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Review article

Breast cancer markers. Part I: Initiation and promotion

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Breast cancer is the most common malignancy affecting women worldwide. This disease can be characterized by several clinical-pathological parameters of diagnostic and prognostic value. Apart from them the gene expression and substances present in tumor mass, blood or urea are used as cancer markers. They can be divided into three groups: namely diagnostic, prognostic and predictive. The diagnostic markers create hope for early diagnosis of the disease, while prognostic and predictive markers may of aid in the choice of therapeutic regime and provide information as to its effectiveness. This division isn't sharp, because in some cases the tumor markers have both diagnostic and prognostic/predictive value. In the present work we have focused on key proteins responsible for breast cancer initiation and promotion. We have assessed the role of the basal regulators of cell cycle: Ki-67 antigen, Cyclin D1, c-myc oncogene product, p-21. Other proteins, Chk2, p53, responsible for DNA damage detection, cell cycle arrest and activation of DNA damage repair systems as well as HER-2, PR, ERα and ERβ receptors, transducing proproliferative signals, have been also described. The interest in investigating the profile of tumor marker expression in breast cancer is still increasisng, as it can provide information as to the potential targets of anticancer therapy. The correlation of the profile and the expression level of tumor markers with typical clinical parameters, such as tumor grade, malignancy level, ER, PR and HER-2 receptor status and nodal metastasis, allow to estimate the risk of recurrence or metastasis and evaluate overall and disease-free survival time.

Key words: breast cancer, diagnostic markers, prognostic markers

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