
ABSTRACT

Background:

Oral squamous cell carcinoma (OSCC) is the most commonly occurring oral malignancy with a fairly onerous prognosis. Oral verrucous carcinoma (OVC) is a variant of oral squamous cell carcinoma with 20% of the cases having small foci of well-differentiated squamous cell carcinomas within them. Cancer stem cells (CSC) are proved to be responsible for regulating the tumorigenesis, proliferation, aggressiveness, chemoradioresistance, recurrence and metastasis of oral squamous cell carcinoma. Aldehyde dehydrogenase 1 (ALDH1) and Sex determining region-Y Box2 (SOX2) play a vital role as markers of cancer stem cells in OSCC.

Aims and Objectives:

To evaluate the expression of cancer stem cell markers; ALDH1 and SOX2 in normal mucosa, oral squamous cell carcinoma and oral verrucous carcinoma by immunohistochemistry and to compare and correlate the immunohistochemical expression levels of ALDH1 and SOX2 with different grades of oral squamous cell carcinoma and oral verrucous carcinoma.

Materials and methods:

Archived, formalin-fixed, paraffin-embedded tissue blocks of 30 cases each of normal mucosa, oral squamous cell carcinoma and oral verrucous carcinoma were included in the study. Two sections each of 4-micron thickness were taken

on positively charged slides and stained with ALDH1 and SOX2 respectively by immunohistochemistry.

Results:

A significant variation in the mean immunohistochemical expression of ALDH1 and SOX2 between normal mucosa, oral squamous cell carcinoma and oral verrucous carcinoma was observed with the highest values in oral verrucous carcinoma samples. The values obtained were statistically significant between all the groups with a p-value <0.05. No significant difference was observed between different grades of oral squamous cell carcinoma though the mean value was increased in low-grade tumors.

Conclusion:

The findings of the present study suggest that both markers ALDH1 and SOX2 play a key role in the tumorigenicity of CSCs in OSCC and OVC. The difference in expression of these markers implies the fact that these markers will be helpful in identifying the invasive foci in OVC. Further investigations using a larger cohort of patients and long term follow-up analysis will validate these results.

Keywords:

ALDH1, Cancer stem cells, Immunohistochemistry, Oral squamous cell carcinoma, Oral verrucous carcinoma, SOX2.