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Prognostic significance of the biologic features of breast tumors

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Purpose: Behaviour of breast cancer is variable of patients presenting at the same clinical stage. In this prospective study, prognostic significance of clinical and pathologic parameters, hormone receptors, c-erbB-2 oncogene, p53, PCNA score, ploidy and S phase fraction (SPF) were evaluated in breast cancer patients.

Methods: c-erbB-2 oncogene, p53 tumor-supressor gene, PCNA score, estrogen and progesterone receptors were studied with immunohistochemical method (IHC) in the primary breast cancer specimens of 52 patients. Ploidy and SPF were determined with flow cytometry in the fresh tissue samples. Prognostic significance of all these parameters and coventional prognostic factors (age, menopausal status, tumor size, positive axillary lymph nodes, tumor grade, stage, etc) were evaluated at the end of the 3 years follow-up period.

Results: c-erbB-2 positivity was 69%; p53 positivity was 35%; ER positivity was 62%; PR positivity was 71%; aneuploidy was 27%; median SPF was 20.9% (range: 0–91.6%) and median PCNA score was 25% with a range of 0–98%. Median follow-up period was 29 months with a range of 1–35+ months. In univariate analyses tumor size, positive axillary lymph nodes, stage and grade were found to be significant on DFS and OS. In stage 2 disease, grade was found an important prognostic factor on DFS and OS. In stage 3 disease, grade and positive axillary lymph nodes were important for DFS. Grade and p53 were found to be significant for DFS and grade for OS in multivaried analyses.

Conclusion: According to our study results, conventional prognostic factors are more powerfull than new prognostic factors on DFS and OS. Larger prospective studies will helpfull to understand the prognostic significance of these new prognostic factors.

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Prognostic significance of telomerase activity in breast cancer

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Purpose: Increase of telomerase activity has been observed in various types of human malignancies. But little is known whether telomerase activity could serve as a predictor for clinical course and patient survival. In order to investigate the prognostic significance of telomerase activity in breast cancer the activity of the enzyme was measured quantitatively in tumor material of breast cancer patients of whom the clinical course was known.

Methods: Tumor tissue from 19 primary breast tumors and 6 secondary tumors was enzymatically separated into single cells, counted and stored in liquid nitrogen. For each patient an identical number of cells was quantitatively analysed for telomerase activity using the Telomerase-PCR-ELISA based on the Telomerase Repeat Amplification Protocol (TRAP). 25 Patients were divided into 3 prognostic categories: I: tumor-resection and no recurrent disease, II: tumor-resection and a postoperative tumor-free interval followed by local recurrence or metastases, III: palliative surgery in systemic disease.

Results: No relation was found between prognostic categories and telomerase activity in primary tumors nor in metastases. Also disease-free interval wasn't significantly related to enzyme activity. Primary tumors displayed an approximately 3-times higher telomerase activity than metastases (p = 0.02). Nodal status was significantly better in patients with low telomerase activity in primary tumors (p = 0.01).

Conclusion: These results don't indicate a clear relation between telomerase activity and prognosis in breast cancer. However these data seem to show a higher enzyme activity in tumors with potential for lymphatic spreading than in limited local disease. Future studies with a higher number of cases are needed to further determine the prognostic value of telomerase activity in breast cancer.

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Mammary carcinoma: Prognostic value of histology, proliferative indicators receptor status and expression of oncogen products in node-free patients

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Purpose: In node-free breast cancer patients analysis of multiple clinico-morphological parameters is of value for prognosis and strategy of treatment. Predictive value of numerous morphological factors was analysed in a retrospective study.

Methods: The study was performed in 150 node-free breast cancer patients with known age and hormonal status treated by radical or modifite mastectomy and followed-up at least ten years. Histological parameters (tumor type and differentiation, percentage of intraductal constituent and necrosis, type of invasion, infiltration of nerves by cancer cells, vascular invasion of tumor surrounding and involvment of breast with cancer cells distantly from tumor mass) and mitotic index were evaluated on routine HE sections. Estrogen receptor content, expresion of proliferative antigens (MIB1, PCNA), c-erb-B2 and p53 proteins were assessed by immunohistochemistry. Flow cytometry DNA analysis was performed on tumor tissue obtained from paraffin bloks. In the statistical analysis long-rank- and Cox-tests were used.

Results: MIB1 index and microfocal invasion type influenced independently on disease free survival. Tumor diameter, tumor type (considered in three categories), Bloom-Richardson score, percentage of intraductal constituent, mitotic and MIB1 indices and involvment of breast by cancer cells distantly from tumor mass were significantly correlated with total survival.

Conclusions: Proliferative indicators, in particular MIB1, are of great predictive value for disease free and total survival in node-free breast cancer patients.

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The value of new prognostic factors for the prediction of disease free interval for women with primary breast cancer in comparison with histopathological variables

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Purpose: A great number of factors with putative value for the prediction of tumour recurrence for women with primary breast cancer has been described. The aim of the study was to assess their prognostic value also in comparison with histopathological ones.

Methods: 203 women underwent surgery for unilateral primary breast cancer in the years 1992–1995 at the gynecological university clinic Mannheim. In June 1996 23 of these patients suffered from recurrences. We determined at the time of operation: tumour size and stage, lymph node involvement, grading, age, menopausal status, estrogen-, progesterone-receptor, epidermal-growth-factor-receptor, erb B2, cathepsin D, cycling-index, p 53, s-phase-fraction and ploidy. To assess the value of each prognostic factor a univariate analysis and after this a multivariate analysis for the significant factors was performed and Kaplan Meier curves calculated.

Results: The histopathological factors all showed prognostic significance, which did only epidermal-growth factor-receptor and cycling index in the group of tumour biological factors. In multivariate analysis cycling index could not reach significant level as a independent prognostic factor.

Conclusions: We could confirm the value of histopathology for the prediction of disease free interval for women with primary breast cancer. Most of the new variables failed to show prognostic significance in our collective.

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Evolution of biological parameters in patients with breast cancer treated with primary chemotherapy

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The administration of primary chemotherapy is an innovative model of study in order to value the interactions beetween cytotoxic drugs and tumor biology. We conducted a study to evaluate the evolution of biomarkers such as hormone receptor status (ER, PgR), Ki 67 during primary chemotherapy