

Expression of p16 gene in oral potentially malignant disorders and oral cancer- a preliminary study

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Oral squamous cell carcinoma (OSCC) is considered an important part of the global burden of cancer. Human Papilloma Virus (HPV) infection has been increasingly recognized as a major etiologic factor for a subset of oral cancer and Oral Potentially Malignant Disorders (OPMD). Although down regulation of p16^{INK4A} in cancer did not increase p16 over expression, high-risk HPV related oral cancers showed increased expression of p16 protein.

A total of 68 formalin fixed paraffin embedded biopsied samples diagnosed as OSCC and OPMD were retrieved from the archives of the Department of Oral Pathology, Faculty of Dental Sciences, University of Peradeniya. Expression of p16 was investigated by immunohistochemistry (IHC) using p16^{INK4A} monoclonal antibody. The sample consisted of 9 OSCC, 21 Oral Submucous Fibrosis (OSF), 25 Oral Lichen Planus (OLP) and 13 cases of Keratosis with dysplasia. Cervical carcinoma was taken as the positive control and PBS used for the negative control without primary antibody. Stained slides were evaluated by 2 examiners separately and nuclear positivity of more than 1% was considered as positive.

Out of all cases 16.17% were positive for p16 protein. Expression of p16 in OLP was 20% followed by 14.28% in OSF and 15.38% in keratosis with dysplasia. Only one OSCC case was positive (11.1%) for p16. Average expression of p16 in all the cases was 8.71%.

HPV is believed to promote the oncogenic process and the relationship between viral onco-proteins and down regulation of p16^{INK4A} tumour suppressor protein in oral lesions. This preliminary study showed 16.17% oral cancer and OPMD were positive for p16 gene expression. Expression of p16 protein is higher in OPMD when compared with OSCC.

The findings of our study as well as published data in the literature suggest that, inactivation of p16 occur at the very early stage of oral cancer in the multistep process of oral cancer progression, before the acquisition of an invasive phenotype. Therefore, loss of p16 function in precancerous oral lesions may be considered as a prognostic marker for the progression of malignancy. Further studies are necessary with a larger sample and extended molecular studies to confirm the results.