ABSTRACT

Background:

Integrins are the principal cell surface receptors that enable both normal and transformed cells to attach to and respond to their extra-cellular environment. Integrins mediate cell to cell or cell to extra-cellular matrix (ECM) adhesion, providing adhesion for stationary cells. They mediate the traction during cell movement and importantly the promotion of many signalling pathways that regulated diverse processes including proliferation, migration, cell survival, differentiation, tumor invasion and metastasis. The integrin αvβ6 was highly expressed throughout the whole lesion in 90% of the squamous cell carcinoma, in 41% of the leukoplakia specimens, 85% of the lichen planus samples and over 80% of oral submucous fibrosis related oral cancers, but is not expressed in tissues with inflammatory hyperplasia or chronic inflammation. The expression of αvβ6 integrin could be associated in the malignant transformation of oral leukoplakia and lichen planus. Potentially malignant lesions are an immune inflammatory processes and if persistent will result in activation of oncogenes and loss of tumor suppressor genes. Oral submucous fibrosis has a high potential for malignant transformation among all other premalignant lesions. Oral submucous fibrosis (OSF) is a premalignant, fibrosing disorder of the mouth, pharynx and oesophagus, with a malignant transformation rate of 7-13%. Although epithelial cell may express a variety of cell-adhesion molecules, integrins are the most important extracellular matrix (ECM) receptors and are known to play a major role in tumor invasion and progression.

Aim and Objectives:

To study the expression of αvβ6 integrin in mild, moderate and severe epithelial dysplasia, oral submucous fibrosis and normal mucosa by immunohistochemistry (IHC).

Material and Method:

Immunohistochemical detection of αvβ6 integrin was done using polyclonal antibody and Poly Excel HRP/DAB chromogen detection system on 40 samples, which included mild epithelial dysplasia (10 cases), moderate and severe dysplasia (10 cases), oral submucous fibrosis (10 cases) and the expression was compared with that of normal mucosa (10 cases). The positive control used for αvβ6 integrin was human placenta.

Results:

The pattern of αvβ6 integrin staining in all the cases (N=40) was cytoplasmic. Oral submucous fibrosis showed 80% positively for αvβ6 integrin expression. 30% of mild epithelial dysplasia and 40% of moderate and severe epithelial dysplasia showed positive expression when compared to normal. All other cases showed negative expression.

Conclusion:

The result of this study has highlighted that, there is increased expression of αvβ6 integrin in increasing grades of epithelial dysplasia and also oral submucous fibrosis when compared to that of normal mucosa. The expression of αvβ6 integrin appears to be necessary but not sufficient for malignant transformation and it may have multiple roles in tumour formation.

Key words: αvβ6 integrin, OSMF, oral epithelial dysplasia.