Ultrasound Evaluation of the Male Breast

Elizabeth D. Brown, M.D.
Medical Director
Breast Center of Greensboro Imaging
Greensboro Radiology
Male breast anatomy

- 2\textsuperscript{nd} through 6\textsuperscript{th} ribs
- Sternum to the midaxillary line
- Most men have predominantly fatty tissue with few ducts and stroma
- Women have ducts, stroma and glandular tissue
- 57\% of males over 44 years of age have palpable breast tissue
Gynecomastia

- Greek “gynaik” (female) + “mastos” (breast)
- Hyperplasia of the ductal and stromal elements due to intrinsic or hormonal stimulation
  - Increased estrogen to testosterone ratio
- Neonates, adolescents, and elderly
- Causes: endocrine, hormonal disorders, Klinefelter’s syndrome, systemic diseases, neoplasms, obesity, and drugs
Gynecomastia

- Medications/drugs: responsible for up to 20% of post-adolescent cases
- Cimetidine, omeprazole, spironolactone, antipsychotic drugs, antiandrogens, and GNRH analogs used to treat prostate cancer, antiretroviral therapy for HIV
- Marijuana, androstenedione (performance enhancing food supplements), anabolic steroids
Gynecomastia

Presentation:
- Palpable abnormality
- Focal tenderness or burning sensation

On physical exam, soft mobile tender mass in the retroareolar region

Usually concentric with the nipple

Mild, moderate, severe

Unilateral or asymmetric (72%)

Usually associated with pain
Mammographic patterns

- Nodular
  - Fan-shaped, radiating from the nipple
  - Symmetric or more prominent in the upper outer quadrant
  - Spherical or blending with the surrounding fat

- Dendritic
  - Retroareolar soft tissue density with prominent extensions into the deeper adipose tissue

- Diffuse
  - Similar to heterogeneously dense female breast
Gynecomastia

Ultrasound

- Hypoechoic to hyperechoic tissue extends from behind the nipple
- Avascular or hypervascular, depending on the stage
  - More vascular in chronic cases
- Difficult region to image, may shadow
- May appear dendritic “spider-like”
Gynecomastia ultrasound
Breast ultrasound tip

0 degrees

30-60 degrees
Male breast cancer

- Accounts for 0.17% of cancers in men
- Accounts for 0.5-1% of all breast cancer
Male Breast Cancer

- In the U.S. in 2012, 2,190 new cases of invasive breast cancer will be diagnosed in men.
- 410 men will die of breast cancer.
- Breast cancer is 100 times less common among men than among women.
- Lifetime risk of being diagnosed with breast cancer for men is about 1 in 1,000.
- Men and women have a similar prognosis when diagnosed with breast cancer, stage by stage.
### 2012 Estimated US Cancer Deaths

<table>
<thead>
<tr>
<th>Cancer Site</th>
<th>Percentage</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung &amp; bronchus</td>
<td>29%</td>
<td>301,820</td>
<td>275,370</td>
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<tr>
<td>Prostate</td>
<td>9%</td>
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<td></td>
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<tr>
<td>Colon &amp; rectum</td>
<td>9%</td>
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<tr>
<td>Pancreas</td>
<td>6%</td>
<td></td>
<td></td>
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<tr>
<td>Liver &amp; intrahepatic bile duct</td>
<td>5%</td>
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<tr>
<td>Leukemia</td>
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<td></td>
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<tr>
<td>Esophagus</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urinary bladder</td>
<td>3%</td>
<td></td>
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<tr>
<td>Non-Hodgkin lymphoma</td>
<td>3%</td>
<td></td>
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<tr>
<td>Kidney &amp; renal pelvis</td>
<td>3%</td>
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<tr>
<td>All other sites</td>
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</tr>
<tr>
<td>Lung &amp; bronchus</td>
<td>26%</td>
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</tr>
<tr>
<td>Breast</td>
<td>14%</td>
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</tr>
<tr>
<td>Colon &amp; rectum</td>
<td>9%</td>
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<tr>
<td>Pancreas</td>
<td>7%</td>
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<tr>
<td>Ovary</td>
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</tr>
<tr>
<td>Leukemia</td>
<td>4%</td>
<td></td>
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</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uterine corpus</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liver &amp; intrahepatic bile duct</td>
<td>2%</td>
<td></td>
<td></td>
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<tr>
<td>Brain/other nervous system</td>
<td>2%</td>
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<tr>
<td>All other sites</td>
<td>24%</td>
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</table>

American Cancer Society, 2012
Male breast cancer

Risk factors:
- Family history, BRCA1, BRCA2
- Jewish, Egyptian, or West African descent
- Advanced age
- Exposure to ionizing radiation at a young age
- Exposure to electromagnetic field radiation
- Cryptorchidism
- Testicular injury
- Klinefelter’s syndrome
- Liver dysfunction
Male breast cancer

Presentation
- Painless mass
  - Usually central, often eccentric to the nipple
  - +/- fixed
- Possible nipple discharge
  - Bloody
  - Serous
- Possible secondary findings
  - Nipple inversion
  - Skin thickening
  - Axillary adenopathy
Male breast cancer: pathology

- 85% are infiltrating ductal cancers
- Most are moderately or poorly differentiated, but low-grade and tubular carcinomas have been described
- DCIS is found in 35-50% of male breast cancers
- Pure DCIS is less common, less than 5%
  - Usually papillary subtype (75%)
  - Usually a nodular partially cystic mass frequently associated with nipple discharge
Male breast cancer: pathology

- Rare tumors
  - Oncocytic carcinoma
  - Cystosarcoma phylloides
  - Lobular carcinoma

- Metastases
  - Prostate carcinoma primary is the most common
  - Hematopoietic, lymphoreticular, melanoma, lung

All lesions described in female patients can be seen in male patients (lobular derived lesions are rare)
Male breast cancer: association

- 40% of male patients with breast cancer have gynecomastia
- No causal link between gynecomastia and breast cancer has been documented
Male breast cancer

Mammographic findings

- Masses in the subareolar region
  - Usually eccentric to nipple
- Margins typically partially indistinct but vary:
  - Well-defined
  - Ill-defined
  - Spiculated
Mammographic findings (cont.)

- **Shape**: round, oval, irregular, or lobulated
- **Calcifications** are infrequent (13-30%)
  - Coarser and less frequently linear compared with calcifications seen in female breast cancer
  - Presence of any calcifications should raise suspicion in the male breast
Male breast cancer

Ultrasound findings

- Complex cystic mass
  (cystic with soft-tissue mass projecting into the lumen)
  - Finding should suggest malignancy
  - Aspiration of the cyst fluid alone may not yield diagnosis
  - Core biopsy of the solid component may be necessary

- Mixed solid and cystic masses

- Solid lesions
  - Heterogeneous
  - Hypoechoic
53 yo with ESRD; palpable mass in the left subareolar region
53 yo with ESRD; palpable mass in the left subareolar region
74 yo with palpable mass in the left breast
74 yo with palpable mass in the left breast
74 yo with palpable mass in the left breast
65 yo with right breast mass
65 yo with right breast mass
68 yo with left breast mass
68 yo with left breast mass
68 yo with left breast mass
72 yo with bilateral breast masses
72 yo with bilateral breast masses
72 yo with bilateral breast masses
72 yo with bilateral breast masses
67 yo with left breast mass
67 yo with left breast mass
67 yo with left breast mass
67 yo with firm left breast mass and nipple retraction
67 yo with firm left breast mass and nipple retraction
67 yo with firm left breast mass and nipple retraction
61 yo with h/o NHL and chest XRT; right breast mass
61 yo with h/o NHL and chest XRT; right breast mass
61 yo with h/o NHL and chest XRT; right breast mass
55 yo with left breast mass
55 yo with left breast mass
55 yo with left breast mass
76 yo with left breast mass
76 yo with left breast mass
76 yo with left breast mass
78 yo with right breast mass
78 yo with right breast mass
78 yo with right breast mass

RIGHT BREAST PALPABLE 10 O’CLOCK 2 CM FROM NIPP

RIGHT BREAST PALPABLE 10 O’CLOCK 2 CM FROM NIPPLE RAD
Summary

Gynecomastia
- Most common abnormality in males presenting with a palpable mass
- Not a risk factor for breast cancer
- Can obscure breast cancer
- Reassurance without biopsy is appropriate in most cases

Male breast cancer
- 1% of all breast cancer
- Same prognosis as female breast cancer, stage by stage
Summary - Imaging

Gynecomastia

- Mammogram
  - Location – concentric to nipple
  - Pattern
    - Nodular
    - Dendritic
    - Diffuse

- Ultrasound
  - Normal appearing tissue corresponding to palpable abnormality
  - May appear dendritic, spider-like
  - May shadow
  - Do not be afraid!
Male breast cancer

Mammogram
- Location – Eccentric to nipple
- Appearance
  - Mass-like
  - Distortion
  - Calcifications are suspicious regardless of appearance

Ultrasound
- Discrete mass
- Cystic masses are suspicious regardless of the appearance
Thank you!

bethbrownmd@gmail.com