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Original Research

Assessment of HPV 16/18 in oral precancerous lesions

Spinder Kour[1], Adil Rasool Malik[2]

[1]MDS, Oral Pathology, Private Consultant, Srinagar, J&K, [2]MDS, Oral pathology, Working at directorate health services, Kashmir

***ABSTRACT*:**

Background: Cancer has afflicted man throughout recorded history. The role of saliva as a diagnostic tool has advanced exponentially over the past decade. Human papilloma virus (HPV) is a small, epitheliotropic, nonenveloped DNA virus. Hence; under the light of above mentioned data, the present study was undertaken for assessing the presence of human papillomavirus (HPV) 16/18 in saliva rinses of patient with oral precancerous lesions. **Materials & methods:** A total of 40 subjects were enrolled in the present study. Among these 40 patients, 20 were healthy controls while the remaining 20 were patients with oral pre-cancerous lesions. Saliva of oral precancerous lesion patients and healthy controls sample was collected by 10ml normal saline rinses that was gargled and expectorated. The sample was then labeled, placed in the provided specimen transport bag, and sent to the laboratory for Detection of HPV in saliva by Polymerise Chain Reaction. **Results:** HPV 16/18 positivity was found to be present in 2 cases of the pre-cancer group while HPV 16/18 negativity was found to be present in 18 cases of the precancer group. HPV 16/18 activity was found to be negative in all the cases of normal controls. **Conclusion:** No significant difference was observed while comparing the prevalence of HPV 16/ 18 in patients with pre-cancer lesion.

Key words: Human papilloma virus, Pre-cancer lesion

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Corresponding author: Dr. Spinder Kour, MDS, Oral Pathology, Private Consultant, Srinagar, J&K

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INTRODUCTION

Cancer has afflicted man throughout recorded history. It is no surprise that from the dawn of history doctors have written about cancer. Some of the earliest evidence of cancer is found among fossilized bone tumors, human mummies in ancient Egypt and ancient manuscripts. The concept of a two-step process of cancer development in the oral mucosa, i.e., the initial presence of a precursor (pre-malignant, pre-cancerous) lesion subsequently developing into cancer, is well-established. Oral leukoplakia is the best-known precursor lesion. It is not known how many oral squamous cell carcinomas arise from precursor lesions and how many develop from apparently normal oral mucosa.[1- 3]

The role of saliva as a diagnostic tool has advanced exponentially over the past decade. The ability to measure a wide range of molecular components in saliva and compare them with serum coupled with the easy and non-invasive method of collection has made it feasible to study microbes, chemical and immunological markers.[4] Human papilloma virus (HPV) is a small, epitheliotropic, nonenveloped DNA virus. The HPV genome consists of 7200 to 8000 base pairs of closed-circular double-stranded DNA, containing up to 10 open reading frames.[4, 6] Hence; under the light of above mentioned data, the present study was undertaken for assessing the presence of human papillomavirus (HPV) 16/18 in saliva rinses of patient with oral precancerous lesions.

MATERIALS & METHODS

The present study was undertaken for assessing and detecting HPV 16/18 in saliva of patients with oral precancerous lesions. A total of 40 subjects were enrolled in the present study. Among these 40 patients, 20 were

healthy controls while the remaining 20 were patients with oral pre-cancerous lesions.

Inclusion Criteria:

1. Clinically and histopathological confirmed cases of Pre-cancerous lesions.
2. Both males and females to be included in the study.

Patients were made to sit comfortably on a dental chair. Clinical examination was carried out wearing sterile hand gloves and mouth mask under artificial illumination, with patient seated appropriate to the procedure being performed. Saliva of oral precancerous lesion patients sample and healthy controls was collected by 10ml normal saline rinses that was gargled and expectorated. The sample was then labeled, placed in the provided specimen transport bag, and sent to the laboratory for Detection of HPV in saliva by Polymerise Chain Reaction. All the results were compiled in Microsoft excel sheet and were analysed by SPSS software. Chi- square test was used for assessment of level of significance.

RESULTS

The present study was undertaken for assessing the presence of human papillomavirus (HPV) 16/18 in saliva rinses of patient with oral precancerous lesions. The mean age among pre cancer group was found to be 38.45 years. The mean age of control group was found to be 40.15 years. The precancer group consisted of 16 male and 4 female patients. The control group consisted of 16 males and 4 female patients. HPV 16/18 positivity was found to be present in 2 cases of the pre-cancer group while HPV 16/18 negativity was found to be present in 18 cases of the precancer group. HPV 16/18 activity was found to be negative in all the cases of normal controls.

Table 1: Age-wise and gender-wise distribution of patients

Parameter		Precancerous group	Control group
Mean age (years)		38.45	40.15
Gender	Males	16	16
	Females	4	4

Table 2: The distribution of HPV 16/18 between three study groups

HPV 16/18 (n=20)	Pre Cancer (n=20)	Normal	p- value
16/18 Negative	18	20	
16/18 Positive	2	0	0.28 (Non-significant)

DISCUSSION

Oral squamous cell carcinoma (OSCC) accounts for over 90% of oral cancers. It has been established that smoking, heavy alcohol and betel nut chewing are the etiological factors for OSCC. However increasing research and technology have focused on identifying possible viral etiological factors such as oncogenic human papilloma virus. Absence of well-defined early symptoms is one of the major factors in lack of diagnosis for OSCC not only in India but also elsewhere. Hence, development of specific biomarker is likely to be important in screening of high-risk patients. Till date no reliable or clinically applicable biomarker has been identified for testing in large population.[5- 7]

Human papilloma viruses (HPV) are members of the papillomaviridae family that infect epithelial cells exclusively. HPV is an epitheliotropic virus predominantly associated with human skin and mucosal lesions. Low-risk HPV subtypes (eg. Type 6, 11) are associated with more benign skin lesions such as warts (papilloma). High-risk subtypes (.e.g. Type 16, 18) can cause neoplasia (abnormal cell growth) or dysplasia. A link between human papillomavirus and squamous cell carcinoma of the head and neck was suggested more than 20 years ago.[8, 9]

The present study was undertaken for assessing the presence of human papillomavirus (HPV) 16/18 in saliva rinses of patient with oral precancerous lesions. The mean age among pre cancer group was found to be 38.45 years. The mean age of control group was found to be 40.15 years. The precancer group consisted of 16 male and 4 female patients. The control group consisted of 16 males and 4 female patients. Smith et al demonstrated the statically significant association between the detection of HPV-high risk (HPV-HR) types in oral exfoliated cells and the presence of HPV-HR types in tumor tissue. They suggested that HPV testing of oral rinses may be predictive of an HPV-related head and neck cancer.They also found an independent association of high-risk HPV presence in oral exfoliated cells with HNSC, using nonquantitative PCR techniques.[10] Peter M. et al**,** summarized the recent knowledge about the HPV infectionwith regards to etiology of cancer, proving that HPV infection is related to development of cancer and that the sexual behavior has played an important role in the viral transmission.[11]

In the present study, HPV 16/18 positivity was found to be present in 2 cases of the pre-cancer group while HPV 16/18 negativity was found to be present in 18 cases of the precancer group. HPV 16/18 activity was found to be negative in all the cases of normal controls. Bouquot et al reported that leukoplakia represents more than 80% of all oral pre cancers.[12] Neville et al. in reported that leukoplakia is the most common pre-cancerous lesion encountered in the oral cavity with a prevalence ranging from 0.2-5.2%.[13]

CONCLUSION

No significant difference was observed while comparing the prevalence of HPV 16/ 18 in patients with pre-cancer lesion. However; further studies are recommended.

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