

**P2**

**Flat epithelial atypia: biological significance on core biopsy**

S Rajan, A Shaaban, B Dall, N Sharma  
 Leeds Teaching Hospitals NHS Trust, Leeds, UK  
*Breast Cancer Research 2010, 12(Suppl 3):P2* (doi: 10.1186/bcr2655)

**Introduction** Flat epithelial atypia (FEA) is seen with increasing frequency following biopsy of calcification detected through screening. FEA is often associated with more significant lesions including atypical ductal hyperplasia and ductal carcinoma *in situ* (DCIS). It is postulated that FEA may even represent the earliest morphological manifestation of DCIS and a precursor to invasive carcinoma. However, the significance of pure FEA still remains unclear. We aim to review the radiological and pathological features of FEA and evaluate the significance of FEA on needle core biopsy.

**Methods** We performed a retrospective analysis of all needle core biopsies containing FEA in the pathology database from April 2008 to April 2010. For each case the following data were recorded: mammographic features, method of further sampling (mammotome or diagnostic surgical biopsy) and histology from needle core biopsy, mammotome biopsy and surgical biopsy.

**Results** There were 35 needle core biopsies that contained pure FEA, of which 89% (31/35) were associated with mammographic calcification. Following initial core biopsy, 21 patients had further sampling with mammotome biopsy, 13 patients underwent diagnostic surgical biopsy and one patient was not suitable for further intervention. There was an upgrade to DCIS in 18% (6/34) and invasive carcinoma in 3% (1/34).

**Conclusions** Pure FEA on core biopsy is upgraded to carcinoma in 21% (7/34) of cases on further sampling and it is vital that we do not underestimate the biological significance of FEA. Increasing the awareness of FEA is crucial to ensure consistent and appropriate patient management.

**P3**

**Two-view 2D digital mammography versus one-view digital breast tomosynthesis**

MJ Mitchell, RK Wasan, A Iqbal, C Peacock, DR Evans, JC Morel  
 King's College Hospital, London, UK  
*Breast Cancer Research 2010, 12(Suppl 3):P3* (doi: 10.1186/bcr2656)

**Introduction** In routine breast screening using 2D digital mammography (2DM), mediolateral-oblique (MLO) and craniocaudal (CC) views are performed to maximise cancer detection. Digital breast tomosynthesis (DBT) improves the visibility of lesions by eliminating the problem of superimposition of normal structures, and there is uncertainty regarding the need for two views. The purpose of this study is to compare the accuracy of two-view 2DM with one-view DBT.

**Methods** Five hundred and one cases were evaluated from the DBT trial dataset of clients recalled for further workup after their initial film-screen mammography. Bilateral two-view 2DM and DBT examination were performed in all study subjects. Mammography scores (1 to 5) based on RCR Breast Group criteria were recorded and an overall score for 2DM was established based on the highest value of MLO and CC scores. Unblinded interpretation of the 2DM followed by MLO-alone DBT was carried out. Statistical analysis was done using the receiver-operative characteristic (ROC).

**Results** There were 111 (22.1%) cancers. The ROC area under the curve (AUC) for two views combined 2DM was 0.915 and for MLO-alone DBT was

0.960 (difference 0.045;  $P = 0.009$ ). The distribution of M-scores against the histology-proven malignant lesions is presented in Table 1.

**Conclusions** In this series, one-view (MLO-alone) DBT had superior sensitivity compared with two-view 2DM.

**P4**

**Accuracy of breast cancer detection with full-field digital mammography and integral computer-aided detection correlated with breast density as assessed by a new automated volumetric breast density measurement system**

K Pinker<sup>1,2</sup>, N Perry<sup>2</sup>, S Milner<sup>2</sup>, K Mokbel<sup>2</sup>, S Duffy<sup>3</sup>  
<sup>1</sup>Department of Radiology, Division of Molecular and Gender Imaging, Medical University Vienna, Austria; <sup>2</sup>Princess Grace Hospital, The London Breast Institute, London, UK; <sup>3</sup>Wolfson Institute, Queen Mary College, University of London, UK  
*Breast Cancer Research 2010, 12(Suppl 3):P4* (doi: 10.1186/bcr2657)

**Purpose** To assess the diagnostic performance of computer-aided detection (CAD) for full-field digital mammography (FFDM) correlated with breast density assessed by an automated breast density measurement system (Hologic, Quantra) in breast cancers and age-matched healthy controls.

**Materials and methods** Two hundred breast cancers imaged with FFDM and 200 age-matched healthy controls were evaluated retrospectively using CAD. A CAD mark was scored true-positive if it correctly indicated a malignant lesion. All other CAD marks were considered false. CAD sensitivity and specificity were calculated and correlated with mammographic breast density (%).

**Results** CAD correctly identified 157 of the 200 cancers, a sensitivity of 79%. Sensitivity was suggestively but nonsignificantly lower with increased density ( $P = 0.09$ ). In those cancer cases with density at or below the median of 20%, sensitivity was 82%, compared with 75% in those with density above the median. The presence of one or more false CAD prompts was suggestively but not significantly more likely in controls than cases (87% vs. 80%,  $P = 0.06$ ). The number of false prompts was significantly higher in controls (average 3.6 vs. 2.6,  $P < 0.001$ ). False prompts were significantly less likely with higher density ( $P = 0.008$ ). False prompts were present in 86% of cases and controls with density at or below the median, and in 81% of those with density above the median.

**Conclusions** Increased breast density is significantly associated with higher specificity of CAD, and there is suggestive evidence that it is also associated with lower sensitivity.

**P5**

**Surveillance following breast cancer: is it cost-effective?**

L Tennent<sup>1,2</sup>, G MacLennan<sup>1</sup>, SD Heys<sup>3,4</sup>, F Gilbert<sup>4,5</sup>, L Vale<sup>1,2</sup>, Mammographic Surveillance HTA Group  
<sup>1</sup>Health Services Research Unit, University of Aberdeen, UK; <sup>2</sup>Health Economics Research Unit, University of Aberdeen, UK; <sup>3</sup>Division of Applied Medicine, School of Medicine and Dentistry, University of Aberdeen, UK; <sup>4</sup>Aberdeen Royal Infirmary, NHS Grampian, Aberdeen, UK; <sup>5</sup>Aberdeen Biomedical Imaging Centre, University of Aberdeen, UK  
*Breast Cancer Research 2010, 12(Suppl 3):P5* (doi: 10.1186/bcr2658)

**Introduction** There is debate about the role and optimal organisation of follow-up following treatment for primary breast cancer. We estimated using the best available evidence whether early detection by surveillance of ipsilateral breast tumour recurrence (IBTR) and metachronous contralateral breast cancer (MCBC) was cost-effective.

**Methods** An economic model compared alternative surveillance strategies involving mammographic surveillance and/or clinical follow-up performed at differing surveillance intervals. The model structure was based upon discussions with the clinical experts involved in the study, a survey of UK breast surgeons and radiologists, and the literature. Data to populate the model came from a series of systematic reviews and an analysis of the West Midlands Cancer Intelligence Unit Breast Cancer Registry. Results of the model were presented as incremental cost per QALYs – a measure of relative efficiency.

**Results** The surveillance strategy most likely to be cost-effective was mammographic surveillance alone provided every 12 to 24 months. This result held for women who had previously received either breast-conserving surgery or mastectomy. Results were sensitive to primary tumour characteristics (size,

**Table 1 (abstract P3)**

Imaging score	MLO-CC combined 2DM, n (%)	MLO-alone DBT, n (%)	Percentage difference, Δ
M1	1	0	0
M2	0	0	0
M3	28 (25.2%)	18 (16.2%)	↓9%
M4	32 (28.8%)	26 (23.4%)	↓5.4%
M5	50 (45.0%)	67 (60.3%)	↑15.3%