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The role of duct cytology in patients presenting with nipple discharge

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Background: Nipple discharge accounts for up to 5% of referrals to breast surgical services. With the vast majority of breast carcinomas originating in the ductal system, symptomatic dysfunction of the ductal system often raises disproportionately elevated clinical concern. Pathologic nipple discharge has traditionally caused somewhat of a diagnostic dilemma, with benign and malignant causes of pathological nipple discharge being difficult to distinguish clinically, radiologically and histologically. The aim of our study was, firstly, to evaluate the clinical importance of nipple discharge as an indicator of underlying malignancy and, secondly, to assess the diagnostic application of duct cytology in patients presenting with nipple discharge.

Methods: We performed a retrospective analysis of all patients presenting with nipple discharge as their primary symptom to the symptomatic breast unit at Mater Misericordiae University Hospital over a 30-month period (n = 313). The Hospital Inpatient Enquiry (HIPE) System and BreastHealth database were used to identify our study cohort. The medical records, radiologic imaging and cytologic reports of all patients were analysed. Parameters evaluated included patient demographics, presenting complaint, clinical evaluation, radiological assessment (including mammography, ultrasound and magnetic resonance imaging) and cytological analysis.

Results: Of the 313 patients presenting with nipple discharge as their primary complaint, 0.32% (1/313) were male and 99.68% (312/313) female. The discharge was bloody in 43.8% (137/313) of cases, serous in 41.5% (130/313) of cases, milky in 8.6% (27/313) of cases and green in 6.1% (19/313) of cases. 23.6% (74/313) of all cases presenting with nipple discharge had nipple aspiration performed and duct cytology analysed, of which 6.8% (5/74) had an underlying diagnosis of breast carcinoma. Duct cytology was diagnostic of the underlying breast carcinoma in 3/5 cases. Of our cohort of 313 patients presenting with nipple discharge, invasive breast carcinoma was identified in 4.2% (13/313) of patients.

Conclusion: Nipple discharge can be an alarming symptom for a patient, however it is a poor indicator of an underlying malignancy. With a systematic approach to patients with pathologic nipple discharge, involving clinical, radiological and histological evaluation, the risk of underlying carcinoma can be accurately defined. Nipple aspiration and duct cytology for the assessment of nipple discharge is of limited diagnostic benefit.

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Neoadjuvant chemotherapy in breast cancer – prediction of pathological response by FDG PET

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Background: Neoadjuvant chemotherapy (NACT) is used with increasing frequency for operable breast cancer (BC): it allows to increase breast conservation surgery and to evaluate chemosensitivity of the tumor. An important goal of NACT is pathological complete remission, that correlates with a higher relapse-free and overall survival rate. Anyway the correlation between clinical and pathological complete response is quite poor (about 50%). In this study (Arianna 01 Project) we investigate if PET can improve this correlation and if it is able to identify early predictive signs of response in pts treated with neoadjuvant anthracycline- and taxane-based chemotherapy for BC.

Materials and Methods: we included in the present study T2−4 N0−3 M0 hystologically confirmed BC pts and M1 olygometastatic pts, if the therapeutic program included breast surgery after chemotherapy. Pts were evaluated with PET scan at baseline, every 2 courses and at the end of NACT. Metabolic therapy response was quantitatively measured by SUVmax within the primary lesion and by relative (%) SUVmax decrease. Pathological response was evaluated according to Miller and Payne classification, that ranges from grade 1 (no response) to grade 4−5 (only small clusters or individual cells residual, or no malignant cells at all).

Results: Up to now 33 pts have been enrolled and 8 of them are still on NACT. The present analysis is focused on the first 25 pts. Median age 49 (range 31−72), median KPS 100%; stage II: 12 pts; stage III: 10 pts; stage IV (olygometastatic): 3 pts. After 6−8 courses of NACT we observed 12 (48%) grade 4−5 pathological remissions (36% and 12% respectively). All pts had pathological baseline PET (focal lesion with SUVmax > 2, median 10, range 2.5−23) at primary tumor level; a complete normalization (SUVmax $\leqslant$ 2) was observed in 17/25 cases (68%) at the end of NACT. The overall concordance between PET and pathological evaluation was 72% (18/25), while PET overestimated pathological response in 6/25 cases (24%). The positive and negative predictive values were 88% and 65%, respectively. After the second course of NACT the cut-off value of SUVmax reduction according to ROC curves analysis was 65%: 10/12 pts (83%) with grade 4−5 pathological response and 4/13 pts (31%) with grade 1−2-3 pathological response had a SUVmax decrease >65% ($p < 0.002$).

Conclusions: the concordance between PET at the end of NACT and pathological remission is 72%; a decrease of SUVmax > 65% after 2 courses of NACT is significantly more frequent in pts with optimal pathological remission (83% vs 31%). Therefore in the absence of PET response after 2 courses of NACT the probability of pathological response is low and a different therapeutic approach could be considered in these pts.

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Potential impact of preoperative MRI on breast-conserving surgery of invasive breast cancer

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Objective: The aim of this retrospective cohort study was to assess whether differences in completeness of tumor excision exist between women who underwent preoperative contrast-enhanced (ce-) MRI (the MRI-group) and those who did not (the non-MRI-group).

Methods: A cohort of 527 women eligible for breast-conserving therapy (BCT) between November 2000 and June 2004 was evaluated. Eligibility for BCT was established by conventional breast imaging and clinical examination. Five-hundred-and-thirty-five breast tumors were found. The mean age of the women was 57.2 years (range 28−89). Two-hundred-and-sixteen patients (41%) underwent a preoperative MRI in addition to conventional imaging. Patient and tumor characteristics, and differences in surgical outcome were evaluated. In addition, the impact of the preoperative MRI on the treatment strategy was assessed.

Results: In 31 women (14.4%) more extensive disease was detected with MRI, which led to treatment change (mastectomy (12%) or wider excision (2.3%)). MRI also depicted six contra-lateral tumors (2.8%). The rate of incompletely excised infiltrating ductal carcinoma (IDC) was 16/245 (6.5%) in the non-MRI group and 3/153 (2.0%) in the MRI group ($p = 0.03$). No significant difference was found in the rate of incompletely excised infiltrating lobular carcinoma: 9/31 in the non-MRI group vs 6/21 in the MRI-group (both 29%).

Conclusion: Preoperative ce MRI may lead to a lower rate of incompletely excised IDC in breast-conserving surgery compared to the rate after conventional mammography, ultrasonography and palpation only.

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“Artery and Vein together” synonymous of benignity in mammary nodules?

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Introduction: Stravros in 1995 described the ultrasound characteristics of the benign nodules in the breast. In some probable benign or indeterminate nodules, Doppler color visualizes an artery accompanied by his vein in the periphery of the lesion. We might suppose that this constitutes an anatomical normal condition, contrasting with new disordered vessels product of tumor angiogenesis in malignant lesions. Might it be consider a new sign of benignity?

Aims: Evaluate the frequency of the sign “artery and vein together” in the Doppler color in our series of Core-biopsies. Determine his association with benign, pre-malignant and malignant lesions and precise the value for benignity.

Material and Method: Between 2002 and 2007 we biopsy 1058 consecutive nodules under Ultrasound (ultrasound scanners Philips HDI5000, IU22, transducers: 5−17 MHz, pistol Bard, needles 14G). They were evaluated with Doppler Color before the biopsy. The ultrasound characteristics of Doppler color of every nodule and the histological results were registered in a database (FileMarker Pro8.5). For the sign “artery and vein together” we calculated sensibility, specificity, predictive positive value (PPV), predictive negative value (PNV) and diagnostic accuracy. We exclude 297 cases with no record of the histology.