Breast Cancer

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DISCLOSURE

Neither I nor my spouse has any relevant financial relationships to products or devices related to the content of this CME activity.

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OBJECTIVES

- Breast cancer risk factors
- Screening guidelines for “high risk” patients
- Signs and symptoms of breast cancer
- Indications for Mammogram, Ultrasound, and MRI
- Racial disparities in breast cancer
Breast Cancer Risk Factors

- **Female**
- 1 in 8 women
- 70% - no other risk factors
- < 1% of all breast cancers occur in men
Total Familial/Hereditary BC in US

- Annual BC incidence in US: 209,060
- 15 to 20% Familial: 31,359 – 41,812
- 5 to 10% Hereditary: 10,453 -- 20,906

Jemal et al, CA Cancer J Clin 60:277-300, 2010
Breast Cancer Risk Factors

- Female
- Personal history of breast cancer
Women undergoing breast conservation (lumpectomy and XRT), the treated breast has a 1% per year risk of developing breast cancer.
Breast Cancer Risk Factors

- Female
- Personal history of breast cancer
- First-degree relative with breast cancer
- BRCA 1, BRCA 2
Prophylactic Surgery for BRCA 1 & BRCA 2

- Prophylactic BSO
  - Ovarian cancer risk reduction as high as 95%
  - Breast cancer risk reduction by 50%

*Finch et al. JAMA 296:185-192, 2006*
Breast Cancer Risk Factors

- Female
- Personal history of breast cancer
- First-degree relative with breast cancer
- BRCA 1, BRCA 2
- History of mediastinal radiation
Breast Cancer After Hodgkin’s Disease (Mediastinal Radiation)

- Hancock
- Travis
- Wolden
- Bhatia

Relative Risk

- 4x
- 3.2 to 8x
- 4.7x
- 7.5x (35% by age 40 yrs)

Hancock  J Natl Cancer Inst 1993; 85:25
Travis  JAMA 2003; 290:465
Wolden  J Clin Oncol 2000; 18:765
Other Risk Factors

- Early menarche
- Late menopause
- Nulliparous
- First birth after age 30
- Most likely due to long exposure to unopposed estrogen.
“High Risk” Patients

- BRCA1 and BRCA2
- Women with multiple family members with breast or ovarian CA
- Patients with >20% lifetime risk, according to risk assessment tools
- Women treated for Hodgkin’s disease (chest radiation b/n the ages of 10 and 30)
- Li-Fraumeni syndrome, Cowden syndrome, hereditary diffuse gastric cancer or first-degree relatives with one of these syndromes
Screening Recommendations for “High Risk” Patients

- Screening Mammogram
- Screening Breast MRI
- Annual Exam starting at age 30

American Cancer Society
Sensitivity of Breast MRI

- **Invasive carcinoma**
  - High sensitivity approaches 100%

- **Ductal Carcinoma In Situ (DCIS)**
  - Variable sensitivity 68 – 94%

*Menell JH. Breast J. 2005; 11:382
Bazzocchi M. AJR 2006; 186:1723
Van Goethem M. eur J Radiol 2007; 62:273*
Signs & Symptoms of Breast Cancer

- Nothing (detected on screening)
- Clinical Breast Examination
  - Palpable lump
  - Nipple or skin retraction
  - Erythema
  - Peau d’orange
  - Nipple discharge
Teaching Points

- Palpable lump
  - Diagnostic mammogram
  - Ultrasound

- Invasive Lobular Carcinoma (ILC)
  - Most difficult cancer to diagnose on mammogram
  - Usually palpable
  - Usually seen on Ultrasound
Signs & Symptoms of Breast Cancer

- Nothing - Screening Mammogram
- Clinical Breast Examination
  - Palpable lump
  - Nipple or skin retraction
  - Erythema
  - Peau d’orange
  - Nipple discharge

Diagnostic Mammogram & Ultrasound
Ultrasound Evaluation

- Goes hand in hand with mammographic evaluation

- Key to determining whether the
  - Mass (seen on mammogram) – cyst, benign mass or suspicious mass
  - Palpable lump - fibroglanular tissue, cyst, benign mass or suspicious mass
  - Abnormality seen on MRI can be biopsied under ultrasound guidance
Nipple Discharge

- Green, yellow, brown - BENIGN
  - Cysts, duct ectasia
- Milky
  - Endocrine (lactation)
  - Tumor (prolactinoma)
  - Drugs (dopamine receptor blockers)
- Spontaneous bloody or clear discharge –
  IMAGING WORK UP
Spontaneous Bloody or Clear Nipple Discharge

- Most common cause is a solitary papilloma
- Clear discharge
  - 1-2 % malignancy
- Bloody discharge
  - 13-23 % malignancy
Imaging of Bloody/Clear Nipple Discharge

- Mammogram
- Ultrasound
- If mammogram and US are negative then
  - MRI and/or Galactogram
- Surgical consultation
Indications for (Diagnostic) Breast MRI
Pre-operative Breast MRI

- Extent of disease – primary tumor size
- Chest wall involvement
- Nipple involvement
- Nodal involvement: axilla and internal mammary chain (XRT planning)
- Contralateral breast assessment
## Synchronous, Contralateral Breast Cancer Found by MRI

<table>
<thead>
<tr>
<th>Study (year)</th>
<th>#Pts</th>
<th># Cancer</th>
<th>%</th>
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<tbody>
<tr>
<td>Fischer (1999)</td>
<td>336</td>
<td>15</td>
<td>4</td>
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<tr>
<td>Woo (2000)</td>
<td>90</td>
<td>5</td>
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<tr>
<td>Kuhl (2000)</td>
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<td>45</td>
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<tr>
<td>Slanetz (2002)</td>
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<td>4</td>
<td>24</td>
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<tr>
<td>Liberman (2003)</td>
<td>223</td>
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<tr>
<td>Lehman (2007)</td>
<td>969</td>
<td>30</td>
<td>3</td>
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<tr>
<td>Pediconi (2007)</td>
<td>87</td>
<td>18</td>
<td>21</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2432</td>
<td>129</td>
<td>5</td>
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</table>
Indications for (Diagnostic) Breast MRI

- Preoperative staging
- Assess response to neoadjuvant chemotherapy
## Multimodality Assessment of Response

41 women with IIB-III palpable breast cancer treated with Taxol and doxorubicin

<table>
<thead>
<tr>
<th>Modality</th>
<th>Agree w/ path</th>
<th>overestimate</th>
<th>underestimate</th>
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<tbody>
<tr>
<td>Clinical exam</td>
<td>19%</td>
<td>26%</td>
<td>55%</td>
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<tr>
<td>Mammo</td>
<td>26%</td>
<td>23%</td>
<td>51%</td>
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<tr>
<td>Ultrasound</td>
<td>35%</td>
<td>13%</td>
<td>52%</td>
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<tr>
<td>MRI</td>
<td>71%</td>
<td>6%</td>
<td>23%</td>
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</tbody>
</table>

*Yeh. AJR 2005; 184:868*
Indications for (Diagnostic) Breast MRI

- Preoperative staging
- Assess response to neoadjuvant chemotherapy
- Axillary adenopathy with unknown primary
- Post-surgical excision with positive margins and possible conservation
- Nipple discharge (negative mammogram/US)
Racial Disparities in Breast Cancer

Cultural and Linguistics Competency (CLC)
Identification of Racial Disparities in BC


- Blacks and Hispanics were less likely than Whites to receive XRT. *(Martinez SR et Int. J Radiat Oncol Biol Phys. 2010 Nov 1;78(3):787-92)*

- Blacks and Hispanics had higher risk of 30, 60, and 90 day treatment delay compared with Whites. *(Fedewa SA et J Health Care Poor Underserved. 2011;22(1):128-41)*

**Cultural and Linguistics Competency (CLC)**
Racial disparities persisted despite adjusting for insurance and socioeconomic status

- Black (vs white) women had less definitive local regional therapy, hormonal therapy, and chemotherapy.
- Hispanic women were also less likely to receive hormonal therapy.

Freedman RA et Cancer. 2011 Jan 1;117(1);180-9

Cultural and Linguistics Competency (CLC)
Early Onset Breast Cancer Among Mexican-origin Women

- Hispanic women are at high risk for early onset, premenopausal breast cancer

- More likely to be diagnosed with a more advanced stage of breast cancer

Miranda PY et Cancer. 2011 Jan 15;117(2):390-7

Cultural and Linguistics Competency (CLC)
Early Onset Breast Cancer Among Mexican-origin Women

- 20% more likely to die of breast cancer
- Additional 3700 lives could be saved if 90% of women aged 40 or greater were screened

*Miranda PY et Cancer. 2011 Jan 15;117(2):390-7*

*Cultural and Linguistics Competency (CLC)*
Early detection and treatment can often mean the difference between life and death.
Recommendations For Early Breast Cancer Detection

- Screening mammogram every year -
  - Starting at age 40
  - Should continue as long as they are in good health

American Cancer Society
American College of Radiology
American College of Surgeons
American College of Obstetricians and Gynecologists
Recommendations For Early Breast Cancer Detection

- High risk patients – starting at age 30
  - Screening mammogram
  - Screening MRI

American Cancer Society
American College of Radiology
Thank You!