

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

M. Mijailović, S. Filipović, B. Filipović. *Institute of Oncology, Medical Faculty of University in Niš, Yugoslavia*

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 subgroups: 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

O. Hallé\*, A. Floquet, E. Stöckle, L. Mauriac. *Institut Bergonié, Regional Cancer Center, 33076 Bordeaux, France*

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 occurred 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 occurred 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

F. Spyrtas\*, M. Briffod. *Centre René Huguenin, Saint-Cloud, France*

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-

J.A. Roy\*, F. Jacob, G. Leclerc, M.J. Piccart. *Institut Jules Bordet, Brussels, Belgium*

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.