AN AUDIT OF SCREENING-DETECTED BREAST CANCERS WITH DISCORDANT INTERPRETATIONS ON DOUBLE READ SCREENING MAMMOGRAPHY

Dr B Batohi, Dr R Rahim, Dr M Michell, Dr M Adejolu
King’s College Hospital, London

Background
Breast cancer is the most common cancer in women with roughly 1 in 9 women affected during their lifetime. During the year 2010-2011, a total of approximately 2.1 million women in the United Kingdom were screened on the NHS Breast Screening Programme (BSP) with a resultant 17,258 total cancers detected1.

Standard practice through the NHS BSP is double reading in order to maximise cancer detection rates. The South East London Breast Screening Service provides breast-screening services for women within the Lewisham, Lambeth, Southwark, Bromley, Bexley and Greenwich primary care trusts. Women ages 50 – 70 are invited for a two view screening mammogram every three years. Age extension from 47 – 73 years has been piloted in the Lewisham, Lambeth, Southwark and Bromley areas since 2009.

Breast cancers diagnosed on a background of discordant mammographic interpretation are likely to be small (<15mm) and have subtle mammographic features. The most common abnormalities found on discordant breast cancer screening mammograms have been reported as microcalcifications2 and parenchymal distortions3.

Aims and Objectives
1. To analyse the mammographic features of screening detected cancers with discordant interpretations on the initial read
2. To improve the accuracy of individual readers in detecting breast cancers on screening mammograms by reviewing the features of the cancers diagnosed following discordant reads.

Method
A search was performed on the South East London Breast Screening Service database which showed that 8743 women were screened and 660 total breast cancers were diagnosed between 01/04/10 and 31/03/11. Of these, 57 were the result of discordant findings on the screening mammograms which eventually lead to a diagnosis of cancer following consensus review and further assessment. All readers were aware that all cases had a mammographic finding that resulted in a diagnosis of breast cancer. A consensus review of all cases was performed at a meeting and the findings recorded. In cases where more than one lesion was identified on a patient’s screening mammogram only the largest lesion has been assessed.

The following were noted:
- The relative proportions of breast density in breast cancers diagnosed following discordant reads.
- The distribution of the mammographic abnormalities that were identified.
- The size of the abnormality (small cancers were classified as less than or equal to 15mm).
- The Royal College of Radiologists Breast Group classification score for each abnormality identified. This was done retrospectively at the consensus meeting.
- The location of the various mammographic abnormalities in terms of quadrants. If the abnormality was only seen on one view then the half of the breast was noted instead.
- The proportion of lesions seen on only one view and, if so, was this on the MLO view.
- The final histological diagnosis and grade of the biopsied abnormality. In cases of ductal carcinoma in situ (DCIS), the grade has not been recorded.
- Reader 1 versus Reader 2 variability

Results
A total of 57 lesions in 54 breasts were found to have discordant interpretations on screening mammography. 18 of these lesions were identified by the first reader and 39 by the second reader. One patient has been excluded from this audit as the 2012 screening mammogram could not be found and therefore a consensus analysis could not be formulated. One patient had had a mastectomy therefore only a mammogram of only one breast was available. One patient was recalled for a circumscribed mass which was biopsy-proven to be a fibroadenoma. However at the assessment clinic a second lesion was identified on ultrasound which was biopsy proven to be malignancy.

Discussion and Conclusion
- Small cancers are often subtle and difficult to identify. Dense breasts are identified in approximately 27.6% of women at screening mammography4. Britton et al showed that the sensitivity for detecting breast cancer in symptomatic patients reduced from 90.1% in patients with predominantly fatty breasts to 45.9% in patients with dense breasts. The specificity increased from 99.1% to 99.7% respectively5.
- Invasive lobular carcinoma accounted for less than 10% of the cancers detected in our audit which corresponds with the data collected in other breast cancer screening studies6. These cancers often present with more subtle mammographic features such as architectural distortions.
- The Royal College of Radiologists (RCR) recognise that radiological discrepancies do occur and that "to err is human". Reasons for why discrepancies occur include inadequate or incorrect clinical information, poor quality imaging, excessive workload or poor working conditions (e.g. tiredness, inattention, distraction, heat) and observational or interpretation errors7. In our audit 19.5% of the discordant cancers were retrospectively given a RCR breast group mammographic classification of H5, meaning that the abnormality was radiologically malignant. The limitation of this audit is that all those present at the consensus review were aware that each case resulted in a diagnosis of breast cancer.
- Previous audits at our institution show that years of experience in mammographic reading does not significantly influence the rate of missed mammographic abnormalities amongst readers.
- All individuals who have not recognised the mammographic abnormality receive confidential feedback in a structured manner that encourages an atmosphere of learning rather than blame. Sensitivity in detected abnormalities on screening mammograms can be addressed in various ways. Each breast screening professional is recommended to complete a PERFORMS assessment in Mammographic Screening (PERFORMS) assessment on a regular basis. The RCR also require mammogram readers to report at least 5000 screening mammograms per year. Attendance at multidisciplinary meetings and assessment clinics along with the feedback received at discordant cancer meetings are also essential parts of continued professional development. In the future the use of tomosynthesis in routine breast screening may be a method which improves the sensitivity of detecting these early cancers.

Figure 1 Distribution of breast density is identified discordant breast cancers

Figure 2 Size of lesions found on discordant breast cancer screening mammograms

Figure 3 Mammographic views on which the discordant breast cancers were identified

Figure 4 Location of the abnormality in the affected breast

Figure 5 Classification of the abnormalities relative to the RCR breast group classification

Figure 6 Types of abnormalities identified on screening mammograms of discordant breast cancers

Figure 7 Distribution of soft tissue abnormalities

Figure 8 Number of histological diagnoses

Figure 9 Distribution of grade of intraductal carcinoma and histological carcinomas

Figure 10 Example of a 20mm M5 breast cancer

Figure 11 Example of a 5mm M3 microcalcification within the left upper outer quadrant diagnosed as DCIS

Figure 12 Example of a 7mm M3 circumscribed mass within the left upper outer quadrant diagnosed as IDC

Figure 13 Example of a 30mm M4 architectural distortion within the right lower breast diagnosed as DCIS

Reference


