578   Poster
Predictive markers for breast cancers of limited extent

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Background: Magnetic Resonance Imaging (MRI) is more often considered to plan and guide minimally invasive treatment or partial breast irradiation (PBI) in patients with localized breast cancer. Although MRI has shown superior ability to visualize invasive breast cancer, microscopic disease extensions are underestimated in 50% of tumours at distances $\geqslant$10 mm from the MRI-visible lesion [1]. The purpose of this study was to find preoperative markers predictive of breast cancers of limited extent (i.e, small components of disease) and extended breast cancers (extensive components of disease) around the MRI-visible lesion.

Materials and Methods: Seventy-eight breast-cancer patients (80 breasts) eligible for breast-conserving therapy on the basis of conventional imaging and MRI were included. The wide-local excision specimens were processed using complete embedding, reconstruction and correlation with MRI.

Tumors were stratified by the absence (limited breast cancer) or presence (extensive breast cancer) of occult microscopic disease beyond 10 mm from the edge of the MRI-visible lesion. Imaging features at mammography, ultrasonography, contrast-enhanced MRI as well as at histology were evaluated for their ability to discriminate between limited and extensive breast cancers. Binary logistic regression with feature selection by double cross-validation was employed to create a prediction model that identifies breast cancers of limited extent.

Results: Of the 80 tumors, 77 were visible at MRI. Thirty-nine (51%) tumors were of limited extent. At multivariate analysis, four tumor characteristics were significantly correlated with differences between limited and extensive breast cancers: washout kinetics at MRI, estrogen and progesterone receptor status, and DCIS in the index tumor (area under ROC curve=0.85). The multivariate prediction model correctly identified one-third (14/39) of the breast cancers of limited extent at negligible error rate (5%).

Conclusions: Cancers with limited disease load around the MRI-visible lesion are associated with absence of washout kinetics at MRI, positive estrogen receptor status, negative progesterone receptor status and low quantity of DCIS in the index tumor. Preoperative knowledge of these properties from MRI and core biopsies may help to identify tumors suitable for minimally invasive therapies or PBI.

References

[1] Visualization of invasive breast cancer and its subclinical disease spread within the breast: Precise correlation between MR imaging findings and histopathologic findings. ASCO Annual Meeting 2009. Abstract number 610.

579   Poster
Analysis of atypical hyperplasia and carcinoma in situ in nonpalpable breast lesions: final outcome and underestimation rates

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Background: The diagnosis of high risk and preinvasive lesions increases with breast cancer screening. Their significance and management is related to the type of biopsy sampling. We reviewed all consecutive high risk and in situ lesions diagnosed in a prospective cohort.

Material and Methods: From 2001 to 2007, 2708 nonpalpable breast lesions BI-RADS 3 to 5 were prospectively reviewed by a multidisciplinary staff in a breast disease unit (Saint Louis Hospital, Paris) and were reclassified according to the BI-RADS categories. On the 2708 lesions, 309 core needle biopsies, 807 vacuum assisted biopsies, and 521 open breast biopsies were performed. The median follow up was 36.9 months.

Results: A total of 371 high risk and in situ lesions was diagnosed (13.7%). Biopsy showed atypical ductal hyperplasia (ADH) in 78 cases, atypical lobular hyperplasia (ALH) in 50 cases, lobular carcinoma in situ (LCIS) in 24 cases, and ductal carcinoma in situ (DCIS) in 219 cases. In

78 ADH lesions, surgery was performed in 67 cases (86%), and carcinoma was diagnosed in 10 cases (12.8%). In 50 ALH lesions, surgery was performed in 39 cases (78%); seven carcinomas were diagnosed (14%). All 24 lesions yielding LCIS were excised, one single lesion was upgraded to lobular infiltrating carcinoma (4.2%). On 219 biopsies yielding DCIS, surgery performed in 211 (97%) revealed malignant invasive lesions in 34 cases (15.5%).

We performed an analysis excluding high risk or in situ lesions diagnosed on open breast biopsy, as their significance differs compared to when diagnosis is made on a core needle or a vacuum assisted biopsy. For ADH and ALH, the underestimation rate of malignancy was 22% and 18.8% respectively, and for LCIS and DCIS, the underestimation rate of invasive disease was 8.3% and 25.2% respectively.

Conclusion: Both atypical hyperplasia and in situ carcinoma are associated with an underestimation of malignancy. Future research needs to focus on accurately identifying clinical, radiologic, and histologic predictors of invasion in patients with DCIS diagnosed on biopsy, and select the most appropriate candidates for sentinel lymph node biopsy in front of high risk or in situ lesions.

580   Poster
Contra-lateral breast cancer in patients with previous breast cancer − a twelve year experience

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Background: Current practice in the UK for evaluating contra-lateral disease in women with a recent diagnosis of breast cancer is to perform clinical examination and mammography. In the ACRIN trial, 969 women diagnosed with recent breast cancer, MRI detected biopsy proved contra-lateral tumours in 30 of 969 women after negative mammographic and clinical examination. This was a yield of 3.1%. However the positive predictive value of a positive MRI was only 21%.

Aims: Aim of the study is to identify the incidence of contra-lateral breast cancer in previous breast cancer patients and the role of MRI in follow up.

Methods: Details of patients diagnosed with breast cancer over a period of 12 years were obtained from the Cancer Registry. The database was then scrutinized to establish the number of bilateral/contra-lateral cancers. Time to diagnosis of the contra-lateral cancer was identified, mammography of these identified patients were reviewed retrospectively to identify whether it was a missed diagnosis.

Results: Over a twelve year period (1995–2006), 2051 cancers were diagnosed in 2005 women. 23 out of 2005 were bilateral cancers at initial assessment (1.5%). Fifteen developed contra-lateral cancers at a later date (0.75%). Contra lateral cancers were seen over a period from 15 months to 84 months. 73% of contra lateral cancers were seen in the first 5 years.

Four contra lateral cancers were seen within the first two years, seven were seen between 2−5 years and the remainder was seen between 5−8 years. The seven patients diagnosed with contra lateral cancers in the first three years could have been identified early with addition of an MRI. In order to pick up this small group, all patients (n = 2005) should had regular MRI instead of mammograms, that would be 7 out of 2005 suggesting a pick up rate of 0.35%. If infiltrating contra-lateral cancers were considered then it would be 3 patients (0.15%). All of the contra lateral disease was diagnosed at routine follow up surveillance examinations.

Conclusions: Overall rate of contra-lateral breast cancer was 2.25%, of which 1.5% was diagnosed at the time of the initial breast cancer detection. Addition of an MRI in surveillance would have prevented three patients out of 2005 patients developing contra lateral infiltrating cancer. To conclude the incidence of contra lateral cancers is low and routine use of MRI for contra lateral breast surveillance is not feasible and cost effective.

581   Poster
Actual role of mammographic wire-guided biopsies

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Background: For years, mammographic wire-guided biopsy (MWGB) has been the standard procedure for diagnosing not palpable breast lesions. Nowadays, sterotactic core biopsy in mammographically detected lesions, or sonographic guided core biopsy, permit histological confirmation previous to surgery, making possible to add in the same definitive surgery sentinel node biopsy in invasive carcinomas. We evaluated our MWGB in