

due to the depth of calcification. USCB was performed on 37 patients. 31/37 USCB obtained a definitive result (83.8%). USCB was non-diagnostic in 4/9 benign (44.4%) and 4/28 (14.3%) malignant lesions biopsied. The absolute sensitivity for malignancy using US guided biopsy was 85.7% (24/28). US guided biopsy correctly identified invasive disease in 12/20 (60%) cases. Abnormal flow on PD did not discriminate between benign and malignant abnormalities but was present in 56.1% of malignancies containing invasive disease. The presence of focal flow on PD was useful in directing successful biopsy in 8 cases.

Conclusion: The combination of high frequency US with PD is useful in the detection and guidance of successful US guided biopsy of micro-calcifications particularly in the detection of invasive foci in areas of in-situ carcinoma.

319

POSTER

Pre-operative detection of breast cancer multicentricity with MRI

M. Douek¹, J. Vaidya¹, T. Davidson¹, S.R. Lakhani², M.A. Hall-Cragg³, K. Blanchard³, M. Baum¹, I. Taylor¹. *Departments of ¹Surgery; ²Histopathology; ³Radiology, University College London Medical School, London W1P 7LD, UK*

Introduction: Whilst radiography relies on tissue density for breast cancer detection, contrast-enhanced magnetic resonance imaging (MRI) relies on vascularity and vascular permeability. In this study we compared the pre-operative detection of cancer foci by MRI with radiological-histological examination of resected specimens (modified Egan's method).

Method: Ten patients with newly diagnosed breast cancer underwent pre-operative contrast-enhanced breast MRI using a transverse T1-weighted three dimensional (3D) FLASH sequence. After surgical excision the specimens were fixed and cut in the same plane as the MRI. After histopathological sampling by an experienced pathologist, specimen slices were radiographed. Two observers identified radiological abnormalities (calcifications, densities or spiculations) and all lesions that were deemed suspicious by either observer were sampled and examined histologically. MRI images were reviewed independently and findings compared with histology.

Results: On MRI, 19 enhancing foci separate from the main tumour were identified in 7 out of 10 patients. On radiography of specimen slices, 71 suspicious areas were sampled and histological examination of these revealed 15 areas of in-situ (9) or invasive cancer (6) in 5 patients. All 5 patients with cancer foci were amongst the 7 patients who had enhancing foci on MRI. In 2 of these 5 patients, the tumour was surrounded by widespread enhancement on MRI and all 11 areas sampled showed cancer foci. In all wide local excision specimens, the enhancing foci on MRI were within 11 mm of the tumour edge and therefore within the resected specimen. Assuming that the radiological-histological correlational method is the gold standard for detection of cancer foci, the sensitivity of MRI is 93% (14/15) and specificity 79% (15/19).

Conclusion: Our findings suggest that small enhancement foci on MRI represent in-situ or invasive cancer foci and that MRI is highly sensitive for their detection. MRI could be used to determine the clinical significance of unresected cancer foci in a future prospective study.

320

POSTER

Prediction of axillary lymphatic node status in primary breast cancer – Comparison between positron emission tomography (PET) and sentinel-node biopsy

C. Santjohanser¹, Th. Kühn¹, V. Möbus¹, K. Maidel, Th. Hörster¹, C. Diederichs², K. Trüger¹, K. Kretz³, W. Böhm¹, S.N. Reske², R. Kreienberg¹. *Departments of ¹Gynecology; ²Nuclear Medicine; ³Pathology, University of Ulm, Germany*

Purpose: Axillary lymphatic node status is still the most important prognostic factor in patients with primary breast cancer. Early detection of small tumors has led to increasing numbers of lymph-nodes without malignant cells. So axillary lymphnode dissection is primarily a staging procedure. Because axillary lymphnode dissection is associated with high morbidity, noninvasive or minimal-invasive staging methods are required.

Methods: In 24 patients with suspicious lesions of the breast in clinical examination and/or mammography [¹⁸F-2-deoxy-2-fluoro-D-glucose (FDG) PET was performed preoperatively. Intraoperatively we injected lymphazurin-blu peritumorally to detect and resect selectively the sentinel-lymph-node before completion of the axillary lymphnode dissection.

Results: For detecting axillary lymph-node metastases we found a sensitivity of 63% with FDG-PET (specificity of nearly 100%) compared with a

sensitivity of 86% by the sentinel-node-technique (detection rate of 63%). The negative predictive value for FDG-PET was 84% and for sentinel-node-technique 89%. In 2 of the 3 false-negative results of FDG-PET we detected positive sentinel-nodes. The only false-negative sentinel-node was obtained in a patient with one large (3 cm), just macroscopic certain metastatic infiltrated lymph-node. In this patient the FDG-PET predicted axillary lymph-node metastases.

Conclusion: The negative predictive value of FDG-PET and sentinel-node-technique was found to be rather high (84 versus 89%). It has to be proved in further controlled prospective studies whether the predictive value for staging the axillary lymph-node status can be improved by combination of these two techniques. Patients with negative PET and negative sentinel-node probably have such a low risk for axillary lymph-node metastases, that complete axillary dissection can be avoided.

321

POSTER

The value of high-frequency ultrasound guided core-cut biopsy of breast tumors

U.-S. Albert, V.F. Duda, K.-D. Schulz. *Medizinisches Zentrum für Frauenheilkunde und Geburtshilfe, Klinikum der Philipps-Universität, Marburg, Germany*

Purpose: Individual therapeutic management on behalf of physical integrity and lifequality requires valid and reliable diagnosis of breast tumors. Fast technological developments in ultrasound made it a major tool in complementary diagnosis of breast lesions. We examined high-frequency guided core-cut biopsy in terms of diagnostic yield and accuracy in detecting breast cancer.

Methods: High-frequency ultrasound (10/13 MHz) guided 16-gauge needle biopsy was performed in 231 cases of breast lesions. Three tissue samples of each lesion were taken. All lesions were subsequently surgical excised, 199 were malignant and 32 benign.

Results: 16-gauge needle biopsy provided adequate amount and quality of tissue specimens for histopathologic diagnosis and for prognostic parameters. 191 breast neoplasms and 32 benign lesions were correctly diagnosed. Sensitivity was 95.9%, negative predictive value was 80.0%, specificity and positive predictive value was 100%. The overall accuracy was 96.5%. 5 of 8 false negative cases showed fibrous tissue.

Conclusion: High-frequency ultrasound guided core-cut biopsy is a valid interventional method of diagnosing malignancy under controlled circumstances. In case of discrepancies of histopathologic findings and dignity judgement of complementary diagnosis of breast lesions in particular revealing fibrous tissue-open biopsy is recommended.

322

POSTER

The value of electron beam computed tomography in the analysis of breast lesions and lymphnode metastasis

D. Kriegl, G.M. Smola, L. Kronberger, J. Raith, R. Groell, M. Cerwenka, W. Hinkel, R. Riemmueller. *University of Graz, Allgemeine Radiologische Diagnostik, Auenbruggerplatz 29, A-8036 Graz, Austria*

Purpose: To differentiate between benign and malignant breast lesions and to evaluate axillary-, supraclavicular-, internal mammary artery- and mediastinal lymphnodes.

Methods: Patients with mammographically verified breast lesions were studied with Electron Beam Computertomography (Siemens Evolution, Imatron software). After initial localisation of the lesion with a volume scan and evaluation of the circulation time a perfusion study at the level of the lesion was performed (50 ml Ultravist 370, Schering), thereafter a post bolus study was made. Perfusion analysis of the lesion and the normal parenchyma was performed using special software for time density analysis (Imatron). Regional lymphnodes were evaluated from the volume scans. All the studied lesions were finally histologically examined.

Results: 63 patients were studied. In 45 patients perfusion and morphological appearance were highly indicative of malignancy and were histologically verified. In one patient perfusion and morphology were not typical of malignancy but compared to the normal parenchyma perfusion was increased and histologically verified as malignant. In two patients perfusion looked benign but were histologically verified as malignant. In one patient the lesion was suspected to be an intra-mammary lymphnode, this was also histologically confirmed. In 15 patients perfusion and morphology appeared benign, histologically verified in all 15 patients. Furthermore, in 23 of the 63 patients metastases in axillary lymphnodes were highly suspected, positive in 15 patients (65.2%), false positive in 8 patients (34.8%). In 23 patients axillary lymphnodes were negative. None of the axillary lymphnodes were