

Furthermore, we found that in absence of Bcl-2 overexpression both Bax and/or Bak overexpression (both present in 60% of cases), increased the apoptosis detected in those tumors ($p = 0.017$ and $p = 0.085$ respectively).

Our results further stress the role of Bcl-2 overexpression blocking the apoptosis of breast cancer tumors and thus controlling the Bax and Bak death facilitator activities.

PP-1-17 Circulating Tumor Markers (CEA, MCA, CA 15.3, CA 549) in the Diagnosis Breast Cancer Recurrence after Surgery: 5-Year Results

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Concomitant measurement of 4 serum markers (CEA, MCA, CA 15.3 and CA 549) were performed every 3–6 months in 128 breast cancer patients with no evidence of disease after surgery. After a median follow-up of 5 yrs (range 4–5 yrs) 30 pts (23%) relapsed. In 25 of these at least one marker was abnormal (sensitivity: 83%); the 5 pts with normal marker value at the time of relapse had only local recurrence (soft tissue metastases). The sensitivity of CEA and MCA (32% and 47%) was significantly lower than the sensitivity of CA 15.3 (80%) and CA 549 (81%) ($p = 0.02$). Ninety-nine pts did not relapse: 90 have normal marker values (specificity: 92%). The predictive value of a positive test and of a negative test is 76% and 95%, respectively. The combination of 2 or more markers does not increase the sensitivity ($p = 0.5$) and the positive predictive value of CA 15.3 or CA 549 alone. The 5-year results confirm that a single marker determination (CA 15.3 or CA 549) is recommended in the follow-up of pts after surgery for breast cancer.

PP-1-18 Plasma c-erbB2 Concentrations and Response to Chemotherapy in Breast Cancer

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The c-erbB2 oncogene is amplified and/or overexpressed in about 25% of breast cancer. The c-erbB2 overexpression has been related to a poor prognosis and a lower response to chemotherapy [1]. Using an enzyme-immunoassay (Triton Diagnostics, Ciba-Corning France) we determined plasma c-erbB2 concentrations in patients with metastatic [2] and inflammatory breast cancers and examined the potential value of plasma c-erbB2 as a predictive indicator. The cut-off value, determined in 30 healthy women between 20 and 80 years, was 27 U/ml. Patients with a c-erbB2 concentration higher than 27 U/ml were considered as c-erbB2 positive (c-erbB2+). 10 out of the 33 metastatic and 9 out of the 25 inflammatory breast cancer patients were c-erbB2+. The response to chemotherapy was not significantly different between c-erbB2+ and c-erbB2– patients with metastatic (4/10 vs 10/23) and inflammatory (6/9 vs 11/16) breast cancer. Plasma c-erbB2 assay has no predictive value in metastatic and inflammatory breast cancer patients.

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[1] Gusterson et al. 1992, *J Clin Oncol*, 10, 1049–1056.

[2] Révillion et al. 1996, *Eur J Cancer*, in press.

PP-1-19 Determination of Cytosol ERBB-2 Protein in Primary Breast Cancer

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To determine over-expression of c-erbB-2 gene in breast cancer, ELISA using anti-c-erbB-2 MoAb was performed with cytosol fractions of 139 resected breast cancer specimens from patients with stage I–III B in 1994–1995. Cut-off value was set at 18 ng/mg protein to correlate with gene amplification. The median and mean value of erbB-2 protein were 7.1, 18.7 ng/mg protein, respectively. The positive rate was 18.7%. Positive erbB-2 was associated with histological grade and serum CEA level, but not with tumor size, stage, vessel invasion, nodal status, intraductal component, serum CA15-3 level and PR. There was a weak inverse relation in erbB-2 level and ER. The prognostic importance will be evaluated in future.

PP-1-20 Psychosocial Correlates of Oestrogen and Progesterone Receptors in Breast Cancer: Results of Three Consecutive Studies

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Psychosocial correlates of hormone receptor status (assessed by DCC assay) were investigated in 93 consecutive patients attending a radiotherapy service. Life event, coping style, and psychological adjustment self-report scales were completed. The 75 patients with receptor-positive (RP) (oestrogen and/or progesterone) were better adjusted psychologically than the 18 patients with receptor negative (RN) lesions. The results of this first study have been replicated in a sample of 89 consecutive patients hospitalized for breast surgery. The 73 patients with RP were better adjusted psychologically before and after surgery than the 16 patients with RN lesions. The high level of distress found in the first and second study and the high prevalence of psychiatric history in RN group of patients led us to design a third study matching 11 patients with RN lesions with 11 patients with RP lesions for medical and sociodemographic data and comparing the two groups for life events and psychological adjustment. The results of this third study are showing that patients with RN lesions are reporting significantly more long lasting stressful life events before cancer diagnosis. These three studies are indicating that the main psychosocial variables related to RN status is a significant psychological distress related to long lasting stressful events preceding cancer diagnosis. The relationship found here between hormone receptor status and psychosocial variables contributes to the understanding of possible effects mediated by the central nervous system on breast cancer initiation and progression.

PP-1-21 Correlational Study of Microangiographic and Immunohistochemical Techniques for Tumour Vascularisation

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Tumour vascularity is an important predictor of prognosis in breast cancer. We have correlated microvessel density with prognosis in 177 with primary breast cancer. In a smaller prospective series of 21 mastectomy patients we have studied the pattern of neovascularisation and vessel density by the new technique of microangiography and immunohistochemistry (IHC) using monoclonal antibodies to CD34, basic fibroblast growth factor (FGF) and vascular endothelial growth factor (VEGF) by immunoperoxidase IHC. Microangiograms were done on the gross specimens and there after IHC was done on 4 μ m thin sections of tumours. Microangiograms revealed two distinct vascular patterns — an anastomosing pattern (15/21) and a radial pattern (4/21). In 2/21 there was no distinct pattern. Six angiograms were graded 1 (lowest vessel count), 11 graded II and 4 were graded III (highest vessel count). IHC vascular counts correlated with the angiogram grade. Correlation between vascular counts, angiogram grade and angiogenic growth factors will be presented.

PP-1-22 Non-Invasive Measurement of Antioestrogen Activity in the Breast

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Tamoxifen, an antioestrogen with agonist and antagonist properties, is currently being assessed as a long-term chemopreventative agent in patients at high risk of breast cancer. Surrogate markers of Tamoxifen action on the normal breast are needed to assess its action in individual women. The protein pS2 is stimulated by oestrogen in cancer cell lines in vitro, whilst the breast cyst protein Apolipoprotein D is inhibited by oestrogen also in vitro. Both proteins can be measured in breast secretions. Healthy women ($n = 63$) and women with breast pain ($n = 15$) provided breast secretion samples. Sequential samples were collected in women treated for breast pain with Tamoxifen ($n = 6$) and Zoladex ($n = 9$) to determine if measurement of these proteins could be used as antioestrogen markers. Apo D and pS2 were measured by radioimmunoassay and total protein by the Bradford method.

Results Premenopausal secretion levels of pS2 ($p < 0.02$) were significantly higher and Apo D significantly lower ($p < 0.03$) than postmenopausal values. Women with breast pain had significantly higher pS2 (median 19.6 vs 8.5 ng/mg protein, $p < 0.04$) and lower Apo D (median 59.9 vs 159.9