Basic Imaging for Breast Cancer Detection, Diagnosis, and Staging

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Purpose

• To review the imaging modalities used to detect, diagnose and stage breast cancer

• **Outline:**
  • Metastatic Disease
  • Locally Advanced Disease
  • Early disease
Evaluating Metastatic Disease
Indications to Evaluate

- Distinguishing between distant metastatic disease and locally advanced disease is essential for guiding treatment.

- Check for metastatic disease when:
  - Tumor > 5 cm with axillary lymph nodes positive for metastatic disease.
  - Tumor of any size with 4+ axillary lymph nodes positive for metastatic disease.
  - Tumor of any size with positive axillary lymph nodes fixed to each other or other structures.
  - Tumor directly extends to chest wall or skin.
  - Patient with Stage II disease and new focal symptoms.
Imaging Modalities

- Ultrasound (Liver)
- Radiography (Chest)
- Bone Scan
- PET/CT

Limited

Maximal
Liver Ultrasound

- Not used in centers with access to PET/CT
- Used to screen liver for metastasis in patients with abnormal liver function tests
Radiography (Chest X-ray)

- Not used in centers with access to PET/CT
- Used to screen for lung metastasis
Bone Scan - Indications

- Demonstrates presence of bone metastasis earlier than x-ray, CT, MRI scan
- Stage 2+ breast cancer with focal back pain or a pathologic fracture
Indications - PET

◆ Characterization of the primary lesion
  - Benign vs. malignant
  - Tumor grading and prognosis
  - Direct site of biopsy

◆ Staging
  - Evaluate tumor extent at initial diagnosis
  - Evaluate for regional or distal recurrences

◆ Response to therapy
Breast Cancer

Coronal images

Left supraclavicular, Bilateral IM LNs

Axial images

All LNs <1 cm on CT

Left Axillary LNs

Courtesy of Dr. Hubert Vesselle
Breast cancer with axillary and IM nodes

Courtesy of Dr. Hubert Vesselle