Breast Cancer Update 2018

The Latest in Diagnosis and Treatment

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GENERAL, BREAST, AND COSMETIC SURGEON – TOLEDO CLINIC

Objectives

- Identify breast lesions and masses, and know the appropriate workup for a breast mass
- List appropriate patient recommendations based on breast imaging BIRADS guidelines
- Recognize a general understanding of the latest in breast cancer diagnosis and treatment

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- Practice Focus – Treating breast cancer patients from diagnosis through definitive surgery including oncoplastic breast conserving therapy, and implant based breast reconstruction.
- Disclosures: No commercial affiliations/grants/speaking fees

Factors to Consider in the Breast Cancer Patient

- Patient History and Physical Exam
- Family History/Genetics
- Radiology
- Tumor Biology
- Surgery
- Screening Guidelines

Patient History and Physical Exam

Patient: “The problem is that obesity runs in our family.”

Doctor: “No, the problem is no one runs in your family.”

Patient History and Physical Exam

- How the patient presents
  - Screening vs. Symptomatic
- Medical History
  - General medical history, personal history of breast other cancers
- Surgical History
  - Breast biopsies, cosmetic breast surgery
- Social History
  - Smoking

Family History/Genetics

Q:What's the fastest way to determine the sex of a chromosome?

A: You pull down it's GENES!

Familial Inheritance

- Overall less than 15% of women with breast cancer have a first degree relative with the disease
- X chromosome
- Maternal family members
  - First degree relative (mother, sister, or daughter)
    - Doubles a woman's breast cancer risk
    - Having two first degree relatives triples a woman's breast cancer risk

Genetic Inheritance

- BRCA1 and BRCA2 mutation
  - Together account for 20-25% of ***familial*** breast cancers and 5-10% of all breast cancers
  - Account for 15% of all ovarian cancers
  - Predisposed to bilateral breast cancer, aggressive, triple negative
  - If BRCA mutation found in parent, child has 50% of inheriting mutation
  - 55-65% of patients with BRCA1 mutation and 45% of patients with BRCA2 mutation will develop breast cancer by age 70
  - 39% of patients with BRCA1 mutation and 17% of patients with BRCA2 mutation will develop ovarian cancer by age 70

Radiologic Evaluation

X-Ray: Where shooting people is not only ok, but is your job!

Radiologic Evaluation

- BI-RADS
  - Breast Imaging Reporting And Data System
  - History
    - Standardization amongst radiology community
    - Allows for concise and unambiguous understanding of patient records between multiple doctors and medical facilities
  - Published by the American College of Radiology (ACR)
    - Publications
      - Mammography – Fifth Edition
      - Ultrasound – Second Edition
      - MRI – Second Edition

Mammogram – BIRADS 0

Mammogram – BIRADS 0

- Assessment
  - **Incomplete**
- Recommendations
  - Immediate follow up/confirmatory imaging
    - Ultrasound
    - Diagnostic Spot Compression Mammogram
    - MRI

Mammogram – BIRADS 1

Mammogram – BIRADS 1

- Assessment
  - **Negative**
- Recommendations
  - Normal yearly mammograms

Mammogram – BIRADS 2

Mammogram – BIRADS 2

- Assessment
  - **Benign**
- Recommendations
  - Normal yearly mammogram

Mammogram – BIRADS 3

Mammogram – BIRADS 3

- Assessment
  - **Probably Benign**
- Recommendations
  - Short Interval (6 month) radiologic follow up
    - Diagnostic/spot compression mammogram
    - Ultrasound
    - MRI

Mammogram – BIRADS 4

Mammogram – BIRADS 4

- Assessment
  - **Suspicious**
- Recommendations
  - Biopsy
- Further delination
  - 4A – low suspicion for malignancy
  - 4B – intermediate suspicion for malignancy
  - 4C – moderate concern, but not classic for malignancy

Mammogram – BIRADS 5

Mammogram – BIRADS 5

- Assessment
  - **Highly Suggestive of Malignancy**
- Recommendations
  - Biopsy
  - Consideration can be given to single stage surgical management

Mammogram – BIRADS 6

Mammogram – BIRADS 6

- Assessment
  - **Biopsy proven known malignancy**
- Recommendations
  - Used in the setting of neoadjuvant therapy to assess progression

Ultrasound

- Benign Characteristics
  - Well circumscribed
  - Smooth borders
  - Hypoechoic
  - Lesion is wider than it is tall
  - No posterior shadowing

Ultrasound - Benign

Ultrasound

- Suspicious Features
  - Irregular borders
  - Hyperechoic
  - Internal debris
  - Posterior shadowing

Ultrasound - Suspicious

Breast MRI

- Dense breasts
- Complicated breast lesions
- Evaluation of patients with BRCA mutation
  - complete radiologic evaluation

Breast MRI

Breast MRI

Tomosynthesis

- Digital Breast Tomosynthesis
  - Useful for dense breast tissue
  - 3D breast image
  - Similar to CT but with less radiation
  - 11 images taken in one arc around the breast
  - 3D rendering produces highly focused image

Tomosynthesis

Molecular Breast Imaging (MBI)

- Also knowns as Scintimammography
- Used particularly in dense breast tissue, post operative scar tissue, breast implants
- Injection of technetium 99 sestamibi
  - Malignant breast tissues concentrate Technetium 99 to a much greater extent and more frequently than benign disease
  - High specificity for breast cancer (66% positive biopsy vs 29% with mammographic or ultrasound guided biopsy)
  - High sensitivity (91%) and high specificity (93%)
- Not useful for routine screenings due to exposure of entire body to radiation, which can cause distant cancer

Tumor Biology

"If it moves its biology. If it stinks its chemistry. If it doesn't work it's physics."

Tumor Biology

- Two types of breast cells
  - Ductal
  - Lobular
- Two Depths of Invasion
  - In Situ
  - Invasive
- 4 main types of breast cancer
  - Ductal Carcinoma In Situ
  - Invasive Ductal Carcinoma
  - Lobular Carcinoma In Situ
  - Invasive Lobular Carcinoma

Tumor Biology

- Other types of breast cancer
  - Ductal Type
    - Tubular Carcinoma
    - Medullary Carcinoma
    - Mucinous Carcinoma
    - Papillary Carcinoma
    - Cribriform Carcinoma
  - Inflammatory Breast Cancer
  - Paget's Disease of the Nipple
  - Phyllodes Tumors of the Breast

Tumor Biology

- Hormone Receptor Status
  - Estrogen Receptor
  - Progesterone Receptor
  - Her2/Neu Receptor
- What does this mean?
  - Targeted endocrine therapy based on receptor status
    - Tamoxifen - targets estrogen receptor
    - Anastrozole – targets estrogen receptor
    - Herceptin – targets Her2/neu
    - Newer agents – Kadcyla – herceptin + emtansine

Tumor Biology

- Ki-67 Tumor Marker
  - Ki-67 – protein found in growth and division states of cell proliferation, but absent in resting phase of cell growth
  - High Ki-67 – indicates an aggressive tumor and predicts a poor prognosis
  - Studies show tumors with high Ki-67 have a poor prognosis and more likely to recur, however are very responsive to chemotherapy
  - Use: Determining whether or not adjuvant chemotherapy should be used for tumors where it would not otherwise be recommended – i.e. small, node-negative tumors.

Tumor Biology

- Oncotype Dx
  - Genomic test that analyzes the activity of a group of genes that can affect how a cancer is likely to behave and respond to treatment
    - Risk of early stage ER positive breast cancer recurrence
    - How likely patient is to benefit from chemotherapy after breast cancer surgery
- Mammaprint
  - Genomic test to analyze early stage breast cancers
    - Stage 1 or stage 2
    - Invasive
    - Smaller than 5cm tumor
    - ER positive or negative

Surgical Management

"I've had so much plastic surgery, when I die they will donate my body to Tupperware"

Surgical Management

- Breast Conserving Therapy
  - Lumpectomy with radiation
  - Oncoplastic breast conserving therapy with radiation
- Mastectomy
  - Without reconstruction
  - With reconstruction
    - Immediate vs. Delayed
    - Autologous vs. Implant Based
- Axillary Lymph Node Management (with BCT and Mastectomy)
  - Sentinel Lymph Node Biopsy (SLNB)
  - Axillary Lymph Node Dissection (ALND)

Surgical Management

- Breast conserving therapy
  - Traditional
    - Lumpectomy followed by radiation
    - If breast tissue remains, it must be radiated
  - Oncoplastic Resection
    - Equivalent oncologic safety
    - Increased cosmetic satisfaction

Oncoplastic Resection

Surgical Management

- Mastectomy
  - Without reconstruction
  - Breast Prostheses
    - Silicone – natural feel

Breast Reconstruction

- Autologous (TRAM, Latissimus Dorsi Flap, DIEP, SGAP)
- Implant Based
- Immediate vs. Delayed

Breast Reconstruction - Autologous

Breast Reconstruction – Implant Based

- Three Stage Procedure
- Stage 1
  - Performed concurrently with mastectomy
    - Dermal matrix sling between inferior border of pectoralis and superior border of rectus abdominis
    - Tissue expander placed
    - Serially expanded over 8-12 weeks
- Stage 2
  - Implants exchanged for silicone gel or form stable anatomic implants
- Stage 3 (optional)
  - NAC reconstruction vs. Tattoo

Adjuvant Therapy

"Chemotherapy is brutal. The goal is pretty much to kill everything in your body without killing you."

Adjuvant Therapy

- Chemotherapy
  - Refer to tumor biology
  - Cytotoxic chemotherapy
  - Endocrine therapy
- Radiation
  - Whole breast radiation
  - Chest wall radiation
  - Axillary radiation

Breast Cancer Screening Guidelines

"Mammogramming your breasts is infinitely more important than Instagramming them."

US Preventative Services Task Force (USPSTF) Guidelines

- Women age 50-74:
  - Biennial screening mammogram
- Women age 40-49:
  - Individual patient decision to undergo biennial screening mammograms. Beginning screening mammograms at a younger age and screening more frequently may increase the risk for overdiagnosis and subsequent overtreatment.
- All women
  - Evidence insufficient to assess benefits and harms of DBT as primary screening
  - Evidence insufficient to assess benefits and harms of adjunctive screening including breast ultrasound, breast MRI, DBT, or other methods in women identified to have dense breasts on an otherwise negative screening mammogram

American Cancer Society Screening Guidelines

- For women at high risk
  - 10 years sooner than age of first degree relative when diagnosed
- For women at average risk
  - Age 40: yearly mammograms choice
  - Age 45: yearly mammograms
  - Age 55: Biennial if benign
  - Screening should continue as long as woman is in good health and is expected to live 10 years or longer
  - Breast Tomosynthesis may be considered for screening especially in women with dense breast tissue

American Society of Breast Surgeons

- Recommendations for asymptomatic Intermediate Risk Women
  - Consider use of risk assessment tool to determine an estimated lifetime risk for breast cancer
    - GAIL model (older model)
    - National Cancer Institute Breast Cancer Risk Assessment Tool
      - www.cancer.gov/bcrisktool
  - Consider use of annual screening mammography for women with greater than an estimated 15% lifetime risk for breast cancer or recommend entry into clinical trials evaluating risk based screening (the future in my opinion)

American Society of Breast Surgeons

- Recommendations for asymptomatic High Risk Women (20-25% or greater estimated lifetime risk)
  - Discuss use of a risk assessment tool to determine estimated lifetime risk for breast cancer and risk of a germ line mutation predisposing to breast cancer
  - Discuss annual screening with both mammography and breast MRI compliant with American Cancer Society and NCCN guidelines

Final Thoughts

- Breast cancer patients are amongst my favorite people to take care of
- Prevention magazine 2006
  - Leading cause of death in women – Heart Disease
  - Leading cause of cancer death in women – Lung Cancer
  - Leading healthcare related fear in women – Breast Cancer
- Breast cancer is still a diagnosis to be taken seriously, and can cause significant morbidity and mortality. However with early detection, comprehensive care and close follow up, it is a disease women can survive with instead of pass from.

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