US IN 411 LOCALIZATIONS OF NONPALPABLE BREAST LESIONS

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The localization of nonpalpable breast lesions has become of great increasing medical interest since the number of these lesions has been growing by using high resolution diagnostic equipments. But while it is now commonly known that the mammographic screening of women without symptoms allows to find lesions at a nonpalpable stage and therefore there is need of stereotaxic localization after a biopsy by means of fine needle (FNAB) or Core biopsy through mammographic guide not that well known is the capacity of the echography in finding early-stage lesions. The use of this technique by High Frequency High Resolution (HFHR) transducers and with appropriate experience and knowledge allows to find out and biopsy pathological process very small in size in dense or mainly dense breast.

The precise localization of nonpalpable lesions is extremely important not only for the surgeon but also for the pathologist. The localization under US guide in surgical position of the patient, with arms abducted at 90 degrees, allows the direct approach to the lesion in antero-posterior way choosing the shortest track, this making possible the whole resection of the affected sector and of the wire track, and enables a skin incision directly on the lesion itself.

Material and Methods

In these last 10 years we have performed 411 localizations of nonpalpable lesions echographically detected using US. In all these cases we have utilized a wire consisting of a terminal hook "hook-wire". The localization has been done almost frequently on the day before surgery or the same morning of the operation just before starting with the sleeping patient. The selection of the hook-wire depends on the consideration that this wire is particularly fixed interiorly to the lesion, it is flexible enough so that the patient does'nt feel any particular discomfort till the moment of the operation when it is inserted the
evening before and it allows the introduction of a stiffening cannule which make it possible for the surgeon to better catch the wire. This is particularly important in very rich fibroglandular tissue breast. Firstly we have used a 7.5 MHz sector transducer and in the last 7 years we have used a HFHR 10-13 MHz transducer of Esaote. All the lesions received previous FNAB with an ABS syringe and 21G needle or core biopsy with Pro-Mag 1.2 14G short modified tru-cut needle. After localizing the lesion the needle is inserted under echoscopic guide nearly as far as the posterior margin of the lesion and the wire tip gets pushed from the needle as far as the margin itself. Gradually the needle is drawn back and the wire is pushed down until the needle is completely out of the skin keeping always under visual control the wire position. If the lesion is very near to the fascia the needle track is little more oblique. If the lesion is localized the evening before surgery the wire portion prominent on the skin is softly wind in a gauze which is fixed by an adhesive drape. At the moment of surgery a stiffening cannule is inserted on the wire which helps in finding the lesion. If the lesion is nonpalpable in surgical specimen an US examination is performed in a small water tank in order to visualize the lesion and the wire in place.

Results

The success rate of the localization has been 100%. Of the 411 lesions 236 were carcinomas (57.4%) and 175 (42.6%) were benign. The stage of carcinomas was Tis in 41 cases (10%), Tismi (micro invasive) in 13 cases 3.2%), T1a in 42 cases (10.2%), T1b in 108 cases (26.2%) and T1c in 32 cases (7.8%). Of benign lesions 7 were LAH (1.7%) and 14 were DAH (3.4%). Papillary tumor has been found in 27 cases (6.6%), Scleroelastosis in 15 cases (3.6%), Fibroadenoma in 33 cases (8%), Ductal adenoma in 6 cases (1.4%), Sclerosing adenosis in 6 cases (1.4%), Complex Proliferative lesions in 43 cases (10.4%), Phyllodes tumor in 1 case (0.2%), Others in 23 cases (5.6%). (Table I) In this last group are included fibrocystic disease with or without epithelial proliferation, focal granulomatous mastitis. In the group of complex proliferative lesions are included a variety of proliferative and sclerosing lesions. The most frequent component of these lesions was the scleroelastosis mixed with different single or multiple proliferative components. Even if the lesion was complex the dimensions were very small. Amongst the carcinoma the smallest infiltrating lesion resulted to be 3mm while amongst the benign lesion group the smallest lesion resulted to be a 2mm ductal adenoma. The greater has been a case of stromal pseudoangyomatous hyperplasia.
Discussion

The preoperative localization of the breast lesions by US guide is extremely important from the surgeon's perspective because it is realized by means the introduction of the needle facing the breast with the patient in supine position and the arms at right angle that is the same position in which the breast will remain during the surgical procedure. It represents the correct way to guide the surgeon to the lesion in a direct way and is of great interest in conservative surgical treatment. Such a position, in fact, blocks relatively the breast on the thoracic wall and shortens the distance between the skin and the target and permits an accurate judgement not only of the topographic location of the lesion but also its exact distance from the skin, from the fascia and from the nipple. Our data, with Benign / Malignant ratio of 1/1.1, suggest that US localization is an accurate and effective technique and is of great advantage in the highly conservative treatment.

The major complications associated with wire localization including failure in excise the lesion, vasovagal reaction, hematoma, pneumothorax never occurred in our experience. Because the wire is inserted into the lesion and in supine position under constant visual control retraction or migration are not been observed. Inadvertent cutting of the wire during surgery with retention of fragment within the breast is another complication and it is happened in only 1 case in a very dense, fibrotic breast. To our knowledge no medical complication associated with this retained fragments has been reported. The verification of successful excision of lesion by means the scanning of freshly excised specimen avoid to miss the lesion. Our experience shows that US in the operating room is the more rapid and efficient technique to localize and excise the non palpable breast lesion.

References


411 HOOK-WIRE LOCALIZATION MALIGNANT LESIONS ANALYSIS

<table>
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<th>Stage</th>
<th>N°</th>
<th>Total Ca</th>
<th>%</th>
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<td>41</td>
<td>10</td>
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<tr>
<td>T1mi</td>
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<td>5.5</td>
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<tr>
<td>T1a</td>
<td>42</td>
<td>10.2</td>
<td>17.8</td>
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<tr>
<td>T1b</td>
<td>108</td>
<td>26.2</td>
<td>45.7</td>
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<tr>
<td>T1c</td>
<td>32</td>
<td>7.8</td>
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236 57.4
411 HOOK - WIRE LOCALIZATION
BENIGN LESIONS ANALYSIS

LAH 7 1.7 4
DAH 14 3.4 8
Papillary Tumor 27 6.6 15.4
ScleroElastosis 15 3.6 8.6
Fibroadenoma 33 8 18.8
Complex Prolif. Lesions 43 10.4 25.4
Ductal Adenoma 6 1.4 3.4
Sclerosing Adenosis 6 1.4 3.4
Others 23 5.6 13.1
Phyllodes Tumor T1c 1 0.2 0.6

175 42.6

Benign / Malignant ratio = 0.7 /1

Table I
SONOGRAPHIC FINDINGS OF PAGET'S DISEASE

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Purpose: To evaluate the sonographic findings of Paget's disease in breast.

Materials and Methods: We retrospectively reviewed the sonographic findings of 13 patients with pathologically proved Paget's disease of the breast. We analysed the nipple or subareolar density change, presence of mass, parenchymal distortion, and presence of calcification. We also assessed the color Doppler findings of two patients. Sonographic findings were correlated with those at clinical, and mammographic examination.

Results: Of these 13 patients, the sonographic findings were atypical subareolar hypoechogenicity (12/13), hypoechoic mass (5/13) and ductal dilatation (2/13). Color Doppler findings of one of two cases was slightly increasement of vascularities in subareolar hypoechoic mass, and in all of two cases, resistive index were below 0.7. The mammographic findings of nine were asymmetric increased density, of six were clustered microcalcification. The clinical findings of seven were nipple retraction, those of seven were bloody discharge.

Conclusion: In Paget's disease of the breast, the sonographic findings were subareolar hypoechogenicity, hypoechoic mass and ductal dilatation.
A-040

HISTOPATHOLOGICALLY CONFIRMED BENIGN AND MALIGNANT PHYLLODES TUMORS: IMAGING CHARACTERISTICS OF MAMMOGRAPHY AND SONOGRAPHY

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**Purpose:** To characterize the imaging findings of pathologically confirmed benign and malignant phyllodes tumors

**Materials and Methods:** Clinical and imaging findings were reviewed in 79 women with 85 phyllodes tumors (68 benign, 17 malignant) confirmed by histopathology. Forty-one of these tumors were evaluated with mammography and thirty of these tumors were also evaluated with sonography.

**Results:** The size of tumors was ranged 1-15cm in diameter, benign tumor was 4.47cm and malignant tumor was 6.23cm in mean diameter. Mammography showed lobulated masses in 19 (61.3%) benign tumors and 6 (54.5%) malignant tumors. Circumscribed tumor margins were evaluated 61.3% and 63.7%, respectively. Sonography showed solid, hypoechoic masses in 5 (71.4%) cases of malignant tumors and 7 (30.4%) cases of benign tumors. At sonography, cystic areas suggested necrosis were seen in 7 (100%) cases of malignant tumors and 2 (8.7%) cases of benign tumors.

**Conclusion:** Malignant phyllodes tumor tends to be large, inhomogeneous, solid, hypoechoic mass rather than benign tumor. Low echoic cystic changes within tumor appear to be associated with a higher likelihood of malignancy.
INVASIVE LOBULAR CARCINOMA OF THE BREAST: IMAGING FINDINGS

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Purpose: To determine the frequency of overlooked multicentric invasive lobular carcinomas by mammography.

Material and Methods: Twenty-six women with invasive lobular carcinoma who had screen-film mammography and biopsy at our institution were enrolled in this study. All mammograms were retrospectively reviewed for benign or suspicious microcalcification. Findings of other imaging study (sonography and MRI), fine needle aspiration were also correlated with the surgical pathology.

Result: The rate of false-negative findings on initial mammograms was 19% (5/26), focal density asymmetry only was shown in 2 cases (8%). Associated adjacent microcalcifications were in 8 cases (31%). Eight cases had additional sonographic examinations and all tumors could be detected. One tumor was falsely diagnosed as benign initially and one showed significant size discrepancy (3 cm vs. 7cm). Nine cases were proved to have multicentricity (35%) but only one could be detected by mammography (1/9) and two by sonography (2/3). The false negative rate of fine needle aspiration (FNA) by palpation was 36% (5/14), by ultrasound-guided was 50% (3/6).

Conclusion: The false-negative rates for the diagnosis of invasive lobular carcinoma by mammography and FNA were higher. MRI was expected to play a role in diagnosing multicentric in invasive lobular carcinoma.
Purpose: To evaluate the radiologic features of metastatic tumors to the breasts.

Materials and Methods: We retrospectively reviewed the mammographic (n=14) and ultrasonographic (n=13) features of sixteen patients who had pathologically proven metastatic tumors to the breast (age range: from 19 to 69 years, average age: 42 years). The primary malignancies were melanomas (n=4), stomach cancers (n=4), lung cancers (n=3), contralateral breast cancers (n=2), rhabdomyosarcomas (n=2), and neuroblastoma (n=1).

Results: The metastatic tumor to the breast represented single or multiple lesions with variable size. Mammography showed round to oval shaped radio-opaque nodular lesions (n=9) with well defined (n=5) or ill defined border (n=4). In two patient with breast metastasis from stomach cancers showed diffuse bilateral involvement like inflammatory carcinoma. Nine patients showed associated secondary signs. Calcification was not associated in all of 14 cases. In ultrasonography, there were round or oval shape (n=7), irregular shape (n=4) and diffuse involvement (n=2). Internal echogenecity of lesions were variable. The depth of lesions were superficial (subcutaneous fat and/or subcutaneous fat-parenchymal interface) in four patients. Associated secondary findings were detected in eleven patients.

Conclusion: Metastatic tumors to the breast could be either single or multiple. Relatively well circumscribed radio-opaque mass with paucity of secondary sign or associated calcification in mammography and superficial location in ultrasonographically suggest metastastasis to the breast in patients with underlying known primary malignancies.
METASTATIC CARCINOMA TO THE BREAST

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Purpose: Malignant breast tumors consist mostly of primary breast cancer, but the breast is an uncommon organ for involvement by metastatic. Breast metastasis shows variable radiographic findings and it is not easy to diagnose metastatic carcinoma to the breast. The purpose of this study was to evaluate the radiographic characteristics of breast metastasis.

Materials & Methods: The total number of patients with pathologically-proven primary and metastatic carcinoma of the breast for 6 years was 2158 and metastatic carcinoma was found in 18 patients. We analyzed 13 cases which were examined by radiographic study (mammogram: 8 cases, ultrasound (US): 11 cases, chest CT: 2 cases). The mean period of metastasis to the breast after the diagnosis of primary carcinoma was 18.3 months.

Results: The classifications of primary malignancy were as follows: stomach cancer (5), melanoma (2), contralateral breast carcinoma (2), lymphoma (2), cervical cancer (1), lung cancer (1). Among all 13 cases of breast metastasis, unilateral lesion of the breast was found in 9 cases and bilateral lesion was found in 4 cases. Multiplicity of the lesion was shown in 12 cases. The one remaining case showed diffuse skin thickening without mass and was metastasis of stomach cancer. Among 8 mammogram cases, 4 showed mass lesion and 4 cases showed diffuse increased density. Three of 4 cases which showed no evidence of mass on mammogram revealed mass lesion in US. Among 10 cases which revealed mass lesion in US, 3 cases showed a well-defined margin and 7 cases showed a less well-defined infiltrative margin. There was no evidence of calcification. Nine cases showed diffuse skin thickening and edema. Lymphatic dilatation of skin and breast parenchyma showed in 8 cases and ipsilateral axillary lymph node enlargement showed in 6 cases. Two cases with chest CT (lymphoma (1), melanoma (1)) showed multiple masses of both breasts and Chest CT was helpful in determining breast metastasis.

Conclusion: The characteristic finding of metastatic carcinoma to the breast is multiple masses with an ill-defined margin, skin thickening and edema, lymphatic dilatation of skin and breast parenchyma, bilateral lesion, and no evidence of calcification, in comparison to primary breast carcinoma.