The Art and Science of Reading a Mammogram

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42 y/o Nulliparous lady

High Resolution Monitors
Back-to-Back Placement
Systematic Viewing Approach

Bright Viewing Box
Minimum Ambient Light
What To Look For?

- Most Early Cancers present as Nonspecific Focal Asymmetry/Subtle Architectural Distortion before they become recognizable Masses.

- Do Not Fuss over Microcalcifications
  - Only 12% of Invasive cancers present as Microcalcifications
  - Only 25% of DCIS present as Microcalcifications
Where to Look?

‘Wrong Places’
What is the next step?

Work Up of Suspicious Finding

Spot compression view
When to Worry?

- Bulging contours
- No interspersed fat
- Distortion
- Evolving asymmetry
- Seen in the ‘wrong place’

‘Targeted Ultrasound’
47 y/o with palpable lump Left side
55 y/o Lady
How to perceive cancers arising within dense fibroglandular tissue?

Look at the fat-glandular tissue interface for contour deformity
Contour of breast parenchyma should be outwardly convex

Pulling in of the interface by the desmoplastic reaction of an invasive cancer—HOOK SIGN

*Harvey JA et al Radiology: Volume 248(1)July 2008*
Contour of fibroglandular parenchyma may be scalloped
Microcalcifications

- Perception of microcal is easy but.....
- Characterization is difficult

- Trick is to establish the location
  - Ducts----- Mostly malignant
  - Lobule-----Mostly benign
  - Outside the TDLU------Definitely Benign

- Morphology and distribution provide clues to the location of microcal
29 y/o with vague Rt periareolar thickening

**Worrisome features**
- Ductal/segmental distribution
- Fine, Pleomorphic
- Evolving over time
- Palpable abnormality

**BIRADS 5**
Faint Indeterminate Microcalcifications

BIRADS 2/3/4?
Can Ultrasound Help?

- In pts with indeterminate microcalcifications without associated findings on mammography, negative US findings have a high rate of benign results (75%)

- Visible calcifications within heterogeneous hypoechoic parenchyma or within complex hypoechoic masses of taller-than-wide shape on US may increase the probability of malignancy
  
  - Kang SS et al, Eur J Radiol 2008 Aug
Not all microcalcifications need biopsy?

BIRADS 3 or 4?
Punctate calcifications

- Punctate ca++ differs from round Ca++ only by size (0.5mm)

- Typically benign morphology provided the distribution is:
  - Regional, multiple clusters
  - Diffuse

- Fibrocystic change/ sclerosing adenosis
How to Categorize Cysts?

High Resolution US should be performed
43 y/o with palpable lump

BIRADS 0
Thick walled Complicated cyst

What BIRADS 3 or 4?

BIRADS 3
45 y/o with lump in the left breast

BIRADS 0
Simple vs Complicated vs Complex cyst

- Cyst should be judged with the worst features
  - Thick internal septations
  - Mural solid nodules
  - Microlobulated margins
  - Fibrovascular stalk

- 20% of complex cysts are malignant
- BIRADS 4b/4c
- VAB or Surgical excision more appropriate
Why 4a, 4b, 4c?

- BIRADS 4 has a wide range (2%-95%) of probability of malignancy. Good to stratify into 4a, 4b and 4c
  - BIRADS 4a, 4b----awaited results is benign
  - BIRADS 4c-------- awaited result is malignant

- Establish Imaging-histology concordance to minimize false negatives due to sampling error

- If the Bx result is nonconcordant--- Further action warranted (Repeat biopsy(VAB)/ Surgical excision)
What to report in a diagnosed case of breast cancer?

Driven by your Breast Surgeon----

- Where is the tumor?
- How big is the tumor?
- What is its distance from the skin and Pectoralis major?
- Is it solitary? Multifocal? Multicentric?
- Abnormal axillary lymph nodes?
Local Extent of Disease

Mammogram: Area of abnormality extends over 6 cm
All microcalcifications must be taken into account for assessing Tumour Burden. US may lead to underestimation.
59 y/o with single palpable lump
Local Extent of Disease

- US Complimentary to Mammography in showing Additional Lesions
- Most of the times they suffice and MRI is not required
40 y/o with single palpable lump
Specimen radiography
Indications for Preop MRI in Patients Suitable for BCS

EUSOMA WG Consensus

- Mammo/US Discrepancy in Size > 1cm
- Newly Diagnosed Invasive Lobular Cancer
- Newly Diagnosed BC in High Risk Women
Lastly, a Diagnostic Problem Unique to our Clinical Practice!!
30 y/o with vague lump 12'O'C

Invasive Lobular Ca
Radial Scar
Granulomatous matitis
Granulomatous Mastitis
Our task is not only to find breast cancer when it is still curable, but also to rule out the presence of breast cancer in those women who do not have the disease.