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Investigation of local blood flow in breast cancer by colour Doppler ultrasonography and immunohistochemistry

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To investigate the relationship between local blood flow and progress, as well as prognosis, of the tumor in breast cancer, we studied tumor local blood flow by colour Doppler ultrasonography before surgery and performed immunostaining of the VIIIth factor-related antigen and VEGF using formalin- fixed paraffin-embedded specimens of resected tissue in 50 patients with primary breast cancer.

Local blood flow in the tumor periphery was more profuse than within the tumor, and there was a positive correlation between tumor diameter and peripheral blood flow. Colour signal density was higher in papillotubular carcinoma than in scirrhous carcinoma. However, no relationship was noted between blood flow and stage, ER, pre- or post-menopause and age. Neovascular density was high in the cancer tissue periphery, but was higher in scirrhous carcinoma than in tubular carcinoma. A positive correlation was shown in stage and tumor diameter, and neovascular density was high in metastatic lymph nodes of more than 5, in patients younger than 60 years old and in ER negative patients. Immunostaining of VEGF was stronger in the tumor periphery, but was not related to tumor diameter, lymph node metastasis and ER. VEGF strongly stained in the cancer tissues of all cases with local recurrence, suggesting that it might be involved in the local progress of the tumor.

The results of the present study on local blood flow, neovascular density, angiogenesis factor, and tumor proliferation of breast cancer tissue indicated that blood flow of the tumor periphery may play an important role in the progress of its proliferation, although each study was not completely coincident.

And this also suggests that the investigation of tumor local blood flow before and after surgery may provide useful information for the treatment of breast cancer.

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Specialist registrar (SpR) training in fine needle aspiration cytology (FNAC) of breast lumps – Can we do better?

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Aim: Following an initial training period in FNAC most surgical trainees examine patients and perform FNAC unsupervised, leading to highly variable diagnostic rates using this technique. Careful patient selection however, as well as technical expertise, contributes to the diagnostic rate from FNAC. The aim of this study was to look at the percentage of informative aspirates obtained by an SpR at a new patient breast clinic following examination of all patients by both SpR and the Consultant and the joint discussion of lumps or nodularity requiring biopsy.

Method: Following an initial two week training period by the consultant, the FNAC results obtained by the SpR. in a one-stop breast clinic were recorded prospectively for the next five months. C1 results were considered unhelpful, whereas C2–C5 (inclusive) results were considered informative. A total of 59 FNAs (out of 125 patients) were performed in 15 clinics and the results are presented in blocks of three successive clinics.

Results:

	No. FNAs Performed	Informative Cytology (%)
Clinics 1–3	10	10 (100%)
Clinics 4–6	14	11 (78.6%)
Clinics 7–9	10	9 (90%)
Clinics 10–12	14	13 (92.9%)
Clinics 13–15	11	11 (100%)
All clinics	*59*	*54 (91.5%)*

Conclusions: The results from this study would suggest that very acceptable diagnostic rates of FNAC can be achieved by a year one SpR. Furthermore a more prolonged training period, with joint dicussion regarding the selection of appropriate lumps and/or nodularity for investigation by FNAC, may contribute to higher quality training and higher diagnostic rates using this technique.

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Specialist registrar (SpR) training in breast and axillary examination

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Aim: The aim of this study was to determine the training time required for a 1st year SpR to become competent in breast and axillary examination.

Method: During a five month period all breast and axillary examination performed by the SpR at the rapid access, new patient breast clinic was compared with the consultants examination findings. The breast examination was classified as normal, focal nodularity, generalised nodularity, or a discrete lump subclassified as a cystic, benign solid or malignant. The axillary examination was classified as no lymphadenopathy, mobile benign nodes, mobile malignant nodes or fixed nodes.

Results:

	Breast examination Concordance	Axillary examination Concordance
Clinics 1–3 (n = 22)	18 (82%)	21 (95%)
Clinics 4–6 (n = 21)	18 (86%)	19 (91%)
Clinics 7–9 (n = 33)	27 (82%)	31 (94%)
Clinics 10–12 (n = 27)	22 (82%)	26 (96%)
Clinics 13–15 (n = 22)	22 (100%)	22 (100%)
Totals (n = 125)	*107 (85.6%)*	*119 (95.2%)*

There was one case of a missed discrete lump by the SpR, which although the consultant thought was benign, was in fact malignant on FNAC (clinic 5). Another lump was thought to be a cyst by the SpR.(prior to FNAC), which the consultant considered to be malignant (clinic 6) and FNAC confirmed malignancy. There were five cases which the SpR. considered malignant, but the consultant considered benign; one of these proved to be cancer.

Conclusions: The results of this study would suggest that a minimum training time of 3 months is required for a 1st year SpR. to become competent in breast and axillary examination. We would recommend close supervision by the consultant of all cases seen by the SpR. during this period.

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Analysis of serum IgG1 in patients with benign and malignant breast disease

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Background: An association of a characteristic and highly significant change in the serum pattern of immunoglobulin IgG subclasses has been previously shown in malignant diseases of various origins. The decrease of %IgG1 and the increase of %IgG2 has to be seen in relation to the absolute concentration of total serum IgG. The aim of our study was to evaluate %IgG-subclasses as a tumour marker in breast cancer and benign breast disease.

Methods: IgG1, IgG2 and total IgG were preoperatively measured form patients' sera by a modified affinity chromatography, originally described by Duhamel.. Group A (healthy controls) consisted of 174 females, Group B (benign disese) of 320 patients and Group C (malignant disease) of 303 patients. In the last group in 13 patients an In situ carcinoma and in 22 a pT1a-tumour (diameter <0.5 cm) were diagnosed. The results of the 3 groups were compared to each other. Additionaly the subgroups of In situ carcinomas and pT1a-tumors were calculated separately. Furthermore Group C %IgG1 was set into relation to the different TNM-stages according to UICC.

Results: (1) The mean value of %IgG1 in Group A was 63.3 ± 0.5 s.e.m., in Group B 57.75 ± 0.4 s.e.m. and in Group C 52.37 ± 0.5 s.e.m.

(2) The difference between Group A and C between B and C were statistically significant ($p < 0.0005$).

(3) No quantitative association could be found according to the TNM-stage with two surprising exceptions: The %IgG1-value for In situ carcinomas was 56.97 ± 2.3 s.e.m, this for pT1a-tumours 57.7 ± 1.8 s.e.m. The results of these two subgroups were not statistically significant from Group B.

(4) The sensitivity and specificity of %IgG1 to discriminate between controls and malignancy was found to be 75% and 87%, respectively.

Conclusion: The significant decrease in %IgG1 in total serum IgG represents an indirect, tissue nonspecific and early marker of malignant proliferation that distinguishes breast cancer patients from healthy controls.