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Preoperative ^{99m}Tc-MIBI scintigraphy of internal mammary lymph node metastases in breast cancer patients

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Background: Regional nodal status is the most powerful predictor of recurrence and survival in women with breast cancer. This study was performed to define the role of scintigraphy for internal mammary lymph node staging in women with breast cancer. Metastases to internal mammary lymph nodes (IMN) may occur in patients with breast cancer and may alter treatment recommendations. The purpose of this study was to identify the frequency of IMN metastases detected by breast scintigraphy.

Materials and Methods: Preoperative scintigraphy images were produced using ^{99m}Tc-sestamibi to 110 consecutive women, using traditionally planar and single photon emission computer tomography (SPECT) techniques. The combined technique method was used, in case of 8 patients, consisting of both ^{99m}Tc-sulfur colloid lymphoscintigraphy in m. rectus abdominis and intravenously ^{99m}Tc-MDP for bone scan. Performing a bone scan at the same time with lymphoscintigraphy for IMN detection may help the surgeon to identify lymph nodes in relation to the rib cage imaging. All patients underwent either a modified radical mastectomy or breast-conserving surgery including thoracoscopic IMN dissection.

Results: IMN metastases were histologically documented in 26 of 110 (23.6%) of patients. IMN metastases without evidence of axillary lymph node involvement occurred in 4 of 110 patients (3.6%). In the assessment of IMN involvement by SPECT, there was 1 false-negative malignant finding and no false-positive finding detected among 26 patients. This patient with mixed ductal and lobular infiltrating carcinoma had IMN metastases in diameter of 0.8 cm in the first intercostal area. Thus, sensitivity of SPECT in detecting of IMN metastases was 96.1%, specificity - 100%. In 5 of 23 lesions, planar scintigraphy failed to detect malignancy. Lymph nodes size were varying between 0.3 cm and 1.0 cm. No false-positive findings were detected by planar imaging. Thus, the overall sensitivity and specificity of planar scintigraphy was 79.1% and 100% respectively.

Conclusions: Preoperative scintigraphy SPECT can identify those women with primary breast cancers who have extra-axillary regional basin drainage such as internal mammary. This study illustrates the potential value of breast ^{99m}Tc-MIBI scintigraphy to identify IMN metastases that may prove to be clinically relevant in patients at the highest risk for IMN metastases whose may benefit from radiotherapy or adjuvant chemotherapy.

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Axillary ultrasound (US) and US-guided fine needle aspiration biopsy in the assessment of lymph-node metastases in breast cancer patients

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Background: Sentinel lymph-node biopsy (SLNB) is an alternative to routine axillary lymph-node dissection (ALND) in clinically node-negative breast cancer patients. However, in 40% of patients in whom SLNB was performed, nodal metastases were revealed in the sentinel nodes and the second operation was needed.

The aim of this study was to evaluate the ability of axillary ultrasound (US) and US-guided fine-needle aspiration biopsy (FNAB) to detect the axillary lymph-node metastases in clinically node-negative patients.

Patients and methods: From 1st January 2001 to 1st March 2003, axillary US was performed in 97 patients with cytologically proven breast cancer in whom SLNB had been planned. In the patients with US-suspicious axillary lymph nodes, US-guided FNAB was performed.

Results: In 29/97 patients, US-guided FNAB was performed. In 23/29 patients, FNAB was positive. Definitive histology report revealed lymph-node metastases in 37/97 patients.

US-guided FNAB was concordant with the histology in 23/37 patients (62% sensitivity). In the group of 14 patients with a false negative FNAB result, there were seven micrometastases (< 2 mm). In one patient, US-guided FNAB was false positive (95% positive predictive value). The specificity and the negative predictive value of US guided FNAB were 98% and 81%, respectively.

Conclusions: US-guided FNAB is a valuable method in detecting axillary

lymph-node metastases in clinically node-negative breast cancer patients. Almost 2/3 of axillary lymph-node-positive patients can be spared the SLN biopsy procedure and the second operation. However, false positive results are possible.

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Accuracy of axillary staging using sentinel node biopsy or diagnostic axillary lymph node dissection

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Background: The false negative rate in sentinel node biopsy (SNB) has usually been 5% or even lower. The more accurate histological examination with serial sectioning and immunohistochemistry of the sentinel nodes is assumed to compensate the false negatives of SNB. Sentinel node biopsy has been proposed to provide even more accurate axillary staging than axillary lymph node dissection (ALND). We aimed to compare the accuracy of axillary staging in breast cancer between SNB and ALND.

Methods: The prevalence of axillary metastases were compared between 166 breast cancer with SNB and their pair-matched control patients with ALND. The matching factors included the age of the patient and the grade, the histological subtype and the histological size of the tumour.

Results: The proportion of patients with axillary metastases was 37% in the SNB group and 31% in the ALND group. The axillary nodes were involved in 41% of patients with invasive lobular carcinoma in the SNB group and in 29% in the ALND group, correspondingly (P= NS).

Conclusions: SNB seems to be at least as accurate method for axillary staging as ALND. No upstaging effect in SNB was convincingly demonstrated, but possible upstaging in invasive lobular carcinoma must be kept in mind.

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Surveillance of women at risk for breast cancer: who detects breast cancer?

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Introduction Women with a familial history of breast cancer carry an increased risk for developing breast cancer at young age. A screening program using monthly breast self examination (BSE), biennial physical examination (PE) and annual mammography was instituted to detect breast cancer at an early stage. This causes considerable stress for the patients. The aim of this study was to identify the efficacy of the screening program and the accuracy of each of the three aforementioned examinations.

Materials and methods Analysis was conducted of all patients (n=361) under surveillance. Since 1999 all data were collected in a database. From these data each abnormal examination (event) was investigated. All these events were then statistically analyzed (sensitivity, specificity and positive predictive value). A negative BSE, PE and mammography was regarded as the golden standard for absence of disease.

Results At a total of 1575 visits, 736 mammographies were done. Out of 361 patients under surveillance, 9 developed invasive breast cancer, 4 had ductal carcinoma in situ (DCIS). 7 out of 9 invasive cancers were detected with BSE. Sensitivity, for detection of invasive carcinoma with BSE and PE and of invasive carcinoma and DCIS with mammography, is 70%, 90% and 85% respectively. Specificity is 98%, 98% and 96%. Positive predictive value is 39%, 39% and 30%. Combination of a positive PE and positive mammography resulted in a 100% identification of breast cancer in that group. When both PE and mammography were negative, no disease was detected. In the group where only PE was positive two patients developed cancer. Positive mammography with normal PE contributed only in the additional detection of DCIS.

Conclusion Breast self examination leads to the detection of the majority of invasive cancers. In case of positive PE and mammography no additional investigations are necessary for diagnosis. Further investigations can be abandoned when both PE and mammography are negative. If mammography alone is positive (microcalcifications) diagnostic surgery is warranted. The knowledge and implementation of these results can avoid unnecessary investigations and eventually lead to decrease of psychological stress in patients.