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

328 POSTER

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

M. Imbriaco, 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.

329 POSTER

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

Y. Sawai[1], C. Kuroda[1], T. Kasugai[2], H. Koyama[3]. *[1]Department of Diagnostic Radiology; [2]Department of Pathology; [3]Department 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 histopathoologically 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.

330 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. Merla[1], S. Papa[1], M. Aicta[2], A. Tartarone[2], R. Murgo[3], D. Seripa[1], G. Di Giorgio[4], G. Lelli[2], V.M. Fazio[1,5]. *[1]Laboratory for Molecular Oncology; [2]Division of Oncology; [3]Division of Surgery; [4]Transfusional Service, IRCCS H. "Casa Sollievo della Sofferenza", San Giovanni Rotondo (FG); [5]Molecular Pathology and Oncology, Universita 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 combinaned 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 chemoterapy and autologous peripheral blood progenitor transplantation.

Methods: 26 patients with III or IV breast cancer, eligible for high-dose chemoterapy (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 chemoterapy. At different time points PB has been collected for follow-up analysis up 1 year. PB from 30 healty 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, RM 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.

331 POSTER

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

A. Semprebene[1], F. de Notaristefani[2], A. Tofani[1], R. Sciuto[1], S. Rea[1], T. Malatesta[2], F. Frezza[3], C. Botti[3], P.G. Natali[4], C.L. Maini[1]. *Dpts of [1]Nuclear Medicine; [2]Physics; [3]Surgery; [4]Immunology, "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 99mTc-MIBI.

Methods: SPEM detector head is composed by a CsI (Tl) 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 99mTc-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