually slower growing and have a better prognosis. They respond to hormone therapy.
2. Progesterone Receptor Assay (PRA) - done on biopsy specimens to see if tumor is sensitive to progesterone.
3. DNA Histogram (flow cytometry) - measures the amount and type of DNA in the tumor - indicates the aggressiveness of the tumor.
4. Tumor Grade - degree of tumor cell differentiation by histology. Poorly differentiated carcinomas are more aggressive.
5. Tumor Size - Tumors less than or equal to 1 cm have a particularly good prognosis (less than 10% recurrence at 10 years.
6. Proliferative Rate - Measurements of cellular proliferation in breast cancer specimens. Tumors with low proliferation rates are less aggressive.

E. Detection and Diagnosis:

1. Self-examination every month and clinical breast exams annually
2. Mammography –
 - a. Review screening guidelines in previous unit on cancer in women.
 - b. Two types of mammography - screening mammography and diagnostic. Screening mammography is for women who have no signs or symptoms of breast cancer. Two views are done on each breast. Approximately 10% of all screening mammograms will need further assessment.
 - c. The mammogram should be performed at a center that is accredited by the American College of Radiology. Women should also record where previous mammograms were done, so changes can be noted.
 - d. Mammography has the most accuracy in older women with less dense breast tissue.

- e. Women with breast implants need 4 x-ray views of the breasts, called the Ecklund technique.
3. Ultrasound –
- a. Is often used to evaluate breast nodules in pregnant women or young women.
 - b. Can visualize peripheral masses not visualized by mammography.
 - c. May be used as guidance during needle biopsy, evaluation of women with augmentation, and evaluation of post-mastectomy women.
4. MRI
- a. Investigational for evaluation of breast masses.
 - b. MRI is expensive, but may be used as a more sophisticated diagnostic tool.
 - c. May be helpful with breast masses, silicone breast implants, scar tissue and fat necrosis.
5. Fine needle aspiration (FNA)
- a. Rare false positive, false negative about 5%
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 - b. Uses small gauge needle to obtain cells for cytologic examination.
 - c. The needle is moved back and forth within the lesion while applying full suction on the syringe.
 - d. Once the needle is filled with cells, these are fixed on slides for the pathologist to review.
 - e. FNA is performed on an outpatient basis with local anesthetic.
6. Stereotactic Breast Biopsy –
- a. Done with a Biopsy Gun during mammogram to biopsy non-palpable lesions
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 - b. May use local anesthesia rather than general
 - c. Less costly than surgical biopsy

7. Surgical Breast Biopsy needed for all suspicious lumps.
8. Biochemical and genetic markers and the density of blood vessels in a tumor may help indicate tumor aggressiveness.

F. Treatment

1. For localized tumors, mastectomy may be appropriate, but breast-conserving surgery (removal of the tumor and some surrounding tissue, sometimes called lumpectomy) followed by local radiation is often preferable.
2. Although recurrences are more common with breast-conserving surgery, these can be treated by mastectomy and the survival rates are equivalent to those when mastectomy is used initially.
3. Either procedure can be followed by additional chemotherapy or hormone blocking therapy. (If tumor cells have high levels of receptors for the hormones estrogen and progesterone, it is a good sign because hormone-blocking therapy may stop growth.)
4. High-dose chemotherapy followed by reconstitution of damaged bone marrow is being studied
5. Immunotherapies, including immunotoxins (molecules that combine a toxic agent with an antibody that binds to tumor cells) are being researched.
6. Tamoxifen, a drug that suppresses the effects of estrogen, may help prevent breast cancer in some women at risk, as well as treatment. Raloxifene is also being studied.

G. Five-year Survival Rates

1. All stages - 88.2%
2. Localized - 96.1%
3. Regional Spread - 74.9%
4. Distant Spread - 19.8%
5. Survival after being diagnosed with breast cancer continues to decline beyond five years.
6. Sixty-five percent of women diagnosed with breast cancer survive 10 years and 56% survive 15 years.

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