DERMATOPATHOLOGY

TUMOR BUDDING: A NEW INDEPENDENT PATHOLOGIC RISK FACTOR OF CUTANEOUS SQUAMOUS CELL CARCINOMA

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Background: Tumor budding (TB) is a pathological feature defined as the presence of single tumor cells, or tumor buds (consisting of up to 5 cells) found in the connective tissue ahead of the advancing front of epithelial cancers. The degree of TB has been found to be associated with an aggressive outcome in several cancer types, namely of the colon, esophagus, breast, lungs and tongue. Limited data are so far available concerning the prognostic significance of TB in squamous-cell carcinomas of the skin (SCC).

Objective: to study whether TB correlates with aggressiveness in cutaneous SCC.

Materials and Methods: We retrospectively examined 31 aggressive SCC (defined as SCC that later developed local recurrences and/or metastases despite an excision with clear margins), in comparison with 21 non-aggressive SCC matched for age and sex. TB was expressed as the mean number of tumor buds in 5 adjacent high-power fields of each SCC. The correlation of TB with other known pathologic features of SCC aggressiveness was also studied (including an additional group of 30 SCC).

Results: Aggressive SCC had a much higher TB score compared with control SCC (1.63±1.35 vs 0.49±0.9 $p<0.001$ by the Student's t-test). The presence of TB was positively correlated with the level of tumor thickness and level of invasion (Clark) and tumor differentiation. A binomial logistic regression analysis [$\chi2(7)=16.456$, $p=0.021$, Nagelkerke $R2 = 0.31$] showed that the cut-off value of 0.8 was predictive of the aggressiveness of SCC, with a positive and negative predictive value of 77.3% and 75.0%, respectively.

Conclusions: As with other cancer types, TB seems to be an independent pathological marker of aggressiveness of cutaneous SCC. Further studies including a larger number of tumors will hopefully firmly validate TB as a new pathologic predictor of aggressiveness in cutaneous SCC.