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 microcalcifications particularly in the detection of invasive foci in areas of in-situ carcinoma.

319 POSTER

Pre-operative detection of breast cancer multicentricity with MRI

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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

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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 [F-18] 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 been 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

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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 computertomography in the analysis of breast lesions and lymphnodemetastasis

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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

false negative. Two patients with suspect lymphnodes were histologically proven as sinushistiocytosis and one patient with suspect axillary lymphnodes was histologically proven to be tuberculosis. 12 patients are still under chemotherapy. In two patients we found additional histologically proven involvement of supraclavicular lymphnodes.

Conclusion: The examination is easy to perform. The radiation dose is not higher than in conventional CT of the thorax. Our results show that there are differences in the perfusion of benign and malignant breast lesion in the arterial phase and that with one examination and one single contrast agent application it is possible to evaluate the breast parenchyma and the regional lymphnodes.

323 POSTER

Advanced breast biopsy instrumentation (ABBI): Initial experience

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Purpose: Larger numbers of non palpable lesions are discovered since the introduction of screening mammography. Open biopsies were until now the option to obtain 100% correct histologic analysis. The ABBI system offers a possible alternative.

Methods: We reviewed the results of 26 patients, between march 97 and march 98, who presented an unpalpable mammographic abnormality and who were candidates for an ABBI procedure. Twenty-one women had microcalcifications and 5 carried a suspicious density. The procedure could not be performed in 1 patient suffering form chronic obstructive pulmonary disease. Twice the mammographic abnormalities were closely situated to the thoracic wall.

Results: In 23 patients out of 26, the procedure was successful and a representative specimen was removed. The patient age ranged from 45 to 78 years (mean 56). The time needed varied form 40 to 80 minutes (learning curve). No major complications were encounted but 3 patients developed a postoperative hematoma. Pathology reports were benign in 15 patients and malignant in 11 (6 in situ carcinoma's and 5 invasive tumors). In 3 patients with DCIS the margins were free and no further surgery was needed.

Conclusion: The ABBI system seems a very promising procedure to obtain under local anesthesia correct histology of non palpable mammographic abnormalities. For small carcinomas, the complete excision of the lesion with free margins may be the unique surgical treatment.

324 POSTER

Tumor density and malignant characteristics on mammography in the evaluation of tumorresponse in patients treated with preoperative chemotherapy

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Purpose: Histologic tumor response does not only correlate with tumor size, but also with changes in tumor morphology. In a retrospective study we compared tumor response by clinical and mammographic evaluation of size according to the POCOB guidelines with the results of our review of the mammograms, evaluating tumor density and malignant characteristics.

Methods: Mammograms before and after chemotherapy of 129 patients, participating in the POCOB trial were reviewed. The grade of tumor response was calculated, based on changes in size on both craniocaudal and oblique views in combination with a decrease in tumor density and malignant characteristics. The results were compared with the results of the clinical and mammographic results as recorded in the POCOB files.

Results: Comparison with clinical data was performed in 118 patients. Agreement was found in 47%, disagreement of one grade in 46% and of two grades in 6%. Kappa was 0.154 (SE 0.069). Comparison with mammographic data was performed in 108 patients. Agreement was found in 41%, disagreement of one grade in 50%, of two grades in 9%. Kappa was 0.080 (SE 0.043).

Conclusion: Assessment of tumor grading, based on size, density and morphology leads to considerable discrepancies.

325 POSTER

A new scoring system to evaluate the malignancy risk in mammographic microcalcifications

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Purpose: To assess a new malignancy-risk scoring system of mammographic microcalcifications. This malignancy risk should help the clinician to determine in which case surgical biopsy is indicated.

Method: A scoring system based on five properties of the microcalcifications was developed. The "Le Gal" classification was combined with four other criteria: the shape of the cluster, the dimension of the cluster, the number of calcifications, and the density of the area surrounding the calcifications. 70 patients were included in this retrospective study. Each individual case was scored, and this score was then related to the histological result.

Results: On 70 images scored, the mean score of the non-malignant lesions was 30, the mean score of the atypical lesions 70, and the mean score of malignant lesions 80.

Conclusion: Our modified scoring system of mammographic images has proved to be a useful tool for the clinician to help him decide which patient to select for further investigations.

326 POSTER

FNA to core biopsy – A need for change?

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Purpose: The differences between stereotactic core biopsy (SCNBx) and stereotactic fine needle aspiration (SFNA) in assessing diagnostic accuracy, changes in surgical practice and treatment course for patients with mammographically detected lesions is evaluated.

Method: Records from 61 consecutive patients with mammographically detected lesions over a 5 year period were reviewed. Up until 12 months prior to this study all lesions were sampled by SFNA alone (n = 43). With the introduction of SCNBx, 18 patients had SFNA followed immediately by SCNx of the same lesion. These results were compared.

Results: Microcalcifications were the predominant lesion biopsies (n = 48). Of the 43 patients who had FNA alone, 26 were considered Grade 1/sufficient tissue for diagnosis. Even with the diagnosis of Grade IV/V on cytology, 9 out of 13 patients had a positive margin on excisional biopsy. SFNA and SCNBx was performed on 18 patients by a single radiologist. All but one patient who had a diagnosis of malignancy made by SCNBx had a one stage surgical procedure.

Conclusion: Assessments should be performed on a separate day to final surgery and the tissue sampling procedures should be limited to radiologists who are performing it on a regular basis. SCNBx provides histological information which can allow for a one stage surgical procedure.

327 POSTER

High resolution computed tomography imaging is useful for the detection of the intraductal tumor spread in breast cancer

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Recently breast conserving therapy for breast cancer has been widely accepted in our country, but there is about 10% of local recurrence in the remained breast gland. In order to diminish such local recurrences the precise diagnosis of the tumor spread is very important. Consequently, the detection of the intraductal tumor spread is required. For this purpose, we have performed high resolution computed tomography (HRCT) imaging in 60 patients with primary breast cancer since 1993.

2 mm slice sections of HRCT in prone position for the breast with tumor were performed. Three dimension subtraction CT imaging was made by the comparison between the plain and the enhanced CT. Surgically obtained tissue specimens were utilized for histologic examination. Then, the relations between the findings of the HRCT and the histologically detected intraductal spread of cancer cells were studied. 10 of 60 patients were detected the remarkable intraductal cancer spread histologically. 9 (90%) of these patients were also confirmed by HRCT, whereas other 3