ABSTRACT

Title: A Clinico-Pathological Study of Biological Behavior of Breast Cancer and the Relevance of Cancer Antigen (CA) 15.3 in Predicting Occult Metastasis

Breast cancer is most common cancers in female worldwide. For management of disease, the key aims were to establish tests that could assess recurrence, plan treatment or predict response to therapy. Tumor markers such as tumour size (TS), axillary lymph node status and histological grading, ER, PR and HER-2/neu (estrogen, progesterone & growth factor receptor), BRCA1, BRCA2 (breast cancer susceptibility type 1 and type 2 gene), CA 15.3 (cancer antigen), are useful in this respect. 100 breast cancer (study group) and 100 benign breast disease (control group) patients were selected. Post surgery tissue blocks were collected for immuno-staining of ER, PR and HER-2/neu. Blood sample was collected and ELISA was performed to measure BRCA1, BRCA2 and CA 15.3 levels. First, common endogenous and exogenous risk factors of breast cancer like menopausal status, parity, breast feeding, use of oral contraceptive pill, family history and BMI was evaluated. It was observed that BMI when combined with other risk factors can be used to formulate traditional risk scores. In the next section, characteristics of breast cancer among East-Indian patients were studied by observing clinico-pathological parameters of different molecular subtypes. Expression status of breast cancer genes (BRCA1 & BRCA2) and their correlation with patients' clinico-pathological parameters was also monitored. Present study found that luminal A was the major subtype and HER-2/neu and triple negative was aggressive with higher number of nodal metastases. In addition to that, a significant number of patients showed decreased BRCA2 expression which was associated with more aggressive tumors with higher grade and axillary metastasis. In the final chapter, serum CA15.3 was monitored pre and post operatively to detect occult metastasis. The study revealed that major percentage had high pre operative level. On post operative days, CA 15.3
level declined in most of the cases though several had persistently raised. Tumors in these patients were aggressive with higher nodal metastasis and NPI score. Furthermore, most of the recurrence was happened among these patients. Therefore CA 15.3 can be utilized as a useful prognostic marker to screen high risk patients who will suppose to benefit most from adjuvant chemotherapy.

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