UCHL1 expression in OSCC in relation to invasive front grading system

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Background: Ubiquitin carboxyl-terminal hydrolase L1 (UCHL1) is an abundant neuronal deubiquitinating enzyme that has been recently implicated in the pathogenesis and progression of several human cancers.

Objectives: To evaluate the immunohistochemical pattern of expressions, to score and intracellular localization of UCHL1 in relation to the invasive Byrne’s grading system.

Materials and Methods: A total of thirty formalin fixed paraffin embedded blocks of oral squamous cell carcinoma were included in this study. Routine stained sections were histologically graded by Byrne’s systems. Sections stained with anti-UCHL1 were evaluated for subcellular localization, the pattern of expression, and stain intensity. Kruskal-Wallis tests was applied for analysis. P<0.05 was considered statistically significant.

Results: The expression of UCHL1 in normal oral epithelia is cytoplasmic in the basal, parabasal and polyhedral cell layers, as well as in the nucleus of few parabasal and polyhedral cells (Fig-1A). Sections containing perineural invasion showed positive strong cytoplasmic expression in the neural cells. UCHL1 showed 86.6% total positivity (Fig-1 B,C,D) with 73.3% cytoplasmic expression, with significant high positivity (score 2 and 3) and diffused strong homogeneous pattern and strong staining intensity. There was no significant differences regarding intracellular localization, the percentage of positivity, pattern distribution and staining intensity among different histopathological grades of Byrne’s system (Table 1).

Discussion: This study provides results, for the first time, regarding the invasive morphological features of OSCC to the expression of (UCHL1). UCHL1 is an important regulator of tumor formation and maturation, and it might play different roles depending on the tissue type (1-3). Herein, normal oral epithelium showed cytoplasmic UCHL1 expression in the basal and polyhedral cells. In OSCC, the basal cells loss this expression and 23% of malignant cells showed membranous expression, beside 73.3% retained the normal cytoplasmic localization. This shifting and changing is directly related to B-catenin expression [1]. The lowerUCHL1 expression was attributed to promoter hypermethylation [4-6]. OSCC had a high percentage of UCHL1 expression (high scored) that has strong intensity and homogenous distributed. It was mainly cytoplasmic. This reflects the alteration in the ubiquitin-proteasome system related to epithelial cellular activity, but it did not related to the invasion. The percentage of mean rank of the abnormal membranous localization did not provide significant findings that limited by the small number of poor differentiated case.

Conclusion: OSCC had a high percentage of UCHL1 positive expression in homogenous distribution pattern and strong intensity. However, basal cells loss this expression. There is a small percentage of negative case and membranous expression. The expression of UCHL1 do not related to histological invasive grading.

Table 1: Frequency distribution of the score, pattern, staining intensity, percentage of mean rank and intracellular localization of UCHL1 expression in OSCCs related to Byrne’s grading system.

![Figure-1: UCHL1 expression in normal oral mucosa (A) in WDSCC (B), MDSCC (C) and PDSCC (D).](image)

References