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KI 67 Expression in Pre-Malignant and Malignant Lesions of Oral Cavity

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Abstract
Introduction: *Oral cancer is a major problem is India. In recent years more emphasis has been placed on cancer prevention programs and related studies. The most common maker used for detection of cell proliferation is Ki67 antigen. The aim of the study is to evaluate the diagnostic and prognostic significance of Ki67 expression in lesions of oral cavity.*
Material and Methods: *The study was carried out on 65 patients of pre-malignant and malignant lesions of oral cavity. Expression of Ki67 was studied on paraffin embedded section using immuno histo chemistry on all 65 cases using Ki67 diagnostic Kit.*
Result: *The mean ki67 labelling index for dysplasias is 25.45+3.31 and for carcinomas is 45.55+6.59. The difference is found to be statistically significant ($p<0.05$).*
Conclusion: *The expression of ki67 correlates well with the disease progression from dysplasias to carcinoma of oral cavity.*
Keywords: *ki67, oral cancer, premalignant, Dysplasia.*

Introduction

In developing countries where oral health resources are meagre, oral cancer is a major health problem[1] oral cancer is the sixth most common cancer in the world accounting for approximately 4% of all cancers and 2% of all cancer deaths[2]. Oral cancer is a major problem in India and accounts for 50 to 70% of all concer diagnosed[3]. Approximately 90% of oral cancers in south east asia are linked to tobacco Chewing and tobacco smoking. The natural history of oral cancer shows that often a precancerous stage precedes the development of cancer Intervention at this stage may result in regression of the lesion In recent years more emphasis has been placed on cancer prevention program and related studies[4]. In these programs success has been relied on the development of efficient, early detection methods to identify patients at high risk for development of cancer. The ki67 antibody was first developed by Gerdes and coworkers. Who demonstrated the antigen to be present in G1, S, G2 and M phases of continuously cycling cells but absent in Go cells since then its utility as a proliferative marker for both diagnostic and research purpose has increared progressively.

Material and Methods

The study was carried out on 65 patients of pre-malignant and malignant lesions of oral cavity admitted or attending IPD/OPD. Histopathology of paraffin embedded section of specimens was

done using hematoxylin and eosin stain. Histopathologically proven oral pre-malignant and malignant lesions were selected for the study. Expression of ki67 was studied on paraffin embedded section using immunohistochemistry on all 65 cases using ki67 diagnostic kit clinical staging and histological grading was done and correlated with ki67 expression ki67 activity was quantified by selecting the most densely & evenly Labelled areas in the sections and assessing the labelling index from the ratio of the number of cells stained by ki67 to the total number of cells counted per section.

Results

Majority of patients 44 cases were in the age group of 31-60 years. The percentage of males being 83% Most common site being anterior 2/3rd of the tongue (42%) 65 case of premalignant and malignent lesions were subjected to immunohisto chemical staining for ki67 were evaluated using scores from 1 to 3

1.+++ High proliferation > 50% positive cells

2. ++Moderate proliferation 30-50% positive cells

3.+ Low proliferation 10-30% positive cells

The mean ki67 labelling index for dysplasias is 25.45+3.31 and for carcinomas is 45.55+6.59 the difference was found to be statistically significant ($p<0.05$)

Discussion

Smoking or chewing tobacco is the main cause of oral cancer, a condition which claims lives of 10,000 people each year. Because of late presentation, it has one of the worst survival rates of all cancers, lessthan 50% patients survire more than 5 years after diagnosis.

Yet, if it is detected and treated early survival of oral cancer is better than those of the most cancers. Thus clinician should look for any mucosal lesion by meticulous inspection for the early detection of cancerous changes in the mouth[5]. Higher rates of transformation are found in the lesions with epitheliale dysplasia, making this a marker of pre-malignancy and thereby predictive for the development of oral cancer[6]. Squamous cell. Carcinoma is the most prevalant type of cancer of the oral mucosa and represants 91% of the diagnosed cases of malignant tumours of the mouth[7]. Ki67 is a nuclear protein doublet nearly 395 KD and can be detected on phases G1, S, G2 M of cell cycle but not on Go phase, exclusively in the nucler of cycling cells. This defined period of nuclear expression makes the ki67 protein a reliable maker of proliferating cells. The ki67 labelling index, is the indicator to predict the condition as premalignant/malignant lesion[8]. Ki67 is the protein that plays a pivotal role in maintaining cell proliferation. This protein is used as prognostic maker in many tumours[9]. Ki67 is extensively accepted as important biomaker in diagnosis, prognosis of malignant lesions, therefore high degree of presence of these biomakers in chronic premalingant lesious can be a great helpful in its prognosis and suggested treatments[10].

The present study showed an inverse correlation between the degree of tumour differentiation obtained by the expression of ki67. Results similar to those found in this study are also suggested by costa et al (2005) in oral carcinoma, Glen et al (2006) in malignant pancreatic timours, deans et al (2006) In gastrooesophageal cancers and cai et al (2006) in transitional cell carcinoma of bladder. The expression of ki67 correlated well with the disease progression from dysplasia to carcinoma.

Conclusion

It may be concluded from the present study that expression of ki67 correlates well with the disease progression from dysplasia to carcinoma of oral cavity. It may be used either as a static proliferation marker or by making multiple measurements during treatment as a dynamic marker of treatment efficacy.

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