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"ASSESSMENT OF PROLIFERATIVE INDEX BETWEEN THE TUMOR MARGIN, CENTER OF TUMOR AND THE INVASIVE TUMOR FRONT OF ORAL SQUAMOUS CELL CARCINOMA WITH THE HELP OF Mcm-2: AN IMMUNOHISTOCHEMICAL STUDY"

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ABSTRACT

Background: Minichromosome maintenance protein-2 (Mcm-2), a component of pre-replicative complex that is essential for initiating DNA replication, are deregulated in a number of malignant lesions from different human organs like breast, prostate, thyroid, laryngeal and esophageal cancer. It is expressed throughout the whole cell cycle including G0 and G1 phase. This characteristic cell cycle event is not found in other proliferative markers like Geminin, AgNOR, Ki-67and PCNA.

Aims and Objectives: To analyze the expression pattern of Mcm-2 in normal oral mucosa (NM) and oral squamous cell carcinomas (OSCC). To compare the expression of Mcm-2 in tumor margins (TM), tumor center (TC) and invasive tumor front (ITF) in OSCC. To correlate the clinicopathological features with expression of Mcm-2 in OSCC. To analyze the expression of Mcm-2 at different grades of OSCC (Broder's and Bryne's grading system)

Materials and Methods: A total of 60 cases were evaluated immunohistochemically for Mcm-2 nuclear expression. These included histopathologically diagnosed cases of Normal buccal mucosa (10 cases), squamous cell carcinoma (OSCC) (50 cases) having invasive tumor front (ITF) and center of tumor (TC), among 50 cases 29 cases have tumor margins also with a site specification of buccal mucosa. Quantitative analysis was done by evaluating the percentage of positive tumor cells (nLI) among a minimum of 500 tumor cells. The obtained results were subjected for statistical evaluation using Independent T-test, ANOVA Test and Post hoc tukey test.

Results: The average nLI of Mcm-2 expression in NM was 49.08%. Mcm-2 overexpression was seen in all the cases of OSCC. Mcm-2 nuclear expression at the ITF (mean 87.77%) was greater than that of TC (mean 76.87%) and TM (mean

67.79%) and this difference was statistically significant ($p<0.05$). Mcm-2 nuclear expression did not show significant association with any of the clinicopathological parameters ($p>0.05$) could be due to small sample size but striking difference was observed with overexpression of Mcm-2 particularly at ITF and clinicopathological features.

Conclusion: Cell proliferation analyzed by Mcm-2 at the ITF had a strong positive relationship with TC and TM ($p<0.001$), confirming more cells from the ITF compared with other areas have been shown to be in the proliferative state and thus informative in studies involving cell-cycle control and other prognostic indicators.

Key words: Mcm-2, pre-replicative complex, oral squamous cell carcinomas, invasive tumor front, cell proliferation.