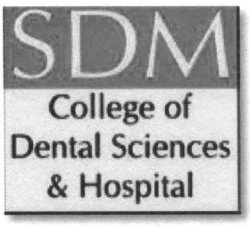

"STUDY OF MICRONUCLEI AND OTHER NUCLEAR ANOMALIES IN EXFOLIATED BUCCAL EPITHELIAL CELLS OF ORAL SUBMUCOUS FIBROSIS PATIENTS – A CASE CONTROL STUDY"

By

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ABSTRACT

Background and purpose:

Oral submucous fibrosis (OSMF) is a chronic, progressive condition that primarily affects Indians and south Asians. The continuous rise in incidence of this disease has been attributed to an increased uptake of areca nut/ betel quid/ gutkha habit, especially among young people. Due to its potential for malignant transformation, easy and reliable techniques for its early detection are needed. Micronucleus (MN) assay in exfoliated cells is an innovative biomarker that can be utilised for monitoring genetic damage in oral precancer and cancer.

The purpose of this study was to investigate the frequency of MN and other nuclear anomalies like binucleation, nuclear buds, karyorrhexis, karyolysis and pyknosis in exfoliated buccal epithelial cells of healthy controls, OSMF and squamous cell carcinoma (SCC) cases. The MN frequency was also correlated with various factors like staining method, gender, habits, diet and clinical stage of OSMF.

Methods:

Cytological smears were obtained from buccal mucosa of healthy controls (n=23), OSMF cases (n=23) and SCC cases (n=23), and were stained using PAP and a DNA specific, Feulgen stain. 1000 cells from each slide were scored for the presence of MN and other nuclear anomalies. The data obtained was statistically analysed using ANOVA test and Unpaired t test.

Results:

We observed that the frequency of MN and other nuclear anomalies showed a step-wise increase from control to OSMF and from OSMF to SCC cases. The MN count in PAP stained slides was higher than in Feulgen stained slides, indicating a

likelihood of false positivity with PAP stain. The mean MN count was highest in betel quid chewers followed by areca nut and gutkha chewers. The MN frequency did not have a significant relation with gender, diet and clinical stage of OSMF.

Interpretation and Conclusion:

We conclude that increase in the frequency of MN and other nuclear anomalies in OSMF cases when compared to healthy controls could be induced by tobacco and areca nut specific nitrosamines; indicating the presence of genotoxic and cytotoxic damage in the oral cells of these individuals. DNA specific, Feulgen stain is more reliable than PAP in MN assay.

Keywords: Micronuclei, OSMF, SCC, PAP, Feulgen, Nuclear anomalies.