Breast Cancer
R E S E A R C H

MEETING ABSTRACTS

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ORAL PRESENTATIONS

O1

Validation of a new automated volumetric breast density measurement system as a marker of breast cancer risk

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Purpose To validate the predictive power for determining breast cancer risk of an automated breast density measurement system with full-field digital mammography (FFDM).
Materials and methods Two hundred cancers and 200 controls were imaged with FFDM. Density was measured separately on MLO and CC images using an integral automated volumetric breast density measurement system (Hologic, Quantra). For each cancer, the contralateral mammogram was used. Each cancer was matched to a control case by date of birth, age at examination and laterality of mammogram used for density determination. Breast density (percentage of fibroglandular tissue) was analyzed by Quantra. Data were analyzed by conditional logistic regression to determine the effect on breast cancer risk.
Results The percentage of breast density ranged from 6% to 63%. Density declined significantly with age (P <0.001). Overall, there was no significant association of density with risk of breast cancer (P = 0.4). There was a suggestive increase in risk with dense volume higher than 35% (OR = 1.80, 95% CI = 0.96 to 3.39, P = 0.07). There was significant heterogeneity by age in the effect of density on risk (P = 0.04). In women aged <50, density was significantly associated with increased risk (P = 0.02), with odds ratios of 6.06, 3.98 and 10.59 for density volumes of 15 to 24%, 25 to 34% and ≥35% respectively, relative to those with <15%. In women aged ≥50 years there was no association of density with risk (P = 0.5).
Conclusions Quantra automated volumetric breast density measurement is strongly associated with breast cancer risk in women aged under 50, but not in women aged ≥50 years or over.

O2

Ultrasound elastography as an adjuvant to conventional ultrasound in the preoperative assessment of axillary lymph nodes in suspected breast cancer: a pilot study

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Introduction NICE guidelines recommend conventional ultrasound (CU) of the axilla as preliminary staging in patients with breast cancer. However, up to one-third of nodes showing normal morphology are metastatic on surgical histology [1]. Ultrasound elastography (UE) uses received radiofrequency data to produce an elastogram depicting tissue stiffness. UE has been researched in the breast but there are no published data regarding UE of the axilla.
Methods Fifty women attending the breast unit as symptomatic GP referrals with breast lesions sonographically suspicious of breast cancer underwent UE of the axilla simultaneously with routine CU examination. Elastograms were visually scored, strain measurements calculated and nodal perimeter and area measurements recorded. UE was compared with CU with histology as the reference standard.
Results Twenty-nine nodes were histologically normal, 21 were metastatic. Normal nodes were indistinguishable from surrounding tissue on UE. Using cut-off points for biopsy selected for the study, sensitivity was 90% for UE visual scoring, 100% for strain scoring and 76% for CU. Specificities were 86%, 48% and 78% respectively. ROC analysis yielded AUC values of 0.9 for UE visual scoring, 0.86 for strain scoring and 0.82 for CU. There was no significant difference between any area and perimeter measurements.
Conclusions UE can demonstrate axillary lymph nodes and differentiate benign from malignant nodes. UE visual scoring shows greatest promise in improving yield without excessive benign biopsies.
Reference
1. Britton P, *et al.*: Use of ultrasound guided axillary node core biopsy in staging of early breast cancer. *Eur J Radiol* 2009, **19**:561-569.

O3

Size matters: second breast cancer size following treatment for primary cancer as a predictor of survival

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Introduction The purpose of surveillance mammography following primary breast cancer treatment is to detect subsequent cancers at the smallest size. We examined the prognostic effect of size of ipsilateral breast tumour recurrence (IBTR) and metachronous contralateral breast cancer (MCBC) to assess potential benefit of surveillance mammography after breast cancer treatment.
Methods Second cancers (IBTR n = 1,174, MCBC n = 975) diagnosed between 1 January 1990 and 31 January 2007 from the West Midlands Cancer Intelligence Unit Breast Cancer Registry were analysed. Survival from diagnosis of second cancer was examined using Cox regression models. Risk factors included were prognostic factors of the primary tumour and size of the second tumour. Outcomes were time to all-cause death and to breast cancer death. Estimates are hazard ratios (HRs) and 95% confidence intervals.
Results There were 613 all-cause deaths and 422 breast cancer deaths after IBTR. For both outcomes, second cancers >2 cm had poorer prognosis compared with those <1 cm, HRs were 1.75 (1.29 to 1.37) and 1.99 (1.37 to 2.89). In MCBC there were 358 all-cause deaths, HR 2.14 (1.49 to 3.06), and 23 breast cancer deaths, HR 1.99 (1.38 to 2.83).