Friday, 26 March 2010   **18:15–19:15**

POSTER SESSION
Diagnosis, imaging and screening

561   Poster discussion
Impact of preoperative pathology diagnoses on lumpectomy margin involvement and re-excision rates in breast cancer patients

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Background: The present study aimed to estimate the impact of (1) the grade of suspicion (conclusively malignant vs. less severe) and (2) the type (FNA vs. CNB) of preoperative pathology diagnoses on margin involvement and re-excision rates in breast cancer patients treated by lumpectomy.

Materials and Methods: We identified all breast cancer patients with FNA and/or CNB followed by lumpectomy within 90 days presenting from 1999–2008. FNA and CNB were diagnosed as C1−5 and B1−5, respectively: C1/B1, inadequate; C2/B2, benign; C3/B3, atypical; C4/B4, suspicious; or C5/B5, malignant. We defined a conclusive diagnosis as C5/B5. The primary endpoint was a positive margin (defined as tumour cells transecting the inked margin), the secondary endpoint was re-excision.

Results: In 1066 eligible patients, conclusively malignant preoperative diagnoses were associated with lower rates of positive margins (20.9% vs. 45.9%, $P < 0.001$) and re-excisions (22.9% vs. 47.6%, $P < 0.001$). These effects remained significant on multivariate analysis ($P = 0.004$ and $P = 0.001$, respectively) adjusting for several clinicopathologic variables and were similar for the FNA and CNB groups ($P = 0.451$ and $P = 0.213$, respectively). FNA (n = 866) and CNB (n = 200) had similar rates of positive margins ($P = 0.816$) and re-excisions ($P = 0.812$).

Table. Logistic regression analysis of factors predicting positive lumpectomy margins

Factor	Odds ratio (95% CI)	P-value
Age (years)	1.0 (0.98–1.01)	0.509
Palpable (vs. nonpalpable)	0.77 (0.54–1.09)	0.135
Mammographic aspect	−	0.997
FNA (vs. CNB)	0.94 (0.33–1.60)	0.724
Conclusive (vs. inconclusive)preoperative pathology diagnosis*	0.19 (0.06–0.59)	0.004
Delay between preoperative diagnosis and lumpectomy (days)	1.01 (1.00–1.03)	0.083
Tumor size (cm)	1.22 (1.04–1.43)	0.013
Tumor grade	−	0.092
Extratumoral DCIS	0.98 (0.71–1.35)	0.875
LVI	1.87 (1.22–2.87)	0.004
Multifocality	2.15 (1.38–3.34)	0.001
Tumor histology	−	0.040
Lobular carcinoma (vs. other)	1.32 (0.94–1.85)	0.105
DCIS (vs. other)	1.00 (0.66–1.51)	0.996

95% CI indicates 95% confidence interval; FNA, fine needle aspiration; CNB, core needle biopsy; DCIS, ductal carcinoma in situ; LVI, lymphovascular invasion.

Conclusions: Obtaining a conclusive preoperative diagnosis by either FNA or CNB is key to effective and complete breast conservation therapy. Hence, breast centres may lower re-excision rates by optimizing preoperative pathology work-up.

562   Poster discussion
Magnetic resonance imaging versus mammography for diagnosing ductal carcinoma in-situ (DCIS) around invasive breast cancer

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Background: Intraductal tumor spread around invasive breast cancers is one of the major reason for positive margins after breast conservation surgery. Therefore, it is very important to accurately map the presence and the extent of intraductal components before breast conserving treatment is initiated. The purpose of this study was to investigate the respective sensitivities of mammography and of contrast enhanced breast MRI for identifying and delineating intraductal components around invasive cancers.

Method and Materials: Between 02/2003 and 10/2008, a total 139 patients, mean age 54 years (28−80) received the final surgical pathology diagnosis of invasive breast cancer with additional intraductal components. All women underwent bilateral mammography with at least 2 views, plus spot compression views where appropriate, and high-resolution bilateral breast MRI. All imaging studies were read independently by experienced readers. We investigated the mode of detection of DCIS associated with invasive cancers and analyzed whether there are subgroups of women who have a higher likelihood of being diagnosed with additional DCIS-components in MRI.

Results: 51/139 (37%) of the intraductal components had been prospectively identified by mammography; 118/139 (85%) by MRI. In 47/139 (34%) mammography and MRI were concordantly positive. In 4/139 (3%), only mammography was positive, whereas MRI was false negative. In 71/139 (51%), only MRI was positive, whereas mammography was false negative. In 17/139 (12%), mammography and MRI were both false negative. 122/139 (88%) intraductal components were identified if mammography and MRI were combined. The detection of additional DCIS-components with MRI was independent from patient age, familial risk and personal risk for breast cancer ($p < 0.05$). Neither histology of the associated invasive cancer, nor grading of the invasive cancer, nor mammographic breast density, predicted the detectability of an intraductal component by mammography or MRI ($p < 0.05$).

Conclusion: MRI offers a significantly higher sensitivity for diagnosing intraductal components than mammography alone. Thus, MRI provides a more accurate road map for breast conserving surgery than mammography alone. There are no subgroups of women that may not profit from breast MRI for diagnosing DCIS-components.

563   Poster discussion
Influence of different types of antihormonal therapy (tamoxifen versus aromatase inhibitors) on parenchymal background enhancement and incidence of benign focal enhancement in breast MRI

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Background: Most women with receptor-positive breast cancer receive anti-hormonal treatment. Usually, patients start with 5 years of tamoxifen (TAM), and many switch to aromatase inhibitors (AI) thereafter. Purpose of this study was to investigate the influence of TAM vs. AI on the degree of parenchymal background enhancement and on the incidence of focal enhancement in dynamic breast MRI.

Method and Materials: A serial study was performed in 40 women (mean age 56 years), who underwent breast MRI three times: Before starting any antihormonal medication, then under TAM medication, and for a 3rd time after switching to an AI. Pattern of background enhancement and incidence of benign appearing focal enhancement (<5 mm) and of benign lesions were recorded; degree of enhancement was rated on a 4-point scale (1 for no enhancement through to 4 for strong enhancement) and was quantified by ROI measurements in each MRI study The Student t-test and Wilcoxon test for paired samples was used to check for statistical significance.

Results: In 34 of the 40 women (85%) enhancement rates of the normal breast parenchyma were highest without any antihormonal medication, decreased significantly under TAM, then increased again under AI therapy. In the remaining 6 women (15%), enhancement rates decreased significantly under TAM and remained low under AI. Mean background enhancement rate before treatment was 50.3%, versus 4.3% under TAM, and 17.4% under AI ($p = 0.0025$). Before starting antihormonal treatment, background enhancement was scored as moderate or strong (grade 3 or 4) in 32/40 (80%). Under TAM, it was scored as no or minimal (grade 1 or 2) in 35/40 (88%) of patients. Under AI, it was scored as minimal or moderate (grade 2 or 3) in (34/40, 85%) ($p = 0.0035$). The incidence of enhancing foci was significantly higher under AI therapy (16/40; 40%) compared to TAM (4/40; 10%) ($p = 0.0047$).

Conclusion: There is a substantial difference between the local effects of TAM versus AI on parenchymal background enhancement and on incidence of benign focal enhancement in breast MRI. Whereas TAM leads to a virtually complete suppression of hormonal induced enhancement (both background and focal enhancement), the effects of AI appear to be less complete. This means that whereas in a patient under TAM, benign diffuse or focal enhancement due to residual hormonal stimulation is unusual and deserves aggressive work up, this is not necessarily true for women under AI. Alike, in patients who were switched from TAM to AI, the (re-)appearance of focal enhancement or stronger background enhancement can be considered normal and should prompt a more conservative management.