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Ultrasound of mammography detected microcalcifications

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Background: The purpose of this study is to show the benefits of high frequency ultrasound (US) examinations as a part of the diagnostic procedure of suspicious mammography detected microcalcifications, especially those beyond reach of stereotaxic biopsy.

Materials and Methods: 36 patients with mammographically suspicious microcalcifications underwent ultrasound examination (10−14 Mhz probe). 86% of the patients (31/36) underwent ultrasound guided fine needle cytologic aspiration and all 36 of them were subjected to biopsy. Open biopsy after preoperative marcation was conducted on 28 patients (23 US guided, 5 mammography guided preoperative marcations). 5 patients underwent stereotaxic biopsy and 3 patients open biopsies without marcation − palpable masses.

Results: Out of 36 patients with mammographically suspect microcalcifications 29 were US detected − 81%. 24 of the detected, (24/29 − 83%) were malignant: 11 DCIS, 12 CDI, 1 malignant tumor phylodes. Out of 5 detected benign microcalcifications biopsy detected various forms of fibrocystic illnesses with or without atypia. In cases of 7 patients where microcalcifications were not detected by US, the examination nevertheless found parenhim distortion in 2 cases (1 ca ductale microinvasivum 5 mm in size, 1 sclerotic adenosis), while in remaining 5 cases no US disorders were found (biopsy under mammography control − nonproliferative fibrocystic changes).

Conclusion: In significant percentage of cases it is possible by the way of precisely aimed US examination using high frequency probe to diagnose mammographically detected microcalcifications, verify them citologically and proceed with biopsy after preoperative marcation under US guidance. The procedure is significant primarily for microcalcifications that are beyond the reach of stereotaxic biopsy (small breast, marginal and superficial localizations and localizations near thoracic wall and towards the axillary tail), also the patient is spared of exposure to ionizing radiation. Other benefits of US procedure also include lower costs, decreased time of procedure, improved patient comfort and lack of breast compression.

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Evaluation of B3-lesions diagnosed at percutaneous biopsy and surgical results after excision

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Background: In our country the national screening program was built up starting 7/2006.

All minimal invasive breast interventions are prospectively entered into the regional screening RIS data base. After surgery the final histopathologies and postoperative diagnoses are entered. To evaluate the final results after excision of B3/4 lesions depending radiological presentation and histology at percutaneous biopsy.

Material and Methods: Between 7/2006 and 9/2008 3925 percutaneous breast biopsies (2423 core needle biopsies = CNB and 1502 stereotactic vacuum assisted breast biopsies = VAB) were performed in 290775 screened women, including 114 B3/B4 lesions among 2423 CNBs and 218 B3/B4 lesions among 1502 VABs. By 9/2008 follow-up data after surgery were available for 86 B3/4-lesions at CNB and 128 B3/4-lesions at VAB.

Results: Among the 86 CNBs, 66.3% of B3/4-lesions concerned masses/densities w/wo microcalcifications with a PPV of 33.3%, 16.3% concerned microcalcifications with a PPV of 35.5% and 17.5% architectural distortions/asymmetries with a PPV of 6.9%. Among the 128 VABs 78.1% of B3/4 lesions concerned microcalcifications with a PPV of 21%, 10.4% concerned masses/densities with a PPV of 17.3 and 4.7% concerned architectural distortions with a PPV of 0%. The highest PPV was observed for papillomas with atypias (76%), followed by FEA with LN (50%, one lesion), by ADH (28.9%), radial scars (4.6%) and LN (0%).

Conclusion: Further analyses and data may in the future aid to avoid excision of certain B3/4 lesions depending on individual risk factors, biopsy method, radiological appearance and histology from percutaneous biopsy.

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Morphological features of MR mammography in HER2-overexpressed breast cancer patients

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Background: HER2 overexpression is a marker of poor prognosis in breast cancer. The purpose of this study was to correlate retrospectively kinetic and morphologic MR features with the prognostic factor c-erbB-2 in invasive breast cancer.

Materials and Methods: A total of 84 patients, 43 with advanced invasive ductal breast cancer and HER2 overexpression, estrogen and progsterone receptor positivity ("triple positive") underwent 3D (Gd)-enhanced 1.5T MR mammography preoperatively using a T1-w FLASH pulse sequence. The control group included 41 patients with triple negative invasive ductal breast cancer. Two radiologists assessed the images in consensus reading. MR features included tumour shape, margin, presence of rim enhancement and washout phenomenon. These features were correlated with the immunohistochemically detected biomarkers. A chi-square test was performed to explore the associations of the morphological patterns with the prognostic factors. SAS-JMP and R-program was used for statistical analysis.

Results: Lesions with HER2 overexpression showed early peripheral rim enhancement and central necrosis/fibrosis (high intratumoral signal intensity on T2-weighted images) with a trend of superiority ($\leqslant 0.02$) as compared to triple negative breast cancer patients.

Conclusion: The presence of early peripheral rim enhancement and central necrosis/fibrosis on dynamic MR mammography can serve as imaging markers for HER2 overexpression. Breast MR features as markers of poor prognosis are reflecting important informations for the pretreatment decision making in patients with advanced breast cancer.

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Is surgical excision required for B3 breast lesions diagnosed at vacuum-assisted core biopsy?

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Introduction and Background: The aim of this study is to assess whether open surgical excision is required following a B3 diagnosis on 11 gauge vacuum assisted core biopsy (VACB) of radiologically-indeterminate breast lesions.

Material and Methods: Twenty-four women with a histological diagnosis of the B3 category on vacuum-assisted core biopsy of radiologically indeterminate breast lesions were identified over a 3 year period.

The VACB procedure was performed under stereotactic (n = 21), ultrasound (n = 2) or MRI (n = 1) guidance by breast radiologists using the Suros system. Microcalcifications (MCC) were evident on specimen radiographs and microscopic slides in all cases of mammographic MCC (n = 20). Nineteen patients underwent open surgical excision following radiological localisation. The remaining 5 patients who had 'complete' removal of the radiological abnormality using VACB under ultrasound (n = 2, papillomas) or stereotactic (n = 4, atypical ductal hyperplasia) guidance were followed up clinically and radiologically.

Results: The median patient's age was 49 years (range = 36−70). Three patients (15.7%) were upgraded to ductal carcinoma in situ (DCIS) at open surgical excision. The VACB showed atypical lobular hyperplasia (ALH) in these 3 patients associated with MCC (n = 2) or mass lesion (n = 1).

No single case of upgrade to invasive breast cancer was identified in our series.

The remaining patients (84.3%: 16 of 19) had a benign biopsy. The open surgical biopsy in these patients showed benign intraductal papillomas in 2, atypical hyperplasia in 7 and benign MCC without atypical in 7 patients. The upgrade to malignancy was significantly associated with the presence of ALH, a BI-RADS category of 4 and incomplete removal of the radiological abnormality by VACB.

After a mean follow up of 18 months (range: 6−30 months), no malignancy was detected in the 5 patients who did not undergo open surgical biopsy.

Conclusion: Open surgical excision is strongly recommended for Atypical Lobular Hyperplasia identified in VACB specimens. VACB can be a safe alternative to surgery in the treatment of B3 lesions in selected cases, providing thorough multidisciplinary discussion has taken place.