clinical findings, and gave consideration to size of the tumour on predicting who is likely to be node positive and have ANC without SLNB.

Aims: The aim of this study was to look at the different criteria used for performing ANC in a District General Hospital and to study the sensitivity of each determinant criterion.

Methods: A retrospective study was performed on all patients who underwent ANC for any reason over a periodof 18 months. Demographic, radiological and histological data were collected from medical notes. The reason for doing ANC without SLNB was documented.

Results: 165 ANC were performed in that period and 40 were negative for metastatic disease, with an overall sensitivity of 80%. If we exclude SLNB, the combined sensitivity of all other predictor factors is 65%, which means we are sparing 2 out of 3 patients unnecessary ANC. On the other hand we are subjecting 1 out of 3 patients invasive and unnecessary ANC, It is interesting to note that clinical examination is as sensitive as US assessment (80%, and 75%), and when both are combined the sensitivity went up to 85%. It is noted that the intra-operative assessment is the least reliable.

Reason for axillary clearance	n	Positive ANC	Negative ANC	Sensitivity
Positive prediction on USG	32	24	8	75%
Size of tumour	18	10	8	55.5%
Recurrence of breast cancer	2	0	2	0
Patient request	2	0	2	0
MRI findings	1	0	1	0
Clinically suspicious nodes	40	32	8	80%
Concerns for fitness for surgery	7	4	3	57.1%
On-table decision (suspicious nodes)	11	1	10	9.0%
SLNB	52	52	0	100%

Conclusions: The combination of USG and clinical examination can correctly predict positive nodes in 85% of cases. To improve the sensitivity an additional assessment of abnormal lymph nodes with FNA or core biopsy is strongly recommended. Suspicious nodes noted intra-operatively should not be used as a criteria for performing ANC.

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Visualisation of lymph nodes using optical projection tomography

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Background: Optical Projection Tomography (OPT) is a wholemount, *in vitro* imaging technique suitable for small biological specimens (1−15 mm in diameter) (Sharpe J. Science 2002;296:541−5). The aim of this study is to investigate whether human lymph nodes can be imaged using OPT and to compare the images with traditional H&E stained sections. The OPT scanner can be considered to be the optical equivalent of an X Ray CT scanner. It produces 3D images and virtual sections in 3 orthogonal planes through the whole of the specimen with a cellular level of resolution. Furthermore, since OPT is non-destructive, the tissue can subsequently be successfully processed for routine histology (either H&E or immunohistochemistry).

Methods and Materials: We retrospectively examined 24 lymph nodes taken from 7 patients who had a histological diagnosis of breast or colon adenocarcinoma with known lymph node involvement, and whose treatment would not be altered by the outcome of this study. The fixed lymph nodes were first prepared for OPT scanning. They were embedded in agarose, dehydrated in methanol and cleared in benzyl alcohol benzyl benzoate (in a 1:2 ratio). The tissue was then mounted and scanned at high resolution on an OPT Scanner 3001, using a Cy3 filter. The reconstructed virtual sections were visualised in 3 orthogonal planes using DataViewer. Once the images were obtained, the nodes were re-hydrated, de-embedded from agarose using a sucrose solution and prepared for histology in the traditional way. The H&E stained sections and the corresponding OPT virtual sections were examined by the Consultant Histopathologist.

Results: Direct comparisons were made between traditional H&E sections and the virtual monochrome sections obtained from OPT. Anatomical structures characteristic of lymph nodes could be visualised using OPT. Furthermore, areas of tumour and small areas of metastases could also be clearly identified.

Conclusions: This study demonstrates that it is possible to identify areas of metastasis and make a presumptive diagnosis based on OPT images of lymph nodes. The actual scanning of tissue using OPT takes minutes, but the processing of tissue takes too long for it to be suitable for intraoperative diagnosis of metastatic spread. However it could potentially be used to direct subsequent histological sectioning or obtain a more accurate assessment of tumour size/extent of involvement within the lymph node. It may also have applications in other clinical scenarios.

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A combined high temporal and high spatial resolution 3 Tesla MR imaging protocol for the assessment of breast lesions: initial results

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Purpose: To develop a 3.0 Tesla breast imaging protocol that combines high temporal and spatial resolution 3D MR sequences for quantitative time course and morphological analysis of breast lesions.

Materials and Methods: Thirty-four patients were included in the study (age range, 31−82; mean age, 54.3). The study protocol was approved by the Institutional Review Board and written, informed consent was obtained from all patients. The MRI protocol included: a coronal T1-weighted Volume-Interpolated-Breathhold-Examination sequence (VIBE), focused on high temporal resolution for optimal assessment of the contrast-enhancement behavior of lesions (SI 1.7 mm isotropic; TA 3.45 min for 17 measurements); a coronal T1-weighted turbo fast-low-angle-shot-3D sequence (FLASH), with water-excitation and fat-suppression, focused on high spatial resolution for morphologic analysis (SI 1 mm isotropic; TA 2 min); and a repeated coronal VIBE for detection of washout. Lesion size and morphology were assessed. ROIs for suspicious areas were manually drawn and evaluated for contrast-enhancement behavior by plotting intensity courses against time. Sensitivity and specificity with a 95% confidence interval and the negative predictive value (NPV) and positive predictive value (PPV) were calculated. Diagnostic accuracy was assessed. The histopathological diagnoses were used as a standard of reference.

Results: Fifty-five lesions were detected in 34 patients. All malignant breast lesions were identified correctly. There were five false-positive lesions. The sensitivity of contrast-enhanced MRI of the breast at 3Twas 100%, with a 95% confidence interval (CI) of 90.6–100%. The specificity was 72.2%, with a 95% CI of 49.1–87.5%. The PPV was 0.88 and the NPV was 1. Diagnostic accuracy was 91% with a 95% CI of 80.4–96.1%.

Conclusion: Our prospective study demonstrates that the presented 3 Tesla MR imaging protocol, comprising both high temporal and high spatial resolution, enables accurate detection and assessment of breast lesions.

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Method of differential breast tumour diagnostics

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Background: *Oxidative stress* is a disturbance in the balance between the production of *reactive oxygen species* (ROS) and antioxidant defense. In patients with mammary gland tumors the processes of peroxide oxidation of lipids (POL) are increased and metabolism disturbed. *Glutathione-associated metabolism* is a major mechanism for cellular protection against agents which generate oxidative stress and peroxide oxidation of lipids. Glutathione, glutathione-dependent enzymes and glutathione S-conjugate efflux pumps function in an integrated fashion to allow cellular adaptation to oxidative stress. Co-ordination of this response is achieved, at least in part, through the antioxidant which is found in the promoters of many of the genes that are inducible by oxidative and chemical stress.

Purpose: A comparative investigation of the activity of antioxidative glutathione-dependent enzymes and glucose-6-phosphate dehydrogenase in the blood serum and saliva in the patients with breast dyshormonal hyperplasiae (BDH) and breast cancer (BC).

Material and Methods: Fifty-five patients aged 32−65 years (mean age 48.5±16.5 years) were studied before treatment and 30 healthy (a control group). In the blood serum and saliva the following enzyme activities were determined using SP "Humalyzer 2000": glutathione reductase (GR), glutathione-S-transferase (GST), gamma-glutamyltranspeptidase (GGT), glucose-6-phosphate dehydrogenase (G6PDH), and the content of the reduced glutathione (GSH).

Results: The results were calculated with the help of statistical Student method. Spearmen method was used for examination of interrelations