were: number of vessels seen on CD (vessel C) and PD (vessel P), vessel distribution (peripheral, central or penetrating) and morphology (tortuous, branching). The likely diagnosis after before and after evaluation with PD was also documented. 145 pathological sections were both examined for both microvessel density (using CD31 immunostaining) and vessels measuring 1 mm or larger.

Results: 183 masses were examined and diagnosis confirmed with needle biopsy. There were 117 cancers and 66 benign masses and/or surgery. PD demonstrated significantly more vessels than CD (P < 0.001). 33 lesions which were avascular on CD were shown to be vascular on PD; 19 of these were cancers showing more than 1 vessel and/or abnormal vessel morphology. PD also correctly altered the diagnosis from probably benign to malignant in 21 cases; 6 of these were smaller than 10 mm in size. The number of vessels seen on Doppler were significant predictors of malignancies but vessel P (P < 0.001) was a better predictor than vessel C (P = 0.02). The presence of vessels, tortuosity and branching vessels were all significantly associated with malignancy (P < 0.001). The most sensitive predictor of malignancy was peripheral vasculature (85.47%) but the most specific features were tortuosity and branching vessels (95.24% and 96.97% respectively). Regression analysis showed vessel tortuosity to be the best predictor of malignancy. A correlation between the number of large vessels identified by Doppler imaging and histology was found (periphery and centre: p < 0.0001 and p = 0.0075 respectively) with a greater number of large vessel groups seen at the periphery of malignant lesions compared to benign masses (p = 0.0075).

Conclusion: PD was superior to CD in the detection of vascularity and malignant lesions were significantly more vascular than benign lesions. Vessel morphology, in particular tortuosity, appear to be specific indicators of malignancy.

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Preoperative identification of node negative axillary lymph nodes in breast cancer by highly significant electron beam computertomography (EBC)

M.G. Smola, D. Kriegl, H. Promberger, L. Kronberger, J. Raith, R. Gröll, H. Cerwenka, R. Kern, M. Thalhammer, W. Hinkel, K.H. Preissegger. *UniKlinikChirurgie, Klinische Abteilung für Allgemein-chirurgie, uniKliniRadiologie, Allgemeine Radiologische Diagnostik, Institut für Pathologische Anatomie, Karl-Franzens Universität, Graz, Austria*

Introduction: Axillary lymph node dissection (ALND) has been a standard procedure in the management of breast cancer, primarily performed for staging purposes to select different kinds of adjuvant systemic treatment. The main question remains, if it is necessary to perform ALND in increasing node negative cases under the background of increasing rates of very small carcinomas. We introduced a pilot study to evaluate the preoperative efficacy of EBS for detecting node negative/positive axillary lymph nodes.

Material and Methods: Between July 1997 and February 1998 we evaluated the efficacy of EBC (Siemens Evolution) in 63 pts. with different breast lesions. In all patients, mammography, sonography and immediately post-EBC-investigation high-speed or core biopsy with following final surgical treatment was performed. In 63 patients with until now surgical treated 37 breast cancer cases we evaluated the preoperative and later on histological confirmed lymph-node status. 37 patients represents a mean age of 59 years (range 36–88), mean tumor diameter of 31 mm (range 4–60 mm) and mean dissected nodal number of 16 (range 9–30).

Results: Preoperatively by EBC as nodal negative classified lymph nodes were true negative in 13 pts (100%), as nodal positive classified lymph nodes were true positive in 14 pts and false positive in 10 pts, no patient was false negative. It was possible to evaluate the size and the suspectibility of the lymph-nodes in EBC down to 2 mm, separated by axillary Level 1, 2 and 3 and by supraclavicular, intramammarial and contralateral axillary lymph-nodes. Immunhistochemistry of the histological node negative pts. was performed to evaluate the evidence of micrometastasis.

Discussion and Conclusion: The EBC is easy to perform at all ages and tumor-stages without intraoperative time-consuming management. The high significance in node negative pts. is the most important point of view in the future decision wether to dissect or not the axillary lymph-nodes. The second point of view, belongs to the false positive rate. Most of the pts. show different suspect lymph-nodes with histologically confirmed different immunological reactions, but without metastasis. We don't know exactly the clinical relevance of these histological pictures and the suspected kontralateral lymphnodes. However, further experience in this technique is needed to confirm this preliminary data.

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99mTc-scintimammography in the diagnosis of non-palpable breast lesions in relation to the mammographical probabilities of malignancy and microcalcifications

J.M. Carril, I. Uriarte, R. Quirce, A. Montero, N. Vallina, A. Vega, A. Hernandez. *Nuclear Medicine Dept., Hospital Universitario Valdecilla, Santander, Spain*

Aim: To evaluate the contribution of MIBI-Tc99m scintimammography (SMM) to the diagnosis of non-palpable breast lesions (NPBL).

Methods: The study included 107 patients with a NPBL detected on mammography and a final diagnosis by biopsy. According to mammography they were classified as high probability (HP) of malignancy in 34, intermediate (IP) in 40, and low (LP) in 33. Of the 107, 37 showed microcalcifications (MCF) as mammographical pattern, 7 HP, 21 IP, 9 LP. The overall final diagnosis was 48 malignant and 59 benign.

Results: The overall sensitivity (S) for SMM was 94%. In the HP S was 93% and NPV 96%, in the IP S was 93% and NPV 93% and in the LP S and NPV were 100%. In the 37 with MCF overall S was 92%, and NPV 92%, and in IP and LP together S was 100% (7/7) and NPV (11/11). Additionally, in 11 cases of which 8 had carcinoma confirmed, SMM showed pathological uptake in the contralateral breast and in 1 bilateral carcinoma was proved.

Conclusion: SMM showed a high sensitivity for cancer detection in non-palpable breast lesions mammographically detected. The use of SMM in IP and LP groups would allow the reduction of 46% of the unneccessary biopsies of 39% in the LP group. In patients with MCF SMM would allow the reduction of 48% of the unneccessary biopsies in the IP and LP groups together with a S of 100%.

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99mTc-MIBI scintimammography (SM) in 300 patients with breast masses: Correlation with tumor proliferative activity

R. Pasqualoni[1], A. Tofani[1], R. Sciuto[1], A. Semprebene[1], A. Festa[1], A. Ferraironi[1], C. Botti[2], M. Mottolese[3], M. Benevolo[3], C.L. Maini[1]. *Depts. of [1]Nuclear Medicine; [2]Surgery; [3]Pathology, "Regina Elena" Cancer Institute, Rome, Italy*

Purpose: This study evaluates the diagnostic yield of 99mTc-MIBI SM in 300 consecutive patients with breast masses on the basis of physical examination or mammogram. 99mTc-MIBI uptake was correlated to tumor size, receptor status, neovascularity, proliferating activity, P-170 glycoprotein expression and patient's gonadal state.

Methods: All patients underwent 99mTc-MIBI SM. Pathological status was obtained after surgery in all patients. All cancer specimens were evaluated for tumor type, size, grading, mitotic grade, labelling index and estrogen (ER) and progesteron (PgR) receptor status. In a subset of patients immunohistochemistry for P-170, PCNA, Her/2 and CD31 was also performed.

Results: Breast cancer was diagnosed in 218 (73%) patients. MIBI scan was positive in 89% cancer patients and in 17% of patients with benign masses (false positives). MIBI scan was negative in 24 (11%) of cancer patients (false negatives). Sensitivity of MIBI-SM was higher in tumor >1 cm (95% vs. 48%) and in premenoupasal women (95% vs. 85%). Conversely, specificity was better in lesion <1 cm (100%) and in postmenopausal women (89%). Positive predictive value (PPV) of MIBI scan was good either in small (<1 cm) and large tumors (93% and 100%) and slightly modified by gonadal state (89 and 96% in pre- and postmenopausal state). Negative predictive value (NPV) was not satisfactory, expecially in small tumors and in older patients.

Conclusions: Diagnostic performances increased stratifying data for tumor size, indicating lesion size is a major determinant in diagnostic accuracy of MIBI SM. MIBI SM seems useful in the diagnostic evaluation of young patients as it can select patients for further, invasive diagnostic procedures (biopsy). In older patients, a positive MIBI scan is highly suggestive for malignancy and could represent an indication for surgery. In case of negative scan, biopsy is advisable given the poor NPV value. Small tumor size and well differentiated histotype characterize false negative cases.