

the conventional imaging modalities were also detected by FDG-PET-CT scan. In a total of 14 patients additional lesions were found. In half of these patients the treatment plan was changed (2x no operation, 2x no adjuvant chemotherapy, 4x adaption of radiotherapy).

**Conclusion:** A 18F-FDG PET-CT is more accurate than the usual conventional imaging techniques in staging patients with advanced breast cancer. In our experience therapy can be more accurately planned.

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#### Combination of Breast Scintigraphy and Ultrasound is Promising Tool for Diagnosis and Staging of Breast Cancer

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**Purpose:** To evaluate diagnostic accuracy of breast scintigraphy (BrSc), ultrasound (US) and their combination in diagnosis and staging of primary breast cancer (BC).

**Material and Methods:** We studied 132 consecutive patients (pts) with clinical and/or radiological suspicion for BC. BrSc was performed 15 min after i/v injection of 740–860 MBq of 99mTc-sestaMIBI. Images with focal and scattered patchy uptake were scored as abnormal. Focal areas of tracer accumulation in axial region were considered as signs of lymph node metastases (LNM). High frequency digital wide field of view US was performed by experienced radiologist. Following signs were considered abnormal: irregular morphology, poorly defined edges, inhomogeneous echo structure, posterior acoustic attenuation, hyperechogenicity. Nodes with diameter more than 1 cm were considered abnormal. All breast lesions and LNs were verified by biopsy and follow-up or by operation.

**Results:** BrSc demonstrated high diagnostic value in 132 evaluated pts with following sensitivity (Sen), specificity (Sp) and accuracy (Ac): 94% (105/112), 68% (7/21), 90%. In 35 pts with lesions below 11 mm Sen of BrSc dropped to 86% (12/14), Sp reached 76% (16/21) and Ac 80%. In this group diagnostic value of US was as follows: Sen 57% (8/14), Sp 100%, Ac 82%. Combination of BrSc and US resulted in excellent Sen (100%) with moderate Sp (76%) and Ac (82%).

BrSc had moderate efficacy in diagnosis of axillary LNM with Sen – 74%, Sp – 75% and Ac – 74%. US demonstrated comparable figures: Sen – 79%, Sp – 77%, Ac – 77%.

When LNM were diagnosed as the combination of concordantly abnormal US and scintigraphy examinations Sp reached 96%, Sen dropped to 52% and Ac remained at 79%. If LNM were diagnosed in all patients with abnormal US or axillary LN scintigraphy Sen raised to 87% with Sp – 68% and Ac – 78%.

#### Conclusions:

1. Combination of BrSc and US can significantly improve Sen (100%) in patients with small (below 11 mm) breast lesions.
2. In diagnosis of axillary LNM BrSc with US help to increase Sen (87%) or Sp (96%). Final result is determined by chosen diagnostic strategy.

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#### Retrospective Comparison of the Accuracy of two Different Computer Aided Detection Systems for Detecting Malignant Lesions on Mammography

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**Background:** To retrospectively compare the accuracy of two computer aided detection (CAD) systems (SecondLook versus AccuDetect Galileo) for the detection of malignant breast lesions on full-field digital mammograms.

**Material and Methods:** Digital mammograms of 326 patients were analysed (117 patients with biopsy proven breast cancer, 209 negative cases). Positive cases consisted of 85 masses, 6 calcifications, and 26 masses plus calcifications. Twelve month follow-up was available for all negative cases. Each set of cases was read by both CAD systems and true positive fraction (TPF) for both systems and per image, case, and total cancers was assessed. Operating points for both systems was set at approximately the same false positive rates per image and case. One-sided, exact McNemar's tests were used to assess statistical significance of the results.

**Results:** When compared to SecondLook, AccuDetect Galileo significantly increased TPF per image for masses (increase of 10.6% to 72.2%,  $p = 0.0001$ ) and calcifications (increase of 12.8% to 61.5%,  $p = 0.03$ ). Per case, AccuDetect Galileo did not significantly increase TPF for masses and

calcifications. More importantly, AccuDetect Galileo achieved higher TPF for all cancers (per image increase to 6.9% to 72.2%; per case increase to 4.3% to 84.6%). Interestingly, AccuDetect Galileo had a significant performance improvement in detecting masses on extremely dense breasts (qualitative BI-RADS breast density class 4) over SecondLook, increasing TPF with 15.4% to 69.2% ( $p = 0.0156$ ).

**Conclusions:** AccuDetect Galileo showed better overall performance than SecondLook in detecting masses, microcalcifications and all cancer types, especially in extremely dense breasts.

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#### Comparison of Different Vacuum Assisted Breast Biopsy Methods – A Time-based Analysis

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**Background:** Minimally invasive biopsy is the standard of care for the diagnosis of suspicious non palpable breast lesions. Stereotactic vacuum assisted breast biopsy (VABB) with the use of devices such as Mammotome<sup>®</sup> is considered as an established method for the evaluation of suspicious non palpable mammographic lesions. Breast Lesion Excision System (BLES) is a new method that has been introduced for these kinds of procedures. The BLES utilizes radiofrequency in order to perform a one-pass intact specimen excision of the suspicious lesion. It has been proven that the duration of the procedure has an influence on many parameters for the patient such as pain, compliance, quality of life etc. The aim of the study was to record and compare the amount of time needed in order to complete a stereotactic VABB, with the use of Mammotome and BLES techniques respectively.

**Material and Methods:** From April 2010 to March 2011, 50 consecutive patients (mean age=49.8, range 35–76) underwent VABB with the use of Mammotome<sup>®</sup>, while another 50 consecutive patients (mean age=53.3, range 33–82) underwent a biopsy with the use of BLES. Inclusion criteria consisted of suspicious non palpable mammographic lesions such as microcalcifications, asymmetric density and solid lesions, categorized as BI-RADS 4 or 5. Biopsies were performed under stereotactic image guidance by the same surgeon–radiologist team and were successful and uncomplicated in all cases. Time intervals at the beginning of the procedure, i.e. positioning the patient and performing the stereotaxis, the anesthesia injection, the needle/basket withdrawal and at the end of the procedure were recorded and analysed.

**Results:** Breast biopsies conducted with the use of Mammotome<sup>®</sup> resulted in anesthesia injection at 15.5±9.6 min and needle withdrawal at 30.7±11 min later, while the total procedure lasted 46.2±13.4 min. On the other hand, biopsies conducted with the use of BLES resulted in anesthesia injection at 13.5±5.3 min, the basket was withdrawn after 9.8±3.8 and the total procedure lasted 28.2±6.6 min. Overall, there was no statistically significant difference between the two procedures in the amount of time required to appropriately position the patient and perform the stereotaxis. Nevertheless, the duration of the invasive part of the biopsy as well as the overall procedure time were significantly shorter ( $p < 0.0001$ ) in biopsies that were performed using the BLES.

**Conclusion:** According to our initial experience, the BLES device is a simple and time-saving diagnostic breast biopsy system. Patients undergoing a breast biopsy with the BLES might find it less inconvenient compared to Mammotome, due to shorter duration of the procedure. However, the choice of Mammotome<sup>®</sup> over the BLES or vice versa as a diagnostic procedure for non palpable mammographic lesions should be made based on objective criteria such as the morphology, size and location of the lesion rather than the estimated duration of the procedure itself.

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#### Identification of Sentinel Lymph Node Metastasis and Axillary Status in Early Breast Cancer by Indocyanine Green Fluorescence Method

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**Background:** Indocyanine green (ICG) fluorescence detection has been shown to be superior to blue dye in terms of the number of sentinel