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"IMMUNOLOCALISATION OF c-Jun IN NORMAL MUCOSA, ORAL SUBMUCOUS FIBROSIS, EPITHELIAL DYSPLASIA AND ORAL SQUAMOUS CELL CARCINOMA - A COMPARATIVE STUDY."

By

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ABSTRACT

Background and objective:

The dimeric transcription factor complex AP-1 has been implicated in the control of a diverse range of biological processes including cell proliferation, differentiation, apoptosis and oncogenic transformation. c-Jun is a component of the transcription factor AP-1 which is activated by a variety of extracellular stimuli. Over-expression or activation of c-Jun has been implicated in the pathogenesis of several types of cancer. c-Jun is suggested as a factor in malignant progression of oral lesions as well. The aim of this study was to correlate the expression of c-Jun in Normal buccal mucosa, Oral submucous fibrosis, Severe epithelial dysplasia and Well differentiated squamous cell carcinoma.

Methods:

Qualitative and quantitative assessment of c-Jun expression was evaluated in a total of 60 cases which included 15 each of Normal buccal mucosa, Oral submucous fibrosis, Severe epithelial dysplasia and Well differentiated squamous cell carcinoma. The percentage of positive cells (Nuclear labelling index-nLI) was considered for statistical evaluation for quantitative assessment. Qualitative assesment was done by evaluating the grading of staining. The obtained results were subjected for statistical evaluation.

Results:

The average nLI of c-Jun expression in Normal buccal mucosa was 35.02%. The expression was completely nuclear and was observed in all the cell layers with the intense staining being seen in basal cell layer and superficial cell layer. In Oral submucous fibrosis the average nLI of c-Jun expression was 35.61%. There was only nuclear expression. Intense staining was observed in basal, parabasal and superficial cell layers.

The average nLI of c-Jun expression in Severe epithelial dysplasia was 89.09%. The expression was completely nuclear. Intensity of staining increased from basal cell layer to the superficial cell layer. The well differentiated cells in the superficial cell layer have exhibited intense staining when compared to the mild to moderate staining which was seen in basal and parabasal cell layer.

In Well differentiated squamous cell carcinoma nLI of c-Jun expression was 83.31 %. Only nuclear expression was observed. The epithelial tumour islands showed variable intensities of staining with the peripheral cells of tumour islands showing mild to negative staining with the well differentiated central cells showing intense staining.

A significant difference was found in c-Jun expression quantitatively between Normal buccal mucosa and Severe epithelial dysplasia (**p=0.000**), Normal buccal mucosa and Well differentiated squamous cell carcinoma (**p=0.000**), Oral submucous fibrosis and Severe epithelial dysplasia (**p=0.000**), Oral submucous fibrosis and Well differentiated squamous cell carcinoma (**p=0.000**) & Severe epithelial dysplasia and Well differentiated squamous cell

carcinoma (**p=0.021**). No significant difference was seen between Normal buccal mucosa and Severe epithelial dysplasia & Normal buccal mucosa and Well differentiated squamous cell carcinoma. (**p=0.065 & 0.439 respectively**)

Qualitatively, statistical significant difference was seen in the intense staining of c-Jun expression between Oral submucous fibrosis and Severe epithelial dysplasia (**p=0.000**), Oral submucous fibrosis and Well differentiated squamous cell carcinoma. (**p=0.032**) & Severe epithelial dysplasia and Well differentiated squamous cell carcinoma (**p=0.011**). No statistical significance was found between Normal buccal mucosa and Oral submucous fibrosis (**p=0.273**), Normal buccal mucosa and Severe epithelial dysplasia (**p=0.065**) & Normal buccal mucosa and Well differentiated squamous cell carcinoma (**p=0.439**). There was no statistical significance between any study groups for mild and moderate staining.

Conclusion:

The over expression of c-Jun in Severe epithelial dysplasia (89.09%) and Well differentiated squamous cell carcinoma (83.31%) demonstrates its role in early carcinogenesis as evidenced in our study. So, c-Jun might act in different mechanisms and pathways that lead to malignant transformation in oral lesions.

Keywords: AP-1, Transcription factor, c-Jun, Oral submucous fibrosis, Severe epithelial dysplasia, Well differentiated squamous cell carcinoma.