

false negative. Two patients with suspect lymphnodes were histologically proven as sinusistiocytosis 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.

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POSTER

Advanced breast biopsy instrumentation (ABBI): Initial experience

J.M. Nogaret¹, D. Hertens¹, I. Veys¹, M. Coibion¹, J. Dagnelie², W. Mattheiem¹. *Departments of ¹Surgery; ²Radiology, Institute Jules Bordet, Brussels, Belgium*

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 from 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 from 40 to 80 minutes (learning curve). No major complications were encountered 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.

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POSTER

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

H.M. Zonderland¹, P.H.M. Elkhuisen², H.J. van Slooten³, J. Hermans⁴, C.J.H. van de Velde³. *Departments of ¹Radiology; ²Clinical Oncology; ³Surgery; ⁴Medical Statistics, Leiden University Medical Center, The Netherlands*

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.

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POSTER

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

K. Kinget¹, P. Naudts², K. Hansen¹, E. Pauwels¹. *¹Department of Obstetrics and Gynaecology; ²Department of Medical Radiology, Klinieken Noord Antwerpen V.Z.W. Braschaat, Belgium*

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.

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POSTER

FNA to core biopsy – A need for change?

F. Flanagan, C. Keogh, O. Laird, M. Dowling, J.T. Ennis. *Mater Hospital, Breast Screening Unit, 46 Eccles Street, Dublin 7, Ireland*

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 SCNBx 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.

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POSTER

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

N. Kobayashi, K. Iwase, M. Takahashi¹, J. Mizoguchi², A. Inagaki, S. Jimbo, H. Yamamoto, Y. Asano, K. Furusawa, K. Miura. *Departments of ¹Surgery; ²Radiology; ²Pathology, Fujita Health Univ. School of Med., Aichi, Japan*

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

patients (75%) also were suspected to have the spread. Such false positive diagnosis by HRCT seemed to prefer to the schirrhous type breast cancer.

Since the HRCT imaging is well in accordance to the histological findings, the HRCT is thought to be a useful method for detecting the spread of breast cancer.

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POSTER

Accuracy of dynamic contrast-enhanced MR imaging in patients with indeterminate mammograms

M. Imbricco, A. Sodano, A. Riccardi, S. Del Vecchio, M. Panza, G. Limite, U. Pace, P. Forestieri, M. Petrella, G. Salvatore. *University "Federico II", Napoli, Biomorphological and Functional Sciences, Via Pansini 5 (Edificio 10) 1-80131 Naples, Italy*

Purpose: To assess the accuracy of Magnetic Resonance (MR) imaging in the detection of primary breast carcinoma in patients with indeterminate mammograms.

Methods: 39 patients (mean age 58 ± 7) with suspicious breast lesions newly discovered either by physical examination or by mammography were studied. There were 20 palpable and 19 non palpable lesions. Dynamic contrast-enhanced MRI was performed using a dedicated breast coil. 3D T1 weighted gradient echo images were obtained before and immediately after a fast hand injection of gadolinium-DTPA (0.1 mmol/kg). MR images were qualitatively and quantitatively analyzed on the basis of signal intensity increase after contrast administration. The results obtained were related to the final histopathological diagnosis.

Results: There were 22 primary breast carcinoma (16 ductal carcinomas, 3 lobular carcinomas, 2 tubular carcinomas and 1 apocrine carcinoma) and 17 benign lesions. MRI was true positive in 21 cases, true negative in 14, false positive in 3 and false negative in 1. The corresponding figures were: sensitivity 95%, specificity 82%, positive and negative predictive value of 82% and 87% respectively, with an overall accuracy of 90%.

Conclusions: Our preliminary results suggest that in patients with indeterminate mammograms, dynamic contrast-enhanced MRI accurately differentiate between benign and malignant lesions providing a valuable alternative for noninvasive characterization of breast masses.

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POSTER

MR imaging of the breast in patients with mammographically ill-defined breast cancer

Y. Sawai¹, C. Kuroda¹, T. Kasugai², H. Koyama³. ¹Department of Diagnostic Radiology; ²Department of Pathology; ³Department of Surgery, Osaka Medical Center for Cancer and Cardiovascular Diseases, Japan

Purpose: To evaluate the usefulness of preoperative magnetic resonance (MR) imaging of breast lesions that are mammographically difficult to determine their size, number or range.

Methods: Forty-eight patients with suspicious breast lesions which clinically and mammographically difficult to define their contour or range underwent 3-dimensional T1-weighted MR imaging with fat suppression on a 1.5-tesla system before and after dynamic contrast enhancement. Tumors were histopathologically mapped after resection.

Results: MR imaging could depict contrast enhanced lesion better contoured than mammography in 45 cases (93%). In 8 cases, tumor was only detected in MR imaging and mammographically find any sign of suspicious lesion. Horn-like or bridge-like enhanced area was corresponded with intraductal tumor spread in 13 cases. Multi focal contrasted area was suspected in 12 cases but 5 cases (42%) were histopathologically false positive.

Conclusion: MR imaging of the breast has value in the preoperative diagnosis of breast cancer to compensate conventional mammographic diagnosis and has impact in planning surgical management.

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POSTER

Detection by means of RT-PCR of micrometastases in the peripheral blood, bone marrow and leukapheresis products in women with breast cancer, selected for high-dose chemotherapy and peripheral blood progenitor cell transplantation

G. Merla¹, S. Papa¹, M. Aicta², A. Tartarone², R. Murgo³, D. Seripa¹, G. Di Giorgio⁴, G. Lelli², V.M. Fazio^{1,5}. ¹Laboratory for Molecular Oncology; ²Division of Oncology; ³Division of Surgery; ⁴Transfusional Service, IRCCS H. "Casa Sollievo della Sofferenza", San Giovanni Rotondo (FG); ⁵Molecular Pathology and Oncology, Università Campus BioMedico School of Medicine, Rome, Italy

Purpose: The present study was undertaken to evaluate the clinical significance of the RT-PCR assay for cytokeratin 19 (K19) when combined with other molecular markers for the detection of occult micrometastases in the bone marrow, peripheral blood and leukapheresis products, in patients with high-grade breast cancer, selected for high-dose chemotherapy and autologous peripheral blood progenitor transplantation.

Methods: 26 patients with III or IV breast cancer, eligible for high-dose chemotherapy (HDCT) and autologous leukapheresis product transplantation (LPT), were included in the study. Peripheral blood (PB) and bone marrow (BM) were obtained before treatment. An aliquot of each leukapheresis product (LP) collected for autologous transplantation was included in the analysis. When possible lymphnode specimens were obtained before chemotherapy. At different time points PB has been collected for follow-up analysis up 1 year. PB from 30 healthy blood donors and 10 patient with chronic and acute leukemias were included as controls. RT-PCR analysis was performed for cytokeratin 19 (K19), epidermal growth factor receptor (EGF-R) and crbB-2.

Results: First aim of the study was to assess the sensitivity and specificity of RT-PCR assays. RT-PCR detected with high reproducibility as low as 1 positive cell (human tumor cell lines) out of 10^7 normal cells (PBL). Primer pairs for primary and nested PCR amplification were designed for annealing with separated exons, to avoid genomic DNA or pseudogene contaminating amplification. No any false positive was identified among both control populations. K19 was detected in 30% of PB and 50% of BM preceding HDCT. 22% of LP, following HDCT and G-CSF mobilization of stem cells, was positive for K19. Results were compared with BM histology and RT-PCR for erbB-2 and EGF-R of PB, BM and LP. Positive samples were invariable fewer than that detected by K19 RT-PCR.

Conclusions: RT-PCR is a highly sensitive and specific method to detect breast cancer micrometastases in different samples. K19 RT-PCR showed the highest sensitivity, confirming results from other groups. The combined use of different molecular markers may increase the specificity of this approach for the detection of occult micrometastases in BM, PB and LP in patients undergoing HDCT and LPT, representing a useful prognostic marker.

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POSTER

^{99m}Tc-MIBI breast scintigraphy using a dedicated nuclear mammograph

A. Semperebene¹, F. de Notaristefani², A. Tofani¹, R. Sciuto¹, S. Rea¹, T. Malatesta², F. Frezza³, C. Botti³, P.G. Natali⁴, C.L. Maini¹. *Dpts of ¹Nuclear Medicine; ²Physics; ³Surgery; ⁴Immunology, "Regina Elena" Cancer Institute, Rome; National Institute of Nuclear Physics (INFN), Rome, Italy*

Purpose: This study was performed to evaluate a single photon emission mammograph (SPEM) prototype for breast scintigraphy using ^{99m}Tc-MIBI.

Methods: SPEM detector head is composed by a CsI (TI) scintillating array coupled to a Hamamatsu R3292 position sensitive photomultiplier tube with crossed-wire anode. The high resolution collimator is 35 mm thick with 1.7 mm hole diameter and 0.2 mm septal thickness. The electronic acquisition system is composed by 5 integrated cards with computation based on high speed programmable microprocessors. The readout electronics includes correction maps for on-line energy correction. The small size of the detector head allows the use of mechanical breast compression to minimize detection distance and tissue scatter. 29 patients with breast masses underwent mammoscintigraphy with SPEM and with an Anger camera using 740 MBq of ^{99m}Tc-MIBI.

Results: SPEM showed an intrinsic spatial resolution of 2 mm, an energy resolution of 23% FWHM at 140 keV, and spatial uniformities of 18% (integral) and 13.5% (differential). The SPEM imaged one 0.4 cm carcinoma missed by the Anger camera and resolved as 3 separate lumps a single