

A Study to assess the prevalence of Head and neck squamous cell carcinomas in association with tobacco consumption in a tertiary care hospital.

First author :Dr.Durgadevi ., Assistant professor, Department of pathology

Co-author :Dr.Jayaganesh., Professor ,Department of pathology

ABSTRACT

Head and neck cancers are the sixth most common type of cancers and has a steady rise in India, predominantly in males .The most common etiological factor contributing for the cancer development is Tobacco consumption in various forms. This was a laboratory based ,retrospective study to assess the prevalence and association of HNSCC in a subset of population of tobacco consumers A total of 50 positive cases of Head and neck squamous cell carcinomas were collected at our hospital for a period of two years and history collected in view of age , sex and tobacco consumption . In this study, 64% affected cases are males and 48% of the cases had the history of tobacco consumption. Tobacco consumption prevails as the sole risk factor for the development of Head and neck squamous cell carcinomas.

Keywords: Head and neck squamous cell carcinomas, Tobacco, Risk factor

Introduction:

Head and neck squamous cell carcinomas are considered to be the sixth most common type of cancer and more than 6,33,000 cases have been detected worldwide, annually.The important risk factors contributing to the development of HNSCC are Tobacco and alcohol consumption.¹ The other events contributing to the carcinogenesis are loss of heterozygosity, hypermethylation, deletion and mutation of P16 genelocus.^{1,2}

There is a 10 fold increase in risk for HNSCC in smokers than that of the non-smokers.The carcinogenic components of the tobacco products are associated with the cancer development ,more strongly with HNSCC².The most important carcinogens implicated in HNSCC are nitrosamines and polycyclic aromatic hydrocarbons.^{2,3}This involves the tumours of the oral cavity, oropharynx,nasopharynx,hypopharynx and larynx.³ Various different forms of tobacco including combustible and smokeless products are used. The toxicity of the smoke depends on the specific type of tobacco used, affecting the carcinogen content. The combustible products of tobacco are cigarettes, cigar and bidis whereas the smokeless products includes chewing tobacco, gutka and betel quid^{3,4} . There is DNA adduct formation disrupting the DNA structure and is considered to the common mutagenic pathway for the development of cancer. The mean age of HNSCC is 60-70 years and is more common in men than in women.⁴

The aim of this study is to assess the prevalence and association tobacco consumption with HNSCC in relation to age and gender.

Materials and methods

Study Design

This was laboratory based, retrospective study. Tissue blocks were recruited from Histopathology laboratory and processing of staining was carried out at the Department of Pathology in Saveetha Dental College and Saveetha medical college and hospital ,Chennai . Head and neck biopsies reported positive for squamous cell carcinomas using paraffin embedded tissue blocks were retrieved from Department of Pathology from June2014 to December 2016.

Head and neck cancers reported for malignancy as squamous cell carcinoma are included in the study. Blocks found unsuitable due to physical integration, Head and squamous cell carcinoma, biopsies without representative epithelium for review or sufficient tissue for immunohistochemistry, Malignant neoplasms other than squamous cell carcinomas, Thyroid and salivary gland neoplasms and Metastatic malignancies are excluded from the study

Sample size and collection

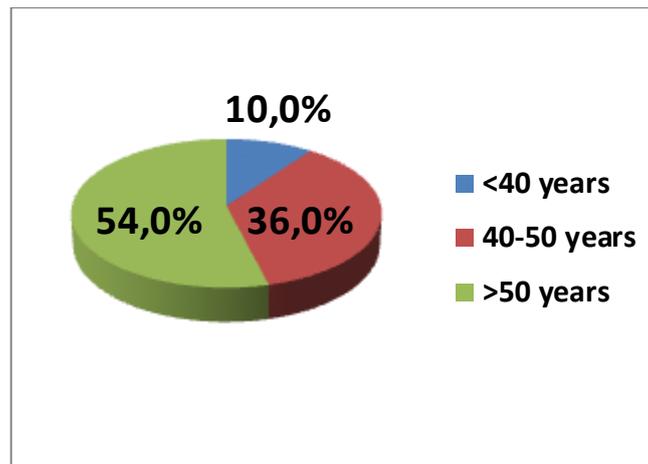
Purposive sampling method was used. The samples were collected after ethical approval . A total number of 50 blocks, corresponding to the squamous cell carcinomas of head and neck were retrospectively retrieved using the unique histopathology numbers from the data collected. The name, age, patients hospital and laboratory number were noted from the histology report as the cases were identified. This information was then used to retrieve the archived paraffin embedded blocks.

Results

Table 1: Age Distribution in carcinoma cases

Age in years	No. of Cases	Percentage
<40 years	5	10%
40-50 years	18	36%
>50 years	27	54%
Total	50	100%

The majority of patients were more than >50 years (54%). 36% of patients were between 40-50 years and 10% of patients were less than <40 years old.

Figure 1: Demonstration of age distribution**Table 2: Distribution of population in age groups**

Min	Q1	Median	Q3	Max
22	42.75	52.50	63.25	75

The mean and standard deviation of age in years is 51.58 ± 11.377 . The median age in years is 52.5 and the range is 53 (22-75). The inter-quartile range is 20.5 which we get from q1 (42.75) and q3 (63.25).

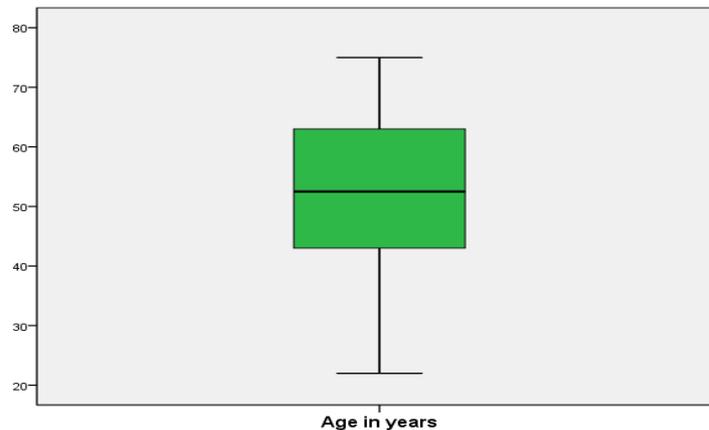
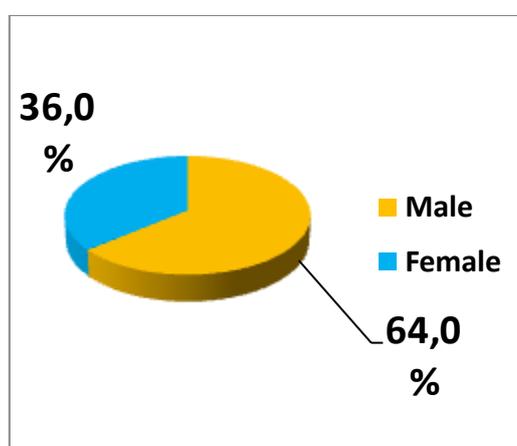
Figure 2: Distribution Age in years

Table 3: Sex Distribution in carcinoma cases

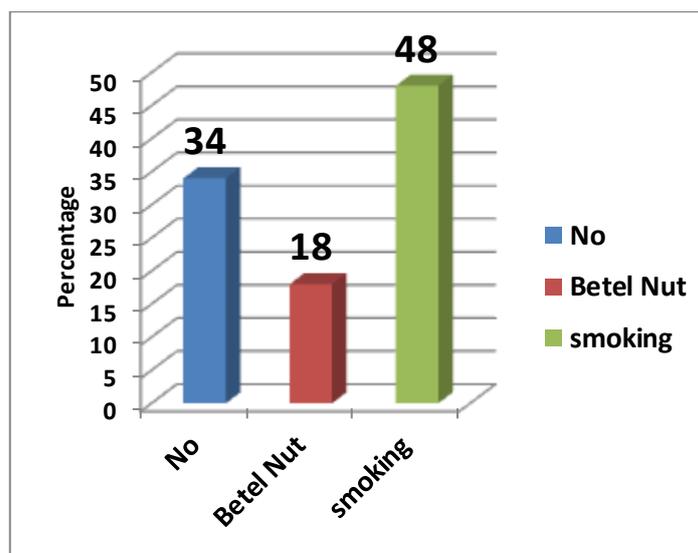
Sex	No. of Cases	Percentage
Male	32	64%
Female	18	36%
Total	50	100%

The maximum numbers of patients were males (64%). 36% of patients were females

Figure 3: Sex Distribution in carcinoma cases**Table 4: Distribution of population in Tobacco Users**

Tobacco Use	No. of Cases	Percentage
Smoking	24	48%
Betel Nut	9	18%
No	17	34%
Total	50	100%

Out of 50 patients majority of them used tobacco (48%). 18% of patients were using betel nut. 34% of patients were non smokers

Figure 4: Demonstration of population among tobacco users

Discussion

The aim and objective of the study is to assess the prevalence and association of Tobacco consumption with HNSCC for a period of two years at our institution along with the frequently affected age groups and gender.

The study comprised of 50 patients out of which 32 cases (64%) are males and 18 cases(36%) are females, respectively .This is found in concordance with other studies shown by Rodrigo et al (2016),Gillison et al and Everett et al(2015) .^{5,6} Cultural behaviour and lifestyle changes are reflected directly on the sex differences in oral cancer .The HNSCC are more common in men than women due to their indulgence in the various risk factors for the development of cancer.⁶

In this study the age of the cases ranged from 34 years to 75 years .the youngest patient was 34 year old male and the eldest patient was 75 years old. The medianage was 52.5 years (Range -22-75). Many other studies also shown a similar age distributionsuch as Murthy et al(median age of 54 years (31-74)), Maria orsaria et al (median age of 57 years (40-80) and David kalfert et al (median age 63 years (28-78)).⁷

Age distribution in this study can be related to two etiological factors such as history of Tobacco consumption and HPV infection due to increase in prevalence of sexual malpractice^{7,8}

In relation to the etiological factors 24(48%) out of 50 cases had the history of smoking followed by betel nut chewing in 9(18%) cases respectively.Smokeless tobacco and chewing snuff in form of betel nut also contributed to the development of oropharyngeal cancer⁸. Multiple studies stated that tobacco consumption in any form is considered as the sole significant risk factor for HNSCC.^{8,9}Studies also stated that there is localised elevation of the

temperature in the oral cavity to carcinogenic effects of tobacco products making the epithelium more susceptible resulting in cell cycle delays which in turn impairing the cells to repair the DNA damage.⁹

More than 50% of the cases of HNSCC in the present study is mainly due to Tobacco and betel nut consumption which is similar to the findings reported in studies by Sasikala et al in 2016.^{9,10} The high levels of nitrosamines were reported in India with people chewing tobacco. Reactive oxygen species are released on chewing of betel quid in the oral cavity resulting in changes in the epithelium.¹⁰ Phillips et al demonstrated that a difference of 25 year latency period exists from the initial exposure of carcinogen to the development of cancer.¹¹ It also stated that there is a continuous alarming increase of HNSCC in the younger patients.^{11,12} In our study, 10% of the cases were <40 years and also many studies have stated that increased risk of cancer related to smoking is seen in the lower educational category.¹²

The limitation of this study may be the prevalence and association of HNSCC related to tobacco consumption is studied in only limited number of cases at our institution

Conclusion

Our present study has found that the sole risk factor for the development of HNSCC is tobacco consumption in various forms, predominantly in males. Public health awareness should be given on tobacco consumption of all forms in endemic areas and improvements in educational level will help in decline of the tobacco consumption and its impact on HNSCC.

Ethical clearance : Institutional human ethical committee were obtained from

Source of funding : Self

Conflict of interest: None

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