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Correlation of Securin and Ki67 in Invasive Breast Carcinoma

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Introduction: Apart from skin malignancies, breast cancer ranks the second most common malignancy in females worldwide. The increasing trends of breast cancer have led to a plethora of studies in an attempt to identify biological markers that may identify patients who may develop local recurrence or metastasis. Among those are proliferation markers which encompass ki67 and Pituitary Derived Tumour-Transforming Growth Protein (PTTG).

Aims: To identify the role of securin (PTTG) as a prognostic marker in invasive breast carcinoma and its possible relation to ki67 and evaluate the use of ImmunoRatio® as a tool for calculating ki67 and labeling indices.

Methods: Securin and Ki67 immunohistochemical (IHC) staining was performed on tissue microarray sections representative of 118 patients diagnosed with invasive breast carcinoma from 2005 to 2011. Assessment of IHC staining was carried out using both visual counting and ImmunoRatio®. The 118 cases were categorized into 2 groups according to their clinical outcome; the first group (G1) (n=77) comprised patients who were disease-free while the second group (G2) (n=41) included patients who developed either recurrence and/or metastasis at the end of 24 months follow up duration.

Results: Both securin and Ki67 labeling indices (LIs) obtained by visual counting (figures 1 and 2 respectively) were significantly higher in G2, while only securin LIs acquired by ImmunoRatio® (figure 3) were significantly higher in G2. Securin assessment by visual counting was the most accurate (AUC=0.775) in identifying patients who will likely suffer from recurrence or distant metastasis. Pearson correlation showed r=63.8%, p < 0.001 for Ki67 and r=67.1%, p <0.001 for securin. Linear regression analysis showed a significant correlation between Ki67 and Securin, B = 1.75, p < 0.001.

Conclusion: The present results suggest that securin may have superior value to ki67 highlighting intra-tumoural heterogeneity regions in invasive breast carcinoma patients' with poor clinical outcome. Better correlation between securin visual counting and ImmunoRatio® suggests that securin provide more uniform staining pattern than Ki67 in breast cancer.