

Assessment of risk of HPV infection and oropharyngeal carcinoma

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ABSTRACT

Background:Head and neck cancer, which includes tumours that arise from the oral cavity, oropharynx, larynx, hypopharynx and sinonasal tract, represents a serious health care problem in many parts of the world, and ranks as the sixth most common cancer worldwide.The present study was conducted to assess risk of HPV infection and oropharyngeal carcinoma.

Materials & Methods: 78patients of oral cancer of both genderswere enrolled. Body mass index (BMI) was calculated. Frequency and amount of alcohol consumption (ml) were recorded. 5 ml venous blood sample was obtained for the assessment of antibodies to HPV16 E6.

Results: Out of 78 patients, males were 58 and females were 20.HPV E 16 E16 serologypositive was seen in 50 and negative in 28, BMI was normal in 26, underweight in 38, poor in 14. Stage I and II was seen in 17, III in 36 and IVin 25. Alcoholism>2 was seen in 52 and <2 in 26. Smoking >10 was seen in 40 and <10 in 38. Dental carewas good seen in 15, moderate in 38 and poor in 25.

Conclusion: Common risk factors for oropharyngeal carcinoma was HPV, overweight, stage III and IV, alcoholism, smoking and poor oral hygiene.

Key words: Oropharyngeal carcinoma, HPV, Smoking

Introduction

Head and neck cancer, which includes tumours that arise from the oral cavity, oropharynx, larynx, hypopharynx and sinonasal tract, represents a serious health care problem in many parts of the world, and ranks as the sixth most common cancer worldwide.¹ These tumours are linked by common characteristics including a male predominant appearance in the 5-6th decade of life, a strong aetiological link with prior tobacco, alcohol use or betel nut chewing.²The estimated annual burden of HNSCC is approximately 650,555 incident cases and approximately 300,000 resultant deaths. It is considered the sixth leading cause of cancer mortality and oropharyngeal squamous cell carcinoma (OPSCC) accounts for approximately 50,000 incident cases, which is low in comparison with other head and neck squamous cell carcinoma (HNSCC). About 90% of head and neck cancers are squamous cell carcinomas (HNSCC).³

There are two different forms of HPV16 occur such as HPV16+ and HPV16-.It is found that the survival rate of patients infected with HPV+ is better as compared to those infected with HPV-. It is observed that HPV DNA and p16 expression assess the HPV status.⁴ History of smoking and disease stage help in differentiating patients into prognostic groups.Oral HPV infection is the primary risk factor for HPV-related OPC, and over 90% of oral HPV infections are sexually acquired.¹⁴ Therefore, it is no surprise that the number of oral sexual partners is the behavioral factor most strongly and specifically associated with OPC.⁵ Differences in sexual behavior between countries may contribute to the differences in global

trends of HPV-related OPC.⁶ The present study was conducted to assess risk of HPV infection and oropharyngeal carcinoma.

Materials & Methods

The present study comprised of 78 patients of oropharyngeal cancer of both genders. All were clinically and histologically proved cases. They were enrolled once they agreed to participate in the study.

Demographic data such as name, age, gender was recorded. A thorough oral examination was conducted. Cancer staging was performed and patients were divided into smokers or non-smokers. Body mass index (BMI) was calculated using formula (weight [kg] × height [m²]) and patients were classified into normal, underweight, overweight and obese. Frequency and amount of alcohol consumption (ml) were recorded.

5 ml venous blood sample was obtained for the assessment of antibodies to HPV16 E6. HPV genotyping was executed with type-specific E7 polymerase chain reaction bead-based multiplex assay. Results were subjected to statistics analysis. P value less than 0.05 was considered significant.

Results

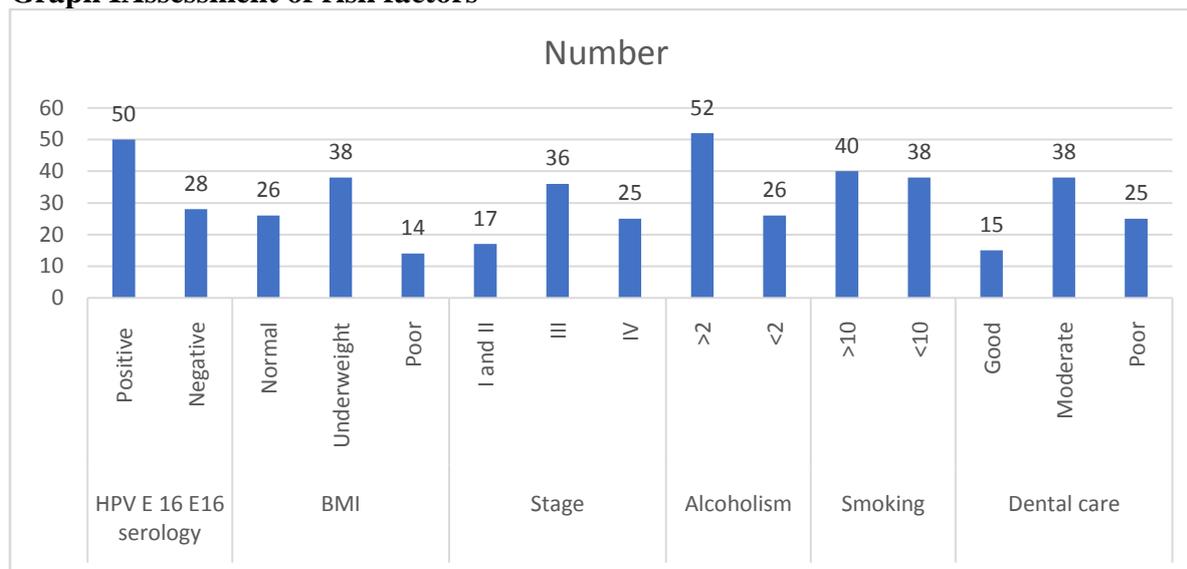
Total- 78		
Gender	Males	Females
Number	58	20

Table I shows that out of 78 patients, males were 58 and females were 20.

Table II Assessment of risk factors

Parameters	Variables	Number	P value
HPV E 16 E16 serology	Positive	50	0.05
	Negative	28	
BMI	Normal	26	0.04
	Underweight	38	
	Overweight	14	
Stage	I and II	17	0.02
	III	36	
	IV	25	
Alcoholism	>2	52	0.01
	<2	26	
Smoking	>10	40	0.09
	<10	38	
Dental care	Good	15	0.04
	Moderate	38	
	Poor	25	

Table II, graph I shows that HPV E 16 E16 serology positive was seen in 50 and negative in 28, BMI was normal in 26, underweight in 38, overweight in 14. Stage I and II was seen in 17, III in 36 and IV in 25. Alcoholism >2 was seen in 52 and <2 in 26. Smoking >10 was seen in 40 and <10 in 38. Dental care was good seen in 15, moderate in 38 and poor in 25. The difference was significant (P < 0.05).

Graph I Assessment of risk factors

Discussion

Most studies have demonstrated that features tobacco and alcohol consumption are major, common risk factors for HNSCC, but over the last 10-15 years HPV infection has been increasingly recognised as a major aetiological factor for a subset of HNSCCs, including mostly OPSCC.⁷ HPV infection in the aetiology of OPSCC was first shown by Gillison et al; numerous case series studies conducted in the late 1990s and 2000s evaluated the prevalence HPV infection in oropharyngeal cancer using molecular techniques such as PCR and in situ hybridisation.⁸ Indeed, over the last five years it has become increasingly clear that HPV plays a pathogenic role in this subset of head and neck cancers, with distinct epidemiologic, clinical and molecular characteristics. These findings have created new opportunities for improved therapy and primary prevention for these HNSCCs.⁹ The present study was conducted to assess risk of HPV infection and oropharyngeal carcinoma.

In present study, out of 78 patients, males were 58 and females were 20. Amini et al¹⁰ conducted a study on 3952 patients out of which 2454 (62%) were HPV positive. Study revealed overall survival rate of 93.1% in HPV positive patients and 77.8% in HPV negative patients. Multimodality treatment comprised chemoradiotherapy (CRT) and Surgery + Radiotherapy but not S-CRT as predictors for improved OS in HPV-positive Stage III–IVB disease. Results further demonstrated that Surgery + Chemotherapy + Radiotherapy was coupled with longer OS in HPV-negative OPSCC-positive patients during multimodality treatment. Similarly, a poor association was observed between lymph node stage with OS in HPV-positive cancers. It was found that the occurrence of positive margins and/or extracapsular extension was connected with worse OS in HPV negative with HR of 2.11 and with significant difference but not HPV-positive OPSCC patients.

We observed that HPV E 16 E16 serology positive was seen in 50 and negative in 28, BMI was normal in 26, underweight in 38, poor in 14. Stage I and II was seen in 17, III in 36 and IV in 25. Alcoholism >2 was seen in 52 and <2 in 26. Smoking >10 was seen in 40 and <10 in 38. Dental care was good seen in 15, moderate in 38 and poor in 25. The clinical behavior and presentation of HPV-related OPC are different from its HPV-negative counterpart. In patients with HPV-related OPC, the most common presenting symptom is a neck mass, while those with HPV-negative OPC are more likely to complain of a sore throat and dysphagia. On presentation, they are more likely to have early T-stage (T1/T2) and advanced cervical nodal disease (N2/N3), when compared to HPV-negative tumors. However, while involvement of cervical lymph nodes reflects more advanced disease, such patients with HPV-related OPC

have better survival outcomes and response to treatment than those with HPV-negative OPC.¹¹

In response to the emerging epidemic of HPV-related OPC, and the morbidity and costs associated with treating these cancers, much attention has turned to the prevention and early detection of disease. Current vaccination rates are low, especially in males who are most often affected by these cancers. Recent statistics estimate that about 65% of girls and 56% of boys between ages 13 and 17 y have received the first dose of the HPV vaccine. Moreover, due to the lack of level one evidence showing a reduction of premalignant lesions and OPC with vaccination, prevention of OPC is not an approved vaccine indication by the Food and Drug Administration (FDA).¹² This creates a barrier to increasing public education and awareness on a large scale.

Conclusion

Authors found that common risk factors for oropharyngeal carcinoma was HPV, overweight, stage III and IV, alcoholism, smoking and poor oral hygiene.

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