ABSITE Review: Breast

Helen M. Johnson, MD
January 14, 2021
Breast Cancer Screening

• Screening guidelines differ by society
• NCCN recommends annual mammogram starting at age 40 for average-risk women
• NCCN recommends annual MRI as a supplemental screening modality (usually starting at age 25) for high-risk women, including:
  • ≥20% lifetime risk of breast cancer
  • Known deleterious BRCA mutation or genetic disease such as Li-Fraumeni, Cowden
  • First-degree relative with one of the above
  • Hx chest XRT between 10-30yo
Deleterious BRCA mutations

- High lifetime risk of breast cancer (~55-70% BRCA1, ~45-70% BRCA2)
- Increased risk of ovarian cancer (~40-45% BRCA1, ~10-15% BRCA2)
- BRCA2 also associated with male breast cancer, prostate, pancreatic

Screening:
- Women
  - Annual clinical breast exam starting at age 25
  - Annual screening with MRI age 24-29; mammo +/- MRI age 30+
- Men
  - Annual clinical breast exam starting at age 35
  - Consider annual mammo at age 50 or 10 years before youngest family member diagnosed with male BC
  - Prostate cancer screening starting at age 40 for BRCA2

Discuss risk-reducing surgery:
- Bilateral mastectomy
- Bilateral salpingo-oophorectomy (after completion of childbearing or between ages 35-40 for BRCA1, ages 40-45 for BRCA2)
Diagnostic Breast Imaging

- If abnormal screening mammogram, get diagnostic mammogram +/- US.
- Breast complaints (e.g., nipple discharge, mastodynia) should at least be evaluated with screening if patient is due for it, and diagnostic imaging if not an obvious benign condition (e.g., fibrocystic disease).
- Breast masses should be evaluated with diagnostic imaging:
  - <30: US (+/- mammo)
  - 30+: US and bilateral mammo
  - Pregnant/breastfeeding: US first-line

Modalities:
- Mammogram vs US: can see fine calcifications, architectural distortion, asymmetry; less sensitive in the setting of dense breast tissue.
- MRI may be beneficial for very dense breasts, occult breast cancer.
Suspicious Findings

• Examples:
  • Mammo: pleomorphic calcifications (linear suggests DCIS), spiculated mass
  • US: hypoechoic mass with irregular borders and posterior shadowing

• Non-simple cysts (BI-RADS 3+) should be aspirated and if fluid bloody, send for cytology; if mass recurs then core needle biopsy

• Biopsies
  • Core needle biopsy (CNB) > fine needle aspiration (FNA)
  • Stereotactic, ultrasound-guided, MRI-guided

• If exam/imaging/biopsy are discordant, do an excisional biopsy
BI-RADS (for diagnostic imaging)

- 0: need more imaging or information
- 1: completely normal, no findings at all (routine screening)
- 2: +finding which is definitely benign (routine screening)
- 3: +finding, most likely benign (repeat imaging q6mo x 2yrs)
- 4: +finding, suspicious (biopsy recommended)
- 5: +finding, most likely malignant (biopsy)
- 6: +finding, known malignancy
Nipple Discharge

• More likely benign than malignant, but risk of malignancy increases with age
  • Most common pathology = intraductal papilloma
• Features concerning for malignancy:
  • Bloody or serous
  • Unilateral
  • Single duct
  • Spontaneous
  • Persistent
• Workup for pathologic nipple discharge
  • Diagnostic breast imaging (mammo, US, +/- MRI); if abnormal findings, biopsy
  • If no abnormal findings, ductography
  • If unable to localize lesion or discordant exam/imaging, terminal vs central duct excision
Fibroepithelial lesions: Fibroadenoma and Phyllodes Tumor

- Usually present as a mass: rubbery, mobile, painless
- Hormone sensitive: can enlarge during pregnancy, involute after menopause
- Workup: diagnostic imaging (US +/- mammo)
- If exam and imaging are concordant with fibroadenoma, can follow with q6mo US for 2 years to ensure no rapid growth (if so, excise) or confirm with biopsy
- Phyllodes tumor:
  - Epithelial and stromal components; +vimentin/actin
  - Can be benign, borderline, or malignant
  - WLE with 1cm gross margins; re-excise if needed to negative margins
  - Spread hematogenously so no need for SLNB
- If core needle biopsy shows indeterminate/“cellular” fibroadenoma, can’t distinguish from Phyllodes so do excisional biopsy
Risk lesions

- Anything with **atypia** needs an excisional biopsy as may harbor malignancy
  - Examples:
    - Atypical Ductal Hyperplasia (ADH)
    - Atypical papilloma/papillary lesion
  - **Exception**: routine excision of Atypical Lobular Hyperplasia (ALH) controversial
- If no invasive cancer on excisional bx, may benefit from chemoprevention (e.g. tamoxifen)
- Radial scar: needs excisional biopsy to exclude malignancy
  - other terms: complex sclerosing lesion, sclerosing ductal proliferation, sclerosing papillary proliferation (note NOT sclerosing adenosis)
  - “fibroelastic core”
DCIS

- May be a pre-malignant lesion
- About 25% harbor invasive cancer so need surgical excision

**Need at least 2mm margins**

- Most can be treated with breast conservation therapy (lumpectomy + XRT)
  - Radiation decreases the risk of recurrence of DCIS and invasive cancer
- Consider mastectomy if:
  - very large, multicentric (multiple quadrants), comedo necrosis, contraindication to XRT
  - ***If do a mastectomy, do a SLNB
- If ER/PR+ then give adjuvant endocrine therapy for risk reduction
- COMET trial: comparing active surveillance vs standard therapy for low-grade DCIS
LCIS

- Marker for increased risk of cancer (~1% per year)
  - Cancer can occur in any location, in either breast
  - If malignancy, usually is a ductal carcinoma
  - Discuss risk reduction strategies (endocrine therapy, prophylactic mastectomy)

- Usually no mammographic findings, so found incidentally on biopsies

- Loss of expression of E-cadherin

- 30% are multifocal and 30% are bilateral

- Routine excisional biopsy is controversial; if performed:
  - Classic LCIS: no goal for negative margins
  - Pleomorphic LCIS: behaves similarly to DCIS, so excise to negative margins
Breast Cancer Staging

- Note: AJCC 8th edition has 3 staging schema: anatomic stage, clinical prognostic stage, and pathologic prognostic stages
  - Prognostic stages include TNM as well as grade and ER/PR/HER2
- Anatomic T:
  - 1: <=2cm
  - 2: 2-5cm
  - 3: >5cm
  - 4: invades skin and/or chest wall (NOT pec major)
    - T4d = inflammatory
- Anatomic N:
  - 1: 1-3 axillary nodes
  - 2: 4-9 axillary nodes OR isolated internal mammary nodes
  - 3: 10+ axillary nodes OR supra/infraclavicular nodes OR internal mammary + others
Axillary Anatomy

• Levels
  • 1: lateral to pec minor
  • 2: deep to pec minor or interpectoral (Rotter’s nodes)
  • 3: medial to pec minor (infraclavicular)

• Important Nerves
  • Intercostobrachial n. – sensation to medial upper arm
  • Long thoracic n. – innervates serratus anterior (medial border of axilla)
    • Deficit = winged scapula
  • Thoracodorsal n. – innervates latissimus dorsi (lateral border of axilla)
    • deficit = weak arm adduction
  • Medial pectoral n. – innervates both pec Major and Minor
  • Lateral pectoral n. – innervates pec minor only
Treatment: Early Stage Breast Cancer

- For example: T1-3N0
- Surgery first
  - Mastectomy and Breast Conservation Therapy (BCT, i.e. lumpectomy + XRT) have equivalent survival, but BCT has slightly higher risk of recurrence
  - Contraindications to BCT
    - Not a candidate for XRT, e.g. pregnancy trimesters 1+2, prior chest radiation (relative), active connective tissue diseases (e.g. scleroderma, lupus)
    - Diffuse multicentric disease
    - Large tumor (eg >5cm)
    - High tumor to breast ratio
  - Negative margin = no ink on tumor; if positive, re-excise
  - SLNB with dual tracer (blue dye and radiocolloid)
    - Can do SLNB again if have a history of prior SLNB
    - If can’t map, levels 1+2 axillary lymph node dissection
Z11 Trial

• Adult women with small tumors (T1-2) with clinically negative nodes treated with BCT + SLNB, found to have low nodal burden (1-2 positive sentinel nodes): no further axillary surgery/whole-breast radiation versus axillary dissection had similar local recurrence and survival
Treatment: Locally Advanced Breast CA

• For example: T3N+, T4N0
• Neoadjuvant chemotherapy vs surgery first depending on resectability, subtype, whether patient wants breast conservation, etc
• Special case: **Inflammatory breast cancer**
  • Clinical diagnosis (erythema, edema, peau d’orange)
  • Skin punch bx: dermal lymphatic invasion is pathognomonic but not required for dx
  • Remember: T4, not stage 4
  • Neoadjuvant chemo, modified radical mastectomy, postmastectomy radiation, +/- endocrine therapy
  • Treatment *not* de-escalated if complete clinical response to chemo
Chemotherapy

• Indications:
  • Metastatic disease
  • Positive nodes
  • Triple negative
  • HER2+ (generally give systemic chemo and anti-HER2 agents)
  • ER+/HER2- >0.5cm, pN0: 21-gene assay score of 31+, possibly for 26-30

• Neoadjuvant vs adjuvant
  • Similar long-term survival/recurrence
  • Higher rates of BCT

• Common Regimens: ddAC→T, TC, TAC
  • Adriamycin/doxycyclin
  • Cyclophosphamide
  • Taxanes
  • risk of cardiomyopathy
  • risk of hemorrhagic cystitis
  • risk of peripheral neuropathy
Radiation

• For locoregional control
• Is part of breast conservation therapy
  • Can be omitted in women >70 if ER+ T1N0 and they do endocrine therapy
• Post-mastectomy radiation (chest wall and regional lymph nodes)
  • >5cm tumors
  • Positive margin(s) that can’t be re-excised; close <1mm margin
  • 4+ positive lymph nodes; consider for 1-3 positive nodes
• Inflammatory breast cancer
Endocrine Therapy and Targeted Therapy

- Endocrine Therapy: for ER+ disease
  - Tamoxifen: pre-menopausal (risk of uterine cancer, DVT/PE)
  - Aromatase Inhibitors: post-menopausal
  - At least 5 years

- Targeted anti-HER2 therapy = trastuzumab (Herceptin), pertuzumab
  - Often given with cytotoxic chemotherapy
Male Breast Cancer

- Risk factors: BRCA2, Klinefelter’s
- Similar treatment and prognosis as for women, except:
  - breast conservation not typically offered
  - chemo if >0.5cm
  - If ER+, tamoxifen (limited data on aromatase inhibitors)
Pregnancy-Associated Breast Cancer

• Radiation contraindicated so usually require mastectomy
  • Exception: breast conservation in third trimester if ok to delay XRT until postpartum
• Blue dye contraindicated
• No chemotherapy in the first trimester and in the last few weeks before delivery
Paget’s

- Marker of underlying DCIS/invasive cancer thus needs imaging workup
- Eczematous changes of nipple/areola complex (NAC)
- Skin punch biopsy shows large cells with pale cytoplasm, prominent nucleoli
- Central partial mastectomy to remove NAC + whatever surgery is needed for primary mass identified through workup, often total mastectomy on ABSITE
Miscellaneous Benign

- Mondor’s disease (superficial thrombophlebitis)
  - Idiopathic, acute onset, 30-60yo
  - Treatment: NSAIDs, warm compresses
- Lactational mastitis: continue to breastfeed
- Abscess: (serial) aspiration(s) > percutaneous drainage > I&D
  - Most common organism: Staph aureus; if lack of improvement, cover for MRSA
- Idiopathic granulomatous mastitis
  - Think of this like Crohn’s of the breast: granulomas, fistulae, DON’T OPERATE
  - Rule out TB with acid-fast bacilli stain
- Periductal mastitis: recurrent subareolar abscesses in smokers, STOP SMOKING
Miscellaneous

- **Galactorrhea**
  - Check meds, serum HCG, TSH, prolactin (if elevated, MRI pituitary)

- **Breast implant-associated anaplastic large cell lymphoma (BIA-ALCL)**
  - Fluid collection +/- erythema, years after textured implants
  - Aspirate fluid and send for cytology/pathology

- **Gynecomastia**
  - Painful tissue +/- subareolar masses
  - Check meds, serum HCG, LH, testosterone, estradiol
Questions?