



RISK FACTORS FOR HEAD AND NECK SQUAMOUS CELL CANCER – ORAL TOBACCO, THE RISING THREAT IN THE INDIAN SUBCONTINENT

Oncology

Dr. Sivakumari Sivarajan

MS, MCh, Associate Professor of Surgical Oncology. Government Stanley Medical College & Hospital, Chennai.

Dr. Sandya Srinivasan

MBBS, Saveetha Medical College, Chennai.

ABSTRACT

An observational study was conducted to assess etiologic factors and treatment outcomes in patients with head and neck cancer at the Government Stanley Hospital over a period of 3 years from May 2020 to May 2023. Details regarding risk factors, their usage of tobacco, smoking, alcohol and other risk inducing behaviours, stage at diagnosis, treatment details, response to therapy and current disease status details were analysed. Habituation or addiction to oral tobacco in the form of Hans, Mawa, Gutka or tobacco quid was reported by a majority 84% of patients. 74% of patients had two or more risk factors. Single modality of treatment was received by 104 patients and 114 received multimodality therapy. 91% of treated patients died within 2 years of diagnosis and 6% remained alive and disease free. 4 patients (2%) were alive with the disease; 2 patients (1%) with distant metastases. The study concluded that tobacco continues to be the most common cause for cancers of the head and neck and smokeless tobacco is seen to be the greatest risk factor and overtaken all other addictions including smoking and is associated with majority of cancers.

KEYWORDS

INTRODUCTION:

Carcinoma of the head and neck region with the exception of brain and orbit is classified as head and neck cancer. Head and neck cancer is the seventh most common cancer globally, accounting for approximately 890,000 new cases and 450,000 deaths annually. The incidence is significantly higher in males than females globally, with a male-to-female ratio of approximately 3:1. In India, head and neck cancer is the most common cancer in males and the third most common in females. The cancers are predominantly squamous cell cancers with a small number of minor salivary gland tumours, sarcomas and lymphomas making up the rest. Over 60% present in an advanced stage and over 80% die within 5 years. The risk factors for squamous cancer of the head and neck are alcohol, smoking, oral tobacco, HPV and neglected oral hygiene. This study was undertaken to examine the risk factors and their relation to one another in relation to this disease.

MATERIALS AND METHODS:

An observational study was conducted to assess etiologic factors and treatment outcomes in patients with head and neck cancer. Patients who were registered for squamous cell cancer of the head and neck at the Government Stanley Hospital over a period of 3 years from May 2020 to May 2023 were contacted for details regarding risk factors, their usage of tobacco, smoking, alcohol and other risk inducing behaviours and their responses recorded. Stage at diagnosis and treatment details, response to therapy and current disease status details were retrieved from hospital records and results analysed.

RESULTS

A total of 224 patients were analysed. Of these, 206 were male (92%) and 18 were female (8%). Ages ranged from 29 years to 86 years (*Table 1*). The highest incidence was in 31-40 year age group (45%). The next highest was in the 41-50 year age group (37%) and the 51-60 year age group (12%). The commonest subsites affected were buccal mucosa (43%), followed by tongue (15%), oropharynx (12%), laryngopharynx and alveolus (10% each) (*Table 2*).

Table 1:

AGE DISTRIBUTION			
AGE in years	MALE	FEMALE	TOTAL
21 – 30	1	-	1
31 – 40	101	-	101
41 – 50	77	6	83
51 – 60	18	9	27
61 - 70	4	2	6
71 - 80	3	-	3
81 - 90	2	1	3
	206	18	224

Table 2:

Site Of Malignancy		
Subsite	Number Of Patients	Percentage
Buccal mucosa	96	43%
Tongue	34	15%
Oropharynx	27	12%
Laryngopharynx	23	10%
Alveolus	22	10%
Lip	9	4%
Palate	8	3.5%
Floor of Mouth	3	1%
Retromolar Trigone	2	0.9%

In 97% of patients, a definite risk factor could be identified. Habituation or addiction to oral tobacco in the form of Hans, Mawa, Gutka or tobacco quid was reported by a majority 84% of patients. Smoking history was present in 63% of patients and alcohol consumption was present in 76% of patients. Areca nut chewing was present in 10% of patients and 2% were habituated to snuff. Sharp tooth and poor oral hygiene were a cause in 3% of patients. 74% of patients had two or more risk factors (*Figure 1*).

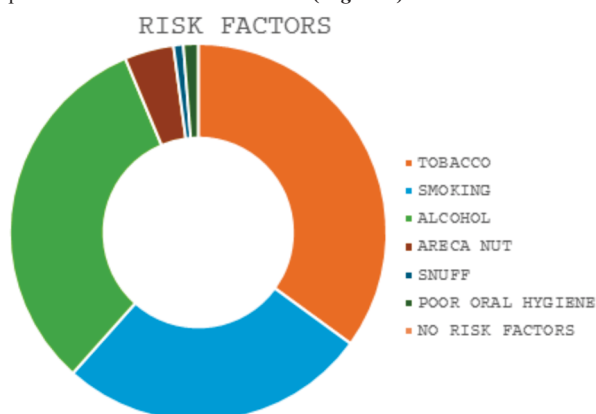


Figure 1:

Of the 224 patients, 84 patients received chemoradiotherapy as single modality of therapy, while 11 received palliative RT. Surgery was the only modality of treatment in 9 patients. Multimodality treatment was received by 114 patients with 91 patients receiving adjuvant RT following surgery and 23 patients underwent salvage surgery after completion of radiotherapy for residual disease. Six patients had inoperable recurrent disease and received palliative chemotherapy. Overall, 204 patients (91%) died within 2 years of diagnosis and 13 patients (6%) are alive and disease free. 4 patients (2%) were alive with

the disease; 2 patients (1%) with distant metastases.

DISCUSSION:

In India, around 120,000 new cases and 72,000 deaths are reported annually, which accounts for 30% of all cancers diagnosed in the country. The two most important etiological factors of oral cancer are tobacco and alcohol consumption. Tobacco has been the predominant factor causing oral cancer. However, smoking was the more common form of usage until the introduction of new oral forms of tobacco introduced into the market about two decades ago. The continual use of oral tobacco in various forms such as gutka, zarda, mawa, kharra, khaini and hans is a major cause of tumor development in the oral cavity in India. People who use tobacco, drink alcohol and chew betel have over 30 times the oral cancer risk. IARC classifies solar radiation as a probable cause of lip cancer. Human Papilloma Virus (HPV 16 subtype) infection causes around 14% of oropharyngeal cancers and is associated with a better prognosis. Spit tobacco, also known as chewing tobacco and snuff, are forms of tobacco that are put between the cheek and gum. Chewing tobacco can be in the form of leaf tobacco (which is packaged in pouches), or plug. Snuff is a powdered form of tobacco, usually sold in cans. The nicotine is released from the tobacco as the user "chews." Although chewing tobacco and snuff are considered smokeless tobacco products, harmful chemicals including nicotine are ingested. More than 28 cancer-causing chemicals have been found in smokeless tobacco. In our study, smokeless tobacco in the form of Hans, Mawa, snuff and plug tobacco was responsible for 84% of all cases. The duration of usage was 2 to 10 years. Cigarettes contain more than 60 known cancer-causing agents. Smoking tobacco causes around 70% of oral and pharyngeal cancers in men, and around 55% in women. In our study, 63% of patients were smokers who smoked cigarettes or beedis for a period ranging from 5 to 25 years. Alcohol was consumed by 76% of patients and almost three-fourths of patients had more than one substance addiction.

CONCLUSION:

Tobacco continues to be the most common cause for cancers of the head and neck and smokeless tobacco is seen to be the greatest risk factor and overtaken all other addictions including smoking and is associated with majority of cancers with a shorter duration of usage. Alcohol is the next common etiological factor and is commonly associated with tobacco use and causes malignancy due to its synergistic effect.

REFERENCES:

1. G. Bhawna, —Burden Of Smoked And Smokeless Tobacco Consumption In India—Results From The Global Adult Tobacco Survey India (GATS-India)-2009–2010, *Asian Pacific Journal Of Cancer Prevention*, Vol. 14, No. 5, Pp. 3323–3329, 2013.
2. Irani S. New Insights into Oral Cancer-Risk Factors and Prevention: A Review of Literature. *Int J Prev Med*. 2020 Dec 30;11:202.
3. Iarc Working Group On The Evaluation Of Carcinogenic Risks To Humans, Smokeless Tobacco And Some Tobacco-Specific N Nitrosamines, Vol. 89 Of Iarc Monographs On The Evaluation Of Carcinogenic Risks To Human, 2007.
4. P. Boffetta, S. Hecht, N. Gray, P. Gupta, And K. Straif, —Smokeless Tobacco And Cancer, *The Lancet Oncology*, Vol. 9, No. 7, Pp. 667–675, 2008.
5. Mocherla, Monica^{1,2}; Krishnappa, Pushpanjali²; John, Denny³. Risk Factors Associated with Oral Cancer: A Hospital-based Case-control Study in Telangana State, India. *Contemporary Clinical Dentistry* 16(1):p 19-27, Jan–Mar 2025.
6. N. Guha, S. Warnakulasuriya, J. Vlaanderen, And K. Straif, —Betel Quid Chewing And The Risk Of Oral And Oropharyngeal Cancers: A Meta-Analysis With Implications For Cancer Control, *International Journal Of Cancer*, 2013.
7. Tobacco, Oral Cancer, And Treatment Of Dependence. Saman Warnakulasuriya 1, Gay Sutherland, Crispian Scully. *Oral Oncol*. 2005 Mar;41(3):244-60.
8. P. C. Gupta And C. S. Ray, —Smokeless Tobacco And Health In India And South Asia, *Respirology*, Vol. 8, No. 4, Pp. 419–431, 2003.
9. M. I. Nisar And R. Iqbal, —Smokeless Tobacco Use Prevention And Cessation (S-Tupac): A Need Of The Time, *Journal Of The Pakistan Medical Association*, Vol. 61, No. 7, Pp. 711–712, 2011.