EVALUATION OF TUMOR BUDDING AND EXPRESSION OF CD44 AS A CANCER STEM CELL MARKER IN ORAL SQUAMOUS CELL CARCINOMA

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Abstract

Background & Objectives: Tumor budding is a sign of invasion and early step for metastasis of many cancers including oral squamous cell carcinoma (OSCC). Recent research has underlined the importance of tumor budding (TB) as a promising prognostic indicator in OSCC. Evidences suggest the presence of cancer stem cells in tumor buds. CD44 has been reported to be involved with tumor growth and metastasis and has also been implicated as a cancer stem cell marker in OSCC. The study aims to highlight the prognostic significance of tumor budding in association with CD44 expression as a cancer stem cell marker in OSCC.

Methods: A total of 60 radical neck dissection specimens of OSCC, which includes 30 cases each with and without lymph node metastasis were included in the study. The sections were evaluated for TB in H&E and CD44 expression immunohistochemically (CD44 mouse monoclonal antibody) in 1HPF and 10HPF at 40x. Sixty OSCC cases were then correlated with clinicopathologic and histomorphologic parameters such as age, gender, habit, site, staging, grading, recurrence, depth of invasion, pattern of invasion, and survival outcomes. Comparison of prognosis and CD44 expression were carried out by statistical methods. The data was subjected to parametric tests like independent T test, Chi-square tests. Overall and disease-free survival was done using Kaplan-Meier analysis.

Results: A high TB score was significantly correlated with grading ($p=0.037$), POI (0.029), overall survival ($p=0.047$). CD44 over expression showed strong correlations with POI (1HPF:$p=0.037$;10HPF:$p=0.027$), grading ($p=0.037$), and overall survival ($p=0.047$). Kaplan-Meier analysis revealed overall survival advantage for LTB (85%) with OSCC compare to HTB (75%) for >36 months.

Conclusion: The present analysis suggests that assessment of TB is effective in predicting prognosis in OSCC patients. Although CD44 expression has demonstrated strong prognostic influence, there were significant difference in its expression with the parameters. Further studies are needed to evaluate the prognostic value of CD44 in OSCC.

Keywords: Oral squamous cell carcinoma, tumor budding, cancer stem cells, CD44, immunohistochemistry