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MR imaging in the preoperative staging of breast carcinoma: Useful or riskful?

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Purpose: To determine if MR mammography is a necessary complementary examination in the preoperative staging of breast cancer patients or if it overestimates the extent of the tumor causing unnecessary wider surgery.

Materials and Methods: We reviewed 39 patients with a malignant breast tumor who underwent preoperative MR imaging at 1.5 T. All this patients had dense breast tissue. Clinical examination and imaging findings were compared with histologic results regarding tumor size and multifocality.

Results: MR imaging depicted 33 invasive carcinomas and 5 ductal carcinomas in situ (DCIS), and missed 1 DCIS. In 15 patients mammography and ultrasound underestimated tumor size. Multifocal disease was suspected in 7 patients on conventional imaging while MR showed an additional enhancing mass in 14 cases, 3 were false positive. In the patients with one enhancing focus the size on MR correlated exactly with histology in 9 cases, MR overestimated the size in 13 patients and underestimated the size in 3 cases, in 2 of which surrounding DCIS was missed. Therapy was altered by performing mastectomy in 8 patients.

Conclusion: MR imaging allows detection of multifocal cancers and is the most accurate in assessing the extent of a malignant lesion in patients with suspected breast cancer in dense breasts but histology of the additional mass should be performed before changing surgical approach.

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Axillary staging of T1–T2 breast cancer

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Objectives and Methods: From December 1996 to January 1998 77 T1-2 N0 breast cancer patients have been recruited for a multicentric study (involving five institutions) on the lympho-scintigraphic search of the axillary sentinel node (SN). The protocol provided a subdermic injection of 99mTc labelled microcolloids (Nanocoll or Albures, 126 + 52 uCi in a 0.2 cc volume) and at least two gamma camera imagings. The SN was searched intraoperatively with a NaI or a CdTe hand/held gamma probe and excised before performing the standard axillary dissection.

Results: In 7 out of 77 cases limphoscintigraphy was unsuccessful (9%); in 3 cases the SN was not localised (3.9%). 67 SN out of 77 cases were found and excised (87%). The SN proved to be predictive of axillary status in 62 cases on 67 (92.5%). In 14/27 cases the SN alone was metastatic (51.8 out of the N1 cases); in 5 cases the SN, reactive, did not match with the axillary status (5/40, 12.5% of false negatives).

Conclusions: These results, although affected by a "learning curve" effect, appear promising; the sentinel node evaluation can be considered a reliable non invasive staging method for T1-T2 N0 breast cancer. Our study will close after a recruitment of 200 cases.

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A prospective assessment of magnetic resonance mammography (MRM) with conventional triple assessment in symptomatic breast disease

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The accepted gold standard of triple assessment of breast lesions i.e. clinical examination, fine needle aspiration cytology (FNA) and mammography, does not always establish a diagnosis and surgical biopsy is therefore required. Contrast enhanced dynamic magnetic resonance mammography (MRM) represents an emerging alternative diagnostic modality. The aim of this study was to compare the diagnostic accuracy of MRM with standard triple assessment for the evaluation of symptomatic breast lesions.

Two hundred and eighty-three symptomatic patients (median age 51, range 20–80) were recruited. The 112 patients who did not undergo operation have been followed up clinically and radiologically for a median of 20 months (IQR 18–24 months). Sensitivities for detection of malignancy were: clinical examination 84.73%, mammography 86.26%, FNA 80.3%, triple assessment 99.23% and MRM 99.23%. Histologically confirmed multifocal disease was detected pre-operatively in 40 patients by MRM but in only 9 (22.5%) on mammography. The specificity for the diagnosis of benign disease was: clinical examination 83.11%, ultrasound 88.88%, mammography 86.36%, FNA 95.0%, triple assessment 77.27% and MRM 98.7%.

Dynamic MRM is superior to standard triple assessment for the evaluation of symptomatic breast lesions. As such utilizing MRM will facilitate a significant reduction in diagnostic surgical biopsies.

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Palpable breast tumors: Preoperative determination of histology and receptor status

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Purpose: In this prospective study the high speed biopsy gun was evaluated in patients with palpable breast tumors. Preoperative determination of histology and receptor status is crucial in optimizing the managemant of breast cancer.

Methods: High speed biopsies were performed in 187 patients (185 female, 2 male). The system BIP High Speed Multi 22/15 was used with 16-gauge needles at a speed of 30 m/sec. The inner needle has got a notch where the specimen is caught and then the outer cylindric shaft cuts it off at high speed – hindering the tumor from slipping away – and covers it, so that it can be salvaged safely and with a minium risk of contamination.

Results: The quality of the biopsies was markedly improved as compared to conventional systems, they yielded well preserved and representative tissue material and all of them could be used for frozen sections and for determination of receptor status. Usually one cylinder was enough for diagnosis. In 134 patients (71.7%) carcinoma of the breast was found (84.3% invasive ductal, 14.2% invasive lobular, 0.75% medullary and 0.75% adenoid-cystic), one patient had non Hodgkin's lymphoma. Five biopsies were classified as highly suspicious (high grade atypical ductal hyperplasia). In all cases malignancy was confirmed by operation and histology. Estrogen receptors (ER) were negative in 30%, progesterone receptors (PR) in 41%. The remaining receptor scores showed the following distribution: 1–3: ER 21%, PR 22%. 4–8: ER 34%, PR 23%. 9–12: ER 15%, PR 14%. Benign tumors were found in 23.5%. In 3 patients malignant tumors were missed at biopsy (1.6% false negative). Complications: In one patient bleeding from a subcutaneous vein (which could be stopped by compression) was observed, no cases of contamination of the biopsy canal were seen.

Conclusion: High speed biopsy provides a reliable and simple way of preoperative determination of histology and receptor status in patients with palpable breast tumors. In cases of high grade atypical ductal hyperplasia or ductal carcinoma in situ, however, the diagnosis should always be confirmed by removal of the entire lesion.

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Ultrasound guided core biopsy of suspicious mammographic calcifications using high frequency and power Doppler ultrasound

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Purpose: The pre-operative diagnosis of suspicious mammographic microcalcifications usually requires stereotaxic needle biopsy as they are not visible using conventional ultrasound (US). The aim of this study is to see if high frequency US and power Doppler (PD) can aid detection and biopsy of microcalcification. We also attempt to characterise the US appearances which may help discriminate benign lesions from malignant pathology.

Methods: We prospectively performed high frequency US (13 MHz) and PD on 44 consecutive patients presenting with microcalcifications which was assessed as requiring needle biopsy. There was no associated mammographic or palpable masses. The presence of any US abnormality and abnormal flow pattern on PD was documented. Ultrasound guided core biopsy (USCB) was performed where possible. Stereotaxic biopsy was performed when US guided biopsy was unsuccessful. All patients underwent surgery if a diagnosis of malignancy was made on core biopsy or if core biopsy was non-diagnostic.

Results: Of 44 patients, 41 (93%) had ultrasound abnormalities corresponding to mammographic calcification. Two cases could not be imaged