G3; 65.5% were node-negative; 24.1% had positive HR; only one patient (3.4%) had c-erb B2 overexpression. Distant recurrence was seen in 3 patients and 2 died with breast cancer. The 12-year DFS and OS was 87% and 88%, respectively.

Conclusions: TMC are usually considered to have a favourable prognosis which could represent a biological paradox, since its behaviour is not commensurate to its pathologic features. Although they are more frequently HR negative and grade 3, poor prognosis characteristics, they are simultaneously of early stage and c-erb B2 negative, which could be related to their favourable prognosis.

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Expression of cyclin D1 protein in breast cancer and its correlation with prognosis

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Background: Cyclin D1 is known to be a key regulator in the G1 to S transition of the cell cycle in numerous cases of human neoplasm. We performed immunohistochemical assay for cyclin D1 expression in 67 breast cancer tissues to investigate its prognostic implication in breast cancer.

Material and Methods: Protein data for cyclin D1 expression obtained by immunohistochemical staining were merged with the clinical and the biological parameters of patients, and the recurrence and the survival of the patients were analyzed according to the expression status of cyclin D1.

Results: Of 67 breast cancers, 16 cases (23.9%) showed strong expression of cyclin D1 protein. Cyclin D1 expression was significantly increased in larger tumors ($p = 0.025$) but there was no evident correlation between cyclin D1 expression and the clinical and the biological parameters of the studied patients. Although cyclin D1 is a cell cycle regulator essential for the G1 to S transition of the cell cycle, we could not identify any correlation between cyclin D1 expression and the S-phase or the G0/G1 fraction measured by flow cytometry. In the survival analyses, patients with increased expression of cyclin D1 protein had an increased incidence of recurrence and poorer survival than other patients. However, the difference was not statistically significant.

Conclusions: Increased expression of cyclin D1 protein was present in a certain proportion of breast cancer. Overexpression of cyclin D1 seemed to play a role in carcinogenesis and tumor growth. However, the clinical utility of cyclin D1 as a prognostic indicator in breast patients has to be defined further by prospective studies with larger sample sizes.

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Predicting the probability of outcome in breast cancer

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Introduction: Since it was first introduced in the 1970's the Nottingham Prognostic index (NPI) has been one of the most widely used tool in the assessment of patients with breast cancer. In the last few years machine learning methods have been developed to predict survival. As clinicians we question the usefulness of methods that only tell us whether a patient will survive ten years or die within that time. You may prefer to make a prognosis and be able to predict the likelihood of survival or death within a chosen time span. We introduce a new machine learning method which is a simple means of calculating conditional probabilities.

Methods: The Surveillance, Epidemiology, and End Results (SEER) data was analysed using the statistical packages R and Weka. Weka implements a function called NBTree() that combines the naïve Bayes classifier with a decision tree classifier to build a model that provides the probabilities of the outcomes. Results were validated using *K*-fold cross validation.

Results: Tumour size, grade and nodal status were used as prognostic indices. The model was tested with the SEER data and the process repeated 10 times. The model was validated using 10-fold cross validation and it accurately classified an average of 69.85% of instances. When the model was then tested on independent datasets it correctly classified 70% of the instances.

Conclusion: This new machine learning method provides a reliable way of putting a value or probability of survival following the diagnosis of breast cancer. The question remains as to whether this could be put into practice and whether it adds any more than more simple validated methods namely the NPI.

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Topoisomerase IIa expression correlates with prognostic factors in invasive breast cancer

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Background: Topoisomerase IIα (Topo IIα) plays a role in DNA replication and is the molecular target for anthracycline-based chemotherapy. The aim of this study was to evaluate the relationship between Topo IIα expression and prognostic factors with invasive breast cancer.

Methods and Materials: Eighty-seven patients were carried out operation diagnosed as an invasive breast cancer between July, 2003 and December, 2004. Formalin-fixed, paraffin-embedded tumor specimens from all patients were stained for Topo IIα expression. The level of Topo IIα expression within tumor cells was compared with clinical factors such as age, tumor size, hormonal receptor status, nodal status, nuclear grade, vascular invasion, HER2 status.

Result: There was a statistically significance between Topo IIα over expression and nuclear grade ($p = 0.0019$), and vascular invasion ($p = 0.0388$). A tendency to a correlation between Topo IIα over expression and tumor size, but statistical significance was not achieved. There was no significance with HER2 status.

Conclusions: Topo IIα over expression significantly correlated with nuclear grade and vascular invasion in invasive breast cancer. These findings may indicate a role for Topo IIα expression as a prognostic factor in breast cancer.

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Hormone receptor-negative breast cancer: a study of prognostic factors

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Introduction: Breast cancer (BC) is a heterogeneous group of tumors whose clinical course depends on histopathological features. The expression of hormone receptors (HR) and HER-2 overexpression are prognostic factors that have impact on survival, and help on predicting response to specific therapies. HR-negative tumors are a challenge to treatment. The introduction of anti-HER-2 treatment has changed the unfavorable prognosis of the patients with HR-negative/HER-2 positive.

Objective: Prognostic value of clinical and histopathological parameters with impact on overall survival (OS) and disease-free survival (DFS) without introduction of anti-HER-2 adjuvant treatment in HR-negative patients.

Methods: Review of clinical reports of patients admitted between January 2003 and December 2004 a cancer treatment hospital. The variables were: demographics data, clinical and histological findings, kind of treatment and clinical evolution. Survival rates and descriptive analysis using the Kaplan-Meyer method.

Results: A total of 170 patients, the median age of the patients was 54 years old (20−85), 57% were postmenopausal, G3 in 58%; TNM Stage II 42% and Stage III 35%, HER-2 overexpression in 48.5%, 82% treated with anthracycline chemotherapy, DFS at 5 years were 73% and OS 77%. Pre-menopausal patient ($p = 0.002$) and advanced stage ($p < 0.0001$) had statistically significantly better DFS. HER-2 positive group had better DFS (0.0002). In the analysis of the OS only the stage had statistically significant difference ($p < 0.0001$).

Conclusions: HR-negative BC, were associated with poor prognosis features, such as: degree of differentiation G3 (58%) and TNM stage II and III (77%). Advanced stages were associated with lower DFS and OS. Factors with negative impact on the DFS like pre-menopausal group and HER-2 overexpression show no statistically significant difference in OS. The introduction of new adjuvant therapies, including taxanes and trastuzumab, will improve outcomes in this group. It might be expected that the anti HER-2 adjuvant therapies improve the poor prognosis of HR-negative/HER-2 positive tumors.