

BI - RADS[®] interpretation of breast US

임 호 순

전남대병원 영상의학과

BI-RADS: Ultrasound

I. Breast Imaging Lexicon - Ultrasound

A. Background Echotexture

유방촬영술과 마찬가지로 조직구성이 매우 다양하며 background texture가 병변을 발견하는 sensitivity에 영향을 줄 수 있다.

1. Homogeneous background echotexture - Fat
2. Homogeneous background echotexture - Fibroglandular
3. Heterogenous background

B. Masses

Mass는 공간을 차지하여 서로 다른 두 방향에서 보여야 한다.

1. Shape
 - a. Oval - elliptical or egg - shaped (may include two or three undulations)
 - b. Round - spherical, ball - shaped, circular or globular
 - c. Irregular - neither round nor oval in shape
2. Orientation
 - defined with reference to the skin line
 - a. Parallel - long axis of a lesion parallels the skin line (wider - than - tall or horizontal)
 - b. Not parallel - AP or vertical dimension is greater than the transverse dimension also be obliquely oriented to the skin line (taller - than - wide or vertical)

3. Margin

a. Circumscribed

well defined or sharp, with an abrupt transition between the lesion and the surrounding tissue

b. Not circumscribed

Indistinct - no clear demarcation between a mass and its surrounding tissue

Angular - some or all of the margin has sharp corners, often forming acute angles

Microlobulated - short cycle undulation impart a scalloped appearance

Spiculated - formed or characterized by sharp lines projecting from the mass

4. Lesion boundary

- describes the transition zone between the mass and the surrounding tissue

a. Abrupt interface - sharp demarcation can be imperceptible or a distinct well - defined echogenic rim of any thickness

b. Echogenic halo - no sharp demarcation, bridged by an echogenic transition zone

- associated with some carcinomas and abscesses

5. Echo pattern

a. Anechoic - without internal echoes

b. Hyperechoic - having increased echogenicity relative to fat or equal to fibroglandular tissue

c. Complex - mass contains both anechoic (cystic) and echogenic (solid) components

d. Hypoechoic - defined relative to fat; masses are characterized by low - level echoes throughout

- e. Isoechoic - having the same echogenicity as fat
- 6. Posterior acoustic features
 - a. No posterior acoustic features
 - b. Enhancement - appears as a column that is more echogenic deep to the mass
 - c. Shadowing - decreased posterior echoes; refractive edge shadowing is excluded associated with fibrosis, with or without underlying carcinoma
 - d. Combined pattern - more than one pattern of posterior attenuation
- 7. Surrounding tissue
 - a. Ducts
Abnormal caliber and/or arborization
 - b. Changes in Cooper's ligament
Straightening or thickening of Cooper's ligament
 - c. Edema
Increased echogenicity of surrounding tissue and reticulation
 - d. Architectural distortion
Disruption of normal anatomic planes
 - e. Skin thickening
normal skin - 2 mm or less except in the periareolar area and lower breasts
 - f. Skin retraction /irregularity

C. Calcifications

- 1. Macrocalcifications
coarse calcifications that are 0.5 mm or greater in size
- 2. Microcalcifications
 - a. Microcalcifications out of a mass
situated in fat or fibroglandular tissue
less conspicuous than calcifications in a mass
 - b. Microcalcifications in a mass
embedded in a mass, well depicted
punctate, hyperechoic foci in a hypoechoic mass

D. Special cases

- 1. Clustered microcysts
A cluster of tiny anechoic foci, each smaller than 2 to 3 mm, with thin (< 0.5 mm) intervening sep-

tations and no discrete solid component

Causes - fibrocystic changes, apocrine metaplasia, ...

- 2. Complicated cysts
homogenous low-level internal echoes, fluid-debris levels do not contain solid mural nodules

cf) Complex mass -

A discrete solid component places the cystic lesion

Requiring aspiration or other intervention

- 3. Mass in or on skin
- 4. Foreign body
- 5. Lymph node - intramammary
- 6. Lymph node - axillary

E. Vascularity

- 1. Present or not present
when scanning with color or power Doppler, little or no pressure should be applied
- 2. Present immediately adjacent to lesion
- 3. Diffusely increased vascularity in surrounding tissue

II. Reporting System

A. Overview and report organization

- 1. Clinical history
- 2. Comparison with previous studies, if available and pertinent
- 3. Statement of scope of examination (targeted or survey) and technique used
- 4. Analysis of the significant lesions or findings
 - Type of breast tissue
 - Lesion size (at least two dimensions)
 - Location of lesion (using clock face, distance from the nipple)
 - Succinct characterization of abnormal findings using BI-RADS feature descriptors
- 5. Correlation with physical, mammographic or MRI finding(s)
- 6. Overall assessment
- 7. Management recommendations

<Assessment categories>

a. Assessment is Incomplete

Category 0 : Need Additional Imaging Evaluation

b. Assessment is Complete - Final Categories

Category 1 : Negative

- no abnormality

Category 2 : Benign Finding(s)

- negative for malignancy
- simple cysts, intramammary lymph nodes, breast implants, stable postsurgical changes and probable fibroadenomas unchanged

Category 3 : Probably Benign Finding - Short-interval Follow-Up Suggested:

- Solid mass with circumscribed margins, oval shape and horizontal orientation, most likely a fibroadenoma
- A less than 2 percent risk of malignancy
- Nonpalpable complicated cysts, clustered micro-cysts

Category 4 : Suspicious Abnormality - Biopsy Should be Considered:

- intermediate probability of cancer, ranging from 3 percent to 94 percent
- low (4a), intermediate (4b), or moderate (4c) likelihood of malignancy
- Require tissue sampling
- Solid mass without all of the criteria for fibroadenoma and other probably benign lesions

Category 5 : Highly Suggestive of Malignancy - Appropriate Action Should be Taken:

- 95 percent or higher risk of malignancy

Category 6 : Known Biopsy - Proven Malignancy - Appropriate Action Should Be Taken:

- Lesions with biopsy proof of malignancy prior to institution of therapy

참 고 문 헌

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