patients with NO were not undergone to adjuvant treatment, patients with N1 had adjuvant therapy. Stage III BC patients (75) were undergone to preoperative chemotherapy or to irradiation, or to combine therapy. In case of operability modified radical mastectomy were performed followed with adjuvant therapy. Before any antitumoral treatment patients were injected intravenously by Na_2HPO_4' 32P labelling and after 4–72 hours 32PRUT was detected intratissualy by means of the semiconductor beta-detector. Disease free survival (DFS) and overall survival (OS) were estimated by Kaplan-Meier life table method, the significance of the differences was evaluated by means of the log rank test and considered significant at $p < 0.05$. 5-yrs DFS in stage I–II BC in patients with low 32PRUT was better (90 ± 9%), lower in patients with middle and high 32PRUT levels (50 ± 8%, $p = 0.03338$). Other comparing groups preferences of the DFS and S in patients with 32PRUT were not significant. The low level of the 32PRUT was a factor good prognosis, the risk of disease relapse in this patients having I–II s BC was in 5.1 times lower than in a hole I–II stage BC group. So, 32PRUT can be used as a prognostic factor in early BC.

PP-6-15 The Levels of Estrogen Receptors (ER) and Progesterone Receptors (PR) and Treatment Results in Breast Cancer (BC) T1-2N0M0 Patients

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The goal of this paper was to evaluate the prognostic significance of ER and PR levels in early BC patients. 630 BC T1-2N0M0 patients after various types of operations and without any adjuvant systemic treatment were analyzed. ER and PR levels were measured by DCC radiolygand method, ER or PR level $> = 10.0$ fmol/mg protein was signed as ER+ or PR+, level < 10.0 fmol/mg protein was signed as ER– or PR–. Disease free survival (DFS) and overall survival (OS) were estimated by Kaplan Meier life table method, the significance of the differences was evaluated by means of the log rank test and considered significant at $p < 0.05$.

Presence of the PR in a tumor was a factor of a good prognosis, DFS and OS of PR+ patients was significantly higher, than in patients with PR– tumors. In PR– patients the frequency of disease relapse was 1.3 times higher than in RP+ patients. ER level has not any influence on the course of disease in the absence of systemic therapy.

PP-6-16 Prediction of Relapse in Patients with Breast Cancer by Blood Flow Analysis Using Color Doppler Ultrasound

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Angiogenesis plays the important roles in the development of hematogenous metastasis in breast cancer. We studied the significance of the blood flow analysis within the mass using color Doppler ultrasound on prediction of relapse in patient with breast cancer. This study consisted of 64 women with breast cancer between October 1991 and September 1994. Analysis of the velocity wave form within the mass included determination of peak systolic velocity (PV), resistive index, acceleration and acceleration index (AI).

In a group of 11 patients with high PV (PV $\geq$ 15 cm/s) and high AI (AI $\geq$ 12/sec), 4 patients relapsed, while in other group of 53 patients, 2 had recurrences. There were significant differences between two groups.

The results of our study suggested that the blood flow analysis within the mass using color Doppler ultrasound might be an interesting role on prediction of relapse in patients with breast cancer.

PP-6-17 Psychological Factors as Prognosticators in Metastatic Breast Cancer

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The possible prognostic influence from psychosocial factors upon breast cancer has been debated throughout the last decades. So far, conflicting results have been found in the literature.

A pilot study of patients with metastatic breast cancer was conducted to evaluate the possible impact of psychological factors in a well-defined group of patients. Fifty five women with metastatic breast cancer were followed prospectively during 2.5 years from time of their diagnosis. The psychological factors evaluated were: anxiety, depression, stress, and cop-

ing strategies. Results show that none of these psychological factors have any prognostic importance in this cohort. Indicating that among patients with metastatic breast cancer other factors related to the disease will determine the outcome.

PP-6-18 Estrogen-Induced Proteins in Breast Carcinoma

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Purpose: To answer to the question whether the expression of estrogen-induced proteins (PR, pS2, cath-D) are similar or different across the ER status, as well as across clinical- and histological-related breast carcinoma subgroups.

Materials and Methods: This study included 70 histologically confirmed breast carcinomas with histologic grade II. Estrogen receptors and estrogen-induced proteins were assayed in citosol of breast carcinomas. Breast carcinoma subgroups were formed on the bases of age, menopausal status, nodal status, size of tumor and tumor type.

Results and Discussion: Estrogen-induced proteins were significantly higher in breast carcinomas with ER-positive status than in those with ER-negative status. Distributions of PR, pS2 and cath-D within tumor-host indicators of prognosis showed: a) There was significantly lower pS2 and higher cath-D in older than younger patients (< 45 vs. > 59); b) There was significantly lower PR and pS2 in peri-/post- than in premenopausal patients after adjustment for age. Distributions of PR, pS2 and cath-D within carcinoma indicators of prognosis showed: Cath-D was significantly higher in carcinomas larger than 2 cm with axilary node metastases than in those with negative ones. In spite of the above association, our results suggest that estrogen-induced proteins studied provide independent biomarkers, due to wide overlapping of individual values among examined breast carcinoma subgroups.

PP-6-19 Pre-Operative Diagnosis and Establishment of Breast Cancer Phenotypic Features of Prognostic Relevance on Routine Fine-Needle Cytological Samples

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Fine-needle cytology has proven to be a valuable method of diagnosing malignancy of breast lesions. Since January 1991, more than a thousand cytological specimens from clinically suspicious lesions, after smearing the first drop on slides for diagnostic purposes, were systematically expelled in cryoprotectant-containing medium and stored in liquid nitrogen. Following microscopic confirmation of malignancy, the samples were sent to a different laboratory specialized in the measurement of prognostic factors. Steroid hormone receptor content was determined immunocytochemically and DNA-content analysis was performed on all samples by flow cytometry. Eliminating the paucicellular samples (less than 2%) by microscopic inspection, reduced the proportion of failures to less than 1%, mostly due to highly necrotic samples or to those containing too much blood. Classical correlations were obtained between DNA-ploidy, S-phase fraction, steroid hormone receptor content and cytological grade. Examples will be presented of the beneficial aspects of obtaining morphological features together with the expression of different proteins by tumor cells on the same samples. In a marginal fraction of cases, considered of difficult cytological diagnosis, cellular determinants may be helpfull, although histological confirmation was always judged necessary. This routinely performed procedure of pre-operative diagnosis with simultaneous measurement of prognostic factors was found highly reliable. It was also flexible since it allowed to include additional antigens in the pannel of cellular markers. Those that we have tested include cathepsin D and c-erbB2, but in the last months we have opted for p53 as an additional phenotypic feature, not only of prognostic relevance but also potentially interacting with treatment. This procedure allows the earliest possible biological characterization of breast cancers and can potentially influence treatment decision.

PP-6-20 Survival Following First Episode of Hypercalcaemia in Breast Cancer Patients

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Hypercalcaemia is a frequent and often life-threatening metabolic complication in breast cancer. Survival time following hypercalcaemia is seldom

reported, and possible prognostic variables are only sparsely described for specific tumour types.

Design: Between February 1986 and July 1989, 212 patients with breast cancer and first episode of hypercalcaemia were registered. A second cohort treated with bisphosphonates for severe hypercalcaemia (serum ionized calcium above 1.60 mmol/l), was identified during the period February 1993 to February 1996.

Purpose: To identify prognostic factors for patients with hypercalcaemia, and to determine the impact of bisphosphonates on survival after hypercalcaemia.

Results: Median survival of 50 patients in the first cohort with severe hypercalcaemia was 1.4 months compared to 16.6 months in 162 patients with moderate hypercalcaemia (p < 0.0001). The results of a multivariate survival analysis will be presented. The model includes WHO performance status, presence of bone metastases, prior systemic therapy, demographic and biochemical variables as covariates. The impact of bisphosphonates on survival will be analysed for patients with severe hypercalcaemia only.

Conclusion: The prognosis is poor following hypercalcaemia in breast cancer patients. The severity of hypercalcaemia may be used to identify patients with extremely poor prognosis.

PP-6-21   Preoperative Values of CA 15.3 and Disease-Free Interval (DFI) in Breast Cancer

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One of the most intriguing questions raised about CA 15.3 is if there could be a relation between the preoperative value of CA 15.3 and DFI in breast cancer patients and that was also the aim of our investigation included 429 women divided into two groups, the control group and the clinical group. The clinical group included 379 women with verified breast cancer and mastectomy, at the time of the beginning of this study in clinical stage M0 and at the end of the study in stage M1. The values of CA 15.3 were detected preoperatively and according to them the clinical group was divided into four subgroup: I subgroup – CA 15.3 up to 30 U/L, II subgroup – 30–60 U/L, III subgroup – 60–100 U/L and IV subgroup – CA 15.3 more than 100 U/L. The patients in the clinical group were followed through the postoperative period and DFI was measured. The average DFI in the first clinical subgroup was 45.141 months, in the second 39.975 months, in the third 32.366 and in the fourth subgroup 10.917 months. A significant difference in DFI was noted between the first and the fourth group (p > 0.013), and the second and the fourth group (p > 0.025). These results suggest that preoperative value of a CA 15.3 more than 100 U/L, could be a helpful predictive parameter for the postoperative course in the breast cancer patients, as well as it could indicate that undetectable breast cancer metastases have existed before the operation and caused the short duration of DFI.

PP-6-22   Breast Cancer Outcome after Pregnancy

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Among young women with breast cancer, 7 to 10% will be pregnant afterward, once or several times. Most of publications do not show a worse prognosis in terms of survival or recurrence due to pregnancy. On the contrary, abortion does not seem to improve prognosis. From January 1981 to December 1994, 601 women younger than 38 were treated at Institut Bergonié for breast cancer. Among them, 43 (7%) became pregnant later and have been reviewed, with a mean follow up of 6 years. Twenty women (mean age 31.1) had 25 full term pregnancies (FTP) and 23 (mean age 33.6) had 24 terminated pregnancies (TP). Pregnancies had occured 22 month (mean) and 16 month after breast cancer treatment completion in FTP and in TP group respectively. In the FTP group, 5 patients had a ductal carcinoma in situ (DCIS) and 15 an infiltrative ductal carcinoma (IDC), with 4 N+. In the TP group, 3 patients had a DCIS and 20 an IDC, with 5 N+. One local and one metastatic recurrences occured 73 and 16 months after pregnancy in the FTP group; in the TP group, 6 patients had had metastatic recurrence in a 25 month mean time after pregnancy and 4 women died. Survival was 100% in the FTP group and 86% in the TP group, with a 5 year follow-up. The good survival of patients in FTP is probably more related to the spontaneous good prognosis of the tumor, despite young age of the women (mean 31), and not to a protective effect of pregnancy.

PP-6-23   DNA Image and Flow Cytometry Analyses in Breast Cancer Fine-Needle Cytopunctures

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The efficiency of flow cytometry (FCM) and image analysis (ICM) was compared in fine-needle cytopuncture samples of 104 primary breast carcinomas. The comparison involved DNA content and SPF. According to the criteria used in each method, tumors were classified as DNA hypodiploid, diploid, hyperdiploid, tetraploid or multiploid. Regarding DNA-ploidy, the concordance rate between the two methods was 81%. True discordance was observed in 19 cases (18%). Eleven of these discordances were due to an underestimation of multiploidy by FCM. SPF was compared in 46 evaluable uniploid cases by using the median value obtained in each method. A manual rectangular model was used for ICM, and Cellfit and Modfit softwares were used for FCM. The correlation coefficients were 0.88 for ICM vs Cellfit, 0.90 for ICM vs Modfit, and 0.95 for Cellfit vs Modfit. In our experience with heterogeneous tumors, SPF evaluation is much more difficult and less accurate than applied to homogeneous tumors, whatever the number of cells analyzed and method used. This work illustrates the complexity of interpreting both FCM and ICM data, which has no doubt been underestimated and is mainly due to tumor heterogeneity.

PP-6-24   A Retrospective Analysis of 124 Cases on the Different Clinical Outcome for Patients with ER−/PR+ Breast Tumors as Compared with ER−/PR−

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The aim of this retrospective analysis was to evaluate the additional prognostic value of the PR status for the subset of patients with ER− tumors. In 1984 and 1985, 1770 breast tumors samples were tested for steroid receptors according to the Dextran Coated Charcoal technique. A cut-off point of 10 fmols/mg was used as positivity for both ER and PR assays. Among the 124 breast cancer patients with reliable follow-up data, 80 had ER−/PR−tumors and 44 had ER−/PR+ tumors. Patient characteristics were comparable between the two groups. The median follow-up for the entire cohort was 66 months (range 2.5–133). Comparisons of disease-free survival (DFS), overall survival (OS) as well as site of first recurrence were made between the two groups. *Results:* The median DFS was statistically different between the two groups with a median of 727 days for ER−/PR− patients and 1460 days for the ER−/PR+ (p = 0.023). OS was also different between the two groups with a median of 1134 days for ER−/PR− patients and 1632 for the ER−/PR+ (p = 0.023). The first site of recurrence varied in function of receptor phenotype: soft tissue involvement was observed more frequently than bone involvement for ER−/PR−, while the opposite was found in the ER−/PR+ patients. These data seem to indicate that the synthesis of PR in ER− breast cancer confers a better outcome in terms of DFS and OS, possibly related in part to a different pattern of metastases.