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Comparison of tumour budding in invasive breast carcinoma-no special type, using 20x and 40x microscope objectives

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Introduction: Tumour budding (TBd) is a well-studied prognostic factor in colorectal carcinoma (CRC). However, its significance in breast carcinoma (BCa) is not established. TBd is assessed with x20objective in CRC. However, the x20 objective is not available in most microscopes in our setting. Few studies have assessed the correlation of TBd observed in CRC using x20 and x40 objectives, with no similar studies for BCa.

Objectives: To compare TBd in invasive breast carcinoma-no special type (IBC-NST) assessed using two different microscope objectives (x20 and x40) and determine the association of TBd by x20 and x40 with pathological prognostic factors of IBC-NST.

Methodology: 351 excision specimens of IBC-NST were studied. TBd was defined as single cells/clusters of up to four cells at the invasive front. TBd was assessed in hotspots at the advancing edge of the tumour using x20 and x40 objectives. TBd was categorized into low (<5/0.785mm^2), intermediate (5-9/0.785mm^2) and high budding ($\geq$10/0.785mm^2) for x20 objective and low ($\leq$4/0.196mm^2) and high ($\geq$5/0.196mm^2) for x40 objective based on the number of buds per hotspot. Association between TBd by x20, x40 and prognostic factors were analysed with a Chi-square test and logistic regression. The correlation between TBd in x20 and x40 was analysed with the Pearson correlation test.

Results: The prevalence of TBd was 72.5%. Pearson's correlation coefficient showed a significant correlation between the number of buddings observed in the x40 objective and x20 objective (0.958). TBd observed in both objectives were significantly associated with tumour size (p<0.001), lymphovascular invasion (p<0.001), perineural invasion (p<0.001), lymph node (LN) status (p<0.001), number of LNs (p<0.001), T stage (p<0.001) and N stage (p<0.001) on univariate analysis. On binominal logistic regression, TBd (p<0.001) showed a significant association with LN positivity.

Conclusion: TBd assessed with x40 objective shows a significant correlation with TBd observed with x20 objective and is significantly associated with prognostic factors and LN metastasis.

Keywords: tumour budding, breast carcinoma, x 40 objective

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