

Update On Breast Disease

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Brief Overview

- Statistics
- Imaging and what is on the horizon
- Benign Breast Disease
- Breast Pain
- Breast Cancer
- High Risk and BRCA positivity

Statistics

- 1 in 8 women will be diagnosed with breast cancer in their lifetime.
- Approximately 233,000 new cases of invasive breast cancer per year
- Approximately 62,000 new cases of in situ breast cancer per year
- Approximately 40,000 women will die from breast cancer per year
- 2nd leading cause of cancer deaths exceeded by lung

WHI

In 2002, the results of the Women's Health Initiative were published linking HRT use to increase risk of breast cancer. In the year 2002-2003, there was a 7% decrease in breast cancer cases that was thought to be related to the decline in HRT.

Risk Factors

- Age: 80% of breast cancer cases occur in women > than 50 years of age
- Gender: less than 1% of breast cancer occurs in men
- Previous exposure to chest wall radiation during childhood or adolescence (lymphoma, leukemia)
- Obesity/Lack of exercise

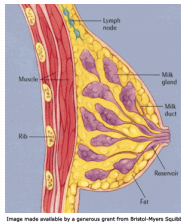
Risk Factors

- Age of menarche (<12 years of age)
- Age of first pregnancy (under the age of 30 considered protective)
- Late menopause (>55 years of age)
- Nulliparous
- HRT use (> 5 years of use)
- Personal history of breast cancer
- Family history of breast cancer- 2 or more 1st degree relatives

Risk Factors

- Alcohol use (2 drinks or more per day)
- BRCA I or II mutation/Familial Hereditary Syndrome
- Lifetime Risk (LTR) > 20%
- History of lobular carcinoma in situ
- History of atypical ductal or lobular hyperplasia

Breast Anatomy



Breast Cancer Development



Surgery.med.nyu.edu

USPSTF Panel Recommendations as of December 2009:

- Recommend biennial screening mammography starting at the age of 50 to age 74
- Recommend discussing screening before the age of 50 with healthcare provider
- Recommend against SBE

NCCN/ACS recommendations for women of average risk:

- Ages 20-39:
 - CBE performed at least every 3 years by healthcare provider
 - Monthly SBE is an option
- Ages 40 or older:
 - annual mammogram
 - Annual CBE
 - Monthly SBE is an option

Diagnostic Workup

- Screening mammogram ordered for women who are asymptomatic.
- For women under the age of 30 that presents with palpable mass, breast pain, nipple discharge or skin changes = obtain US .
- For women over the age of 30 that is symptomatic = obtain mammogram and US.

Breast Imaging

Mammogram:

Looks at density of tissue, presence of calcifications, microcalcifications, architectural distortion, asymmetries, and masses.



Reconnections.org

Birads System

Birads system:

Birads 0: needs additional imaging

Birads 1: negative

Birads 2: benign findings (stable calcs, stable cyst, FA)

Birads 3: probably benign, short interval followup recommended (6 mos)- lumpectomy protocol, f/up on recent biopsy

Birads 4: Suspicious abnormality, biopsy recommended

Birads 5: Suspicious abnormality, highly suspicious, biopsy recommended

Birads 6: Biopsy proven malignancy

Ultrasound

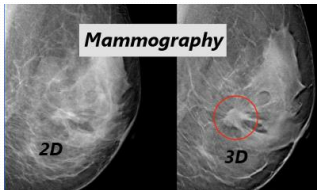
Determines if mass is cystic or solid.

- Gives dimension of size of mass.
- Routinely not used to screen and cannot replace mammogram
- Less sensitive than breast MRI
- 3D automated whole breast US has been approved by FDA using a handheld transducer or transducer placed over the whole breast.
 - *should only be used in average women with dense breast tissue, not in high risk setting

Breast Imaging

- MRI:
Evaluates extent of disease in cancer
LTR > 20% (patient's with atypia, multiple biopsies, dense breast tissue or family history of breast cancer)
- Tomosynthesis (3D mammography) - creates a 3D picture, uses more radiation than standard digital mammography. FDA approved 2011.
*helpful in dense breast tissue, has shown improved cancer detection rates.

3 D Mammography



www.everydayhealth.com

Image Guided Biopsies

- Ultrasound Guided - used to biopsy mass seen on US
- Stereotactic - used to biopsy calcifications
- MRI guided - used to biopsy mass seen on MRI

*core biopsy of lesion/mass/calcification with clip placement .

Image Guided Biopsy

- Ultrasound guided biopsy



Image Guided Biopsy

- Stereotactic biopsy – used to biopsy calcifications

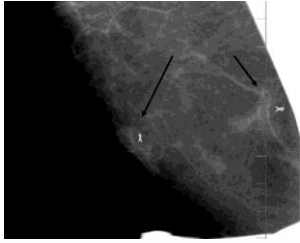


Image Guided Biopsy

- MRI guided biopsy



Clip Placement



Radiology.casereports.net

Benign Breast Disease

- Fibroadenoma – most common benign breast mass
*seen mostly in younger women

Simple, complex and juvenile fibroadenomas

Treatment includes serial followup with US every 6 months to assure stability for total of 18 months but if high risk or found in older woman, recommend sampling with core biopsy for tissue diagnosis.

Benign Breast Disease

Indications to excise FA's:

- rapid growth demonstrated on imaging
- pain
- patient preference
- recommend surgical excision for mass > than 2-3 cms.

FA may degenerate without any treatment.

Benign Breast Disease

Phyllodes Tumors:

- Most commonly seen in women 30 to 40 but can occur at any age
- Present with palpable abnormality and can resemble FA.
- Can grow rapidly if left untreated.

Benign Breast Disease

Phyllodes Tumors:

- Treated with image guided biopsy and surgical excision.
- Follow up includes serial US every 6 months for a period of 5 years.
- Low grade or malignant phyllodes may be recommended for followup with radiation, rarely chemotherapy. Treated more like a sarcoma than breast cancer.

Benign Breast Disease

- Simple cysts/microcysts – benign
- Complicated cysts – thin septations, cluster of microcysts
- Complex cysts – thicker septations with papillary projections. Usually recommended for biopsy.

*can offer aspiration if cyst is large and/or painful

Nipple Discharge

- Usually benign
- Green, yellow, brown or milky usually normal
Guaiaac to check for occult blood.
- Obtain imaging
- Consider labs – prolactin/TSH
- Ask if discharge is spontaneous
- Due to fibrocystic breast changes (FBC), ductal ectasia

Bloody Nipple Discharge

- Usually caused by intraductal papilloma, want to r/o cancer.
- Workup with mammogram and US
- If no mammographic or sonographic correlate, consider MRI
- If no imaging abnormality, refer to breast surgeon for subareolar ductectomy or major duct excision.
- If there is a mammographic or sonographic correlate (intraductal mass) patient will be recommended for USgbx.
- If seen on MRI, will be recommended for MRI guided bx.

Bloody Nipple Discharge

- Core biopsy should reveal a papillary neoplasm which would be recommended for wire localization lumpectomy
- Final pathology reveals an intraductal papilloma which is a wart or polyp-like growth in breast duct.
- Symptoms may include clear or bloody nipple discharge may present with a mass.
- Can be asymptomatic but presents with imaging abnormality that would be recommended for biopsy
- Papillomatosis – multiple papillomas within the duct.
Treatment is surgical excision.
*Slightly increases risk of having breast cancer.

Mastitis/Abscess

- Inflammation of the breast or infection, break in skin or nipple allows bacteria to enter duct
- Mastitis seen most commonly when breast feeding but can occur in older women
- Symptoms include redness, swelling, pain, fever, chills, malaise
- Treatment is with antibiotics (Keflex or Bactrim)
- If fluid collection is seen on US recommend aspiration + abx. Recurs = incision and drainage + abx
- Obtain imaging approximately 6 weeks after treatment

Benign Breast Disease

Pseudoangiomatous Stromal Hyperplasia (PASH) –

- Presents as finding on imaging or patient presents with self palpated mass
- Recommended for core biopsy. Benign finding with no increase risk of breast cancer.
- If mass is palpable, recommend surgical excision.
- If found only on imaging, recommend 6 month followup with imaging followed by clinical exam for period of 18 months to assure stability.

Benign Breast Disease

Radial Scar/Complex Sclerosing Lesion:

- Imaging abnormality that is recommended for biopsy
- Looks suspicious on imaging, mimicking cancer
- Pathology will reveal radial scar which is then recommended for surgical biopsy

Breast Pain

Causes of breast pain include:

- Hormonal changes during menstrual cycle
- Water retention during menstrual cycle
- Injury to breast
- Pregnancy
- Breast Feeding
- Infection
- Breast cancer ** RARE**

Breast Pain

History: ask for description of pain, location, and duration

Work up includes: ultrasound +/- mammogram depending on age of patient. Possible MRI dependent on history.

Treatment:

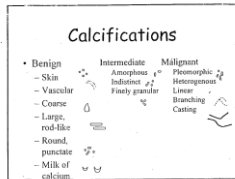
- Elimination of caffeine from diet - chocolate, coffee, tea, and sodas
- Elimination of alcohol from diet
- Elimination of tobacco

Breast Pain

Treatment:

- Supportive bra (day and night if necessary)
- OTC Ibuprofen to break the pain cycle
- Evening Primrose Oil 500 mg capsules TID or
- Omega 3 Fish Oil 1000 mg BID
- Tamoxifen 20 mg daily

Calcifications



Hyperplasia

- Benign hyperplasia - overgrowth of cells that line the breast ducts or lobules.
- Atypical hyperplasia - risk of breast cancer is 3 ½ to 5 times that of a woman with no breast abnormalities.
- Atypical Ductal Hyperplasia (ADH)
- Atypical Lobular Hyperplasia (ALH)
 - * pathology will usually put patient in a high risk setting.

Atypia

Treat with surgical excision

May meet criteria for chemoprevention with

Tamoxifen or Raloxifene. Lowers risk by 50%.

- Tamoxifen 20 mg po daily for five years
- Raloxifene 60 mg po daily for five years

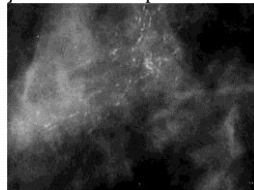
*may meet criteria for breast MRI if LTR is 20% or greater.

Lobular Carcinoma in Situ

- LCIS is considered a Stage 0 breast cancer although is not treated as a cancer.
- Usually pathologic diagnosis from biopsy for abnormal mammographic finding.
- Should be followed in High risk clinic.

Ductal Carcinoma in Situ

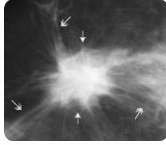
- Stage 0 Breast Cancer
- Mammographic finding that presents with suspicious calcifications (linear formation, pleomorphic shape)
- Treated with surgery, usually radiation and possible endocrine therapy.
- Good prognosis.



Invasive Breast Cancer

- Invasive Ductal Carcinoma (IDC) – most common, 80% of all invasive breast cancer are IDC
- Invasive Lobular Carcinoma (ILC) – can be mammographically occult, 10% of invasive breast cancers are ILC
- Other breast cancers:
 - *Medullary, tubular, mucinous, papillary- better prognosis
 - *Metaplastic carcinoma, mixed feature of ILC/IDC, micropapillary - poorer prognosis
 - *Breast Sarcoma

Spiculated Mass



Breastimaging.vcu.edu

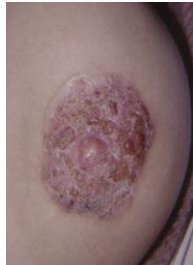
Breast Cancer

- Inflammatory Breast Cancer (IBC) - 1 to 3% of all breast cancers
- involve lymphatics.
- Can be mistaken for mastitis.
- Poorer prognosis than IDC/ILC
- Obtain imaging +/- core biopsy
- Punch biopsy
- Treatment is neoadjuvant chemotherapy, followed by surgery (modified radical mastectomy) then radiation.



Paget's Disease of the Nipple

- Originates in ducts, spreads to skin of the nipple and then areola.
- Accounts for 1% of all breast cancers
- Usually associated with DCIS or IDC
- Symptoms include itching, redness, flaking, crusting of skin on or around nipple
- Obtain imaging, core bx and punch bx



Prognostic Factors

- Estrogen/Progesterone Hormone Receptors
- Her 2 status
- Lymphovascular Involvement – cancer cells that are present in the blood vessels and lymphatic vessels
- Age
- Number of Affected Lymph Nodes
- Stage of Cancer – ranges from Stage 0 to Stage IV
- Ki-67 protein – cellular marker for proliferation
- Grade: poorly, moderately, or well differentiated

Prognostic Factors

Oncotype DX Score:

- Multigene expression test that predicts risk of recurrence and benefit of chemotherapy in women with early Stage I – II, node negative and estrogen positive and Her/2 neu unamplified breast cancer.
- Range is 0 to 100:
 0 to 18 – low risk
 18 to 31 – intermediate risk
 31 to 100 – high risk
 >25 usually recommend chemotherapy

Treatment of Breast Cancer

Surgery: treats local disease

- Mastectomy vs Breast Conservation
- Sentinel Lymph Node Biopsy vs Axillary Lymph Node Dissection

Radiation: Treats local disease

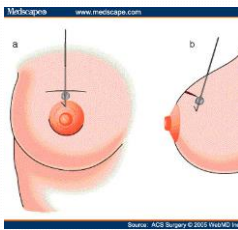
- External Beam Radiation
- Partial Breast Radiation

Chemotherapy: Treats systemic disease

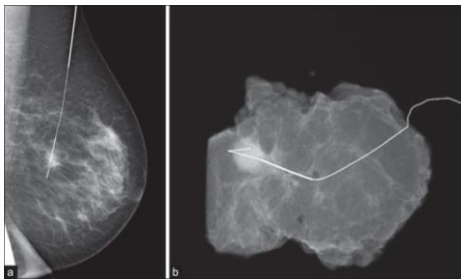
Breast Conservation Treatment

- Clear margins
- Willing to undergo radiation to reduce risk of local recurrence
- BCT + XRT = mastectomy in regards to survival
- BCT + XRT increases risk of recurrence only about 3 to 5% over mastectomy
- Quicker recovery, less pain, less time out of work and daily life
- For non palpable mass will need wire localization

Wire Localization



Wire Localization



Mastectomy

- Multicentric/multifocal breast cancer
- Usually no radiation required unless mass is greater than 5 cm or if positive lymph node.
- Lower risk of recurrence
- More extensive surgery with longer recovery time
- Reconstruction is always an option with flap procedure or implant in a staged fashion.
- Modified Radical Mastectomy = mastectomy with axillary lymph node dissection
- Contralateral Prophylactic Mastectomy

Sentinel Lymph Node Biopsy

Defined as the first lymph nodes receiving lymphatic drainage from the primary tumor and is now the standard of care over axillary lymph node dissection in a clinically and radiologically negative axilla in early stage breast cancer.

- Usually not indicated for low grade or intermediate grade DCIS
- Possibly indicated for high grade DCIS especially if patient is undergoing mastectomy
- Usually recommended for all invasive breast cancers

Sentinel Lymph Node Biopsy

- Nuclear Medicine injection - lymphazurin
- Blue Dye injection
- ACOSOG Z0011 : trial to determine whether ALND vs SLNB alone is beneficial for survival in breast conservation treatment in patients that will receive radiation and chemotherapy.

Lymphedema

- Occurs approximately 15% of the time. Occurs more frequently in women who are obese.
- Refer to PT – one that specializes in lymphedema if possible
- Lymphedema sleeve and glove
- ALND IS a reason to avoid blood draw, IVs, and BPs!!

Radiation

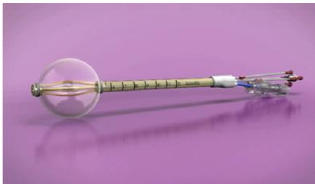
- Reduces the risk of local recurrence
- External Beam: approximately 6 weeks of treatment
- Used for larger tumors, node positive cancers
- Used to treat DCIS, IDC, ILC, IBC, chest wall involvement, positive margin after mastectomy
- Side effects include significant skin changes ranging from dry skin to desquamation of skin
- Survival benefit at 15 years, can be avoided in older population



Partial Breast Radiation

- Used to treat Stage I breast cancer
- Placed in lumpectomy bed by surgeon approximately 7 days after surgery
- Therapy is for five days, BID treatment
- Less side effects, rare skin changes
- Usually give abx during placement of catheter (Keflex, Bactrim)
- Catheter is pulled out in clinic comfortably after last treatment

Partial Breast Radiation



Swedish.org

Chemotherapy

- Triple negative, Her-2/neu amplified cancer will always be recommended for chemotherapy in most patients. Exclusion: elderly and comorbidities that would prohibit.
- Neoadjuvant chemotherapy is used to shrink a large mass to allow for breast conservation treatment.
- Adjuvant chemotherapy used after surgery to reduce risk of systemic disease
- Used to treat metastatic disease (liver, lungs, bone, brain)
*metastatic work up includes CT chest/A/P and bone scan. MRI of the brain if suspect metastatic disease to the brain

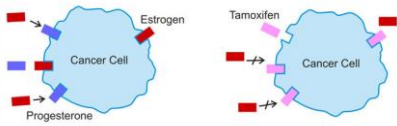
Chemotherapy

Endocrine therapy is used for ER/PR positive breast cancer to reduce the risk of recurrence (Selective Estrogen Receptor Modulators and Aromatase Inhibitors)

- *SERMs- block estrogen and progesterone receptors
 - Tamoxifen 20 mg po daily
 - Length of therapy is 10 years

Used in premenopausal and postmenopausal women with DCIS/invasive cancers

ER/PR positive cell



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BccMiami.com

Chemotherapy

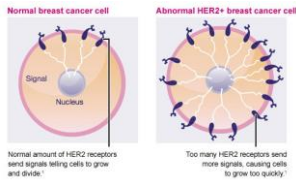
- Aromatase inhibitors - work by blocking the enzyme aromatase which turns the hormone androgen into small amounts of estrogen in the body.
 - Letrozole 2.5 mg po daily
 - Anastrozole 1 mg po daily
 - Exemestane 25 mg po daily

- *length of therapy is 5 years
- *used only in postmenopausal women

Chemotherapy

- Her 2 is a protein called human epidermal growth factor receptor 2 (HER2) that promotes the growth of cancer cells. In about 1 of every 5 breast cancers, the cancer cells make an excess of HER2 due to a gene mutation. This is called Her 2 neu amplified breast cancer.
- Treated with monoclonal antibody – Trastuzumab, Lapatinib and Pertuzumab. Therapy is every 3 weeks for one year.
- These cancers tend to be more aggressive.

Her 2 neu



Normal amount of HER2 receptors send signals telling cells to grow and divide.

Too many HER2 receptors send more signals, causing cells to grow too rapidly.

Aboutcancer.com

Chemotherapy/Endocrine/ Chemoprevention Side Effects

- Chemotherapy: heart failure (monoclonal antibodies, Anthracyclines) and neuropathy, changes in nailbed (Taxanes) in certain agents.
- Neutropenia – febrile, chills and malaise
- Tamoxifen: hot flashes, moodiness, thromboembolic events, endometrial cancer and cataracts
- Raloxifene: hot flashes, moodiness, leg cramps, thromboembolic events (less than Tamoxifen)
- Aromatase Inhibitors: joint pain and bone loss. Get baseline Dexascan and check every 2 years.

Survivorship

Visit focuses on:

- Current status of health (any concerns patient has regarding breast exam, any s/s of metastatic disease)
- Nutrition (offer referral to dietitian)
- Exercise (ACS guidelines)
- Alcohol in moderation (1 alcoholic drink daily)
- Smoking cessation (offer smoking cessation class)
- Avoidance of exogenous hormones
- Avoid natural supplements that include phytoestrogens
- Psychosocial coping – offer Behavioral Medicine/support groups

Survivorship

- Bone Health (Dexascan)
- Imaging: mammogram of lumpectomy breast every 6 months for 2 years, annual bilateral mammogram
- Maintain Vit D levels
- Financial Concerns
- Sexuality/HRT:
Venlafaxine 75 mg XR (Effexor) daily
Estrogen cream
Hyalo GYN – non estrogen vaginal lubricant
- Side effects of treatment:
Heart failure – ECHO/Cards consult
Neuropathy – treat with medications:
* Gabapentin 300 mg at bedtime po and titrate up
* Pregabalin 75 mg po BID, titrate up as needed

Purpose of High Risk Clinic

Identifies if a patient meets criteria

- to be considered high risk
- for chemoprevention
- for additional imaging over standard of care imaging
- to be referred for genetic counseling

BRCA Mutation

BRCA I – increase risk of breast, ovarian and prostate

- Breast – risk is approximately 50 – 70% higher than average woman
- Ovarian – risk is approximately 35 to 50% higher than average woman

BRCA Mutation

BRCA II – increase risk of breast, ovarian, prostate, melanoma and pancreatic

- Breast cancer risk is 40 to 55% higher than average woman
- Ovarian cancer risk is 20 to 30% higher than average woman
- Prostate cancer risk is 20 to 30 % higher for men
- Pancreatic cancer risk is 5% higher

BRCA positivity

- CBE every 6 months starting at age 25 years
- Screening starts at age 25 – 29 with breast MRI +/- mammogram
- Ages 30 – 75 years annual mammogram and MRI
- Transvaginal US with CA -125 semi-annually with high risk GYN
- Salpingo- oophorectomy approximately at the age of 35 to 40
- Prophylactic mastectomy with reconstruction is an option

BRCA positivity

- Dermatology referral for BRCA II positivity
- Psychosocial counseling needs to be addressed throughout process
- Consider chemoprevention with Tamoxifen/Raloxifene with medical oncology.
- For male BRCA positivity, refer to Urology.

NCCN Guidelines

Questions????