ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

An Epidemiological Retrospective Study of Head Neck Cancer in Kolkata, West Bengal.

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Manuscript Info

Manuscript History:

Received: 11 January 2015
Final Accepted: 25 February 2015
Published Online: March 2015

Key words:

Head Neck Cancer, Etiology, Risk factors, Bengali speaking populations

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Abstract

Introduction: The term "Head and Neck Cancer" (HNC) refers to a group of biologically similar cancers originating from the upper aerodigestive tract, including lip, oral cavity (mouth), nasal cavity, paranasal Sinuses, pharynx and larynx. Most head and neck cancers are squamous cell carcinomas (HNSCC), originating from the mucosal lining (epithelium) of these regions. Head and neck cancer is strongly associated with certain environmental and life style risk factors, including tobacco smoking, alcohol consumption.

Materials and methods: Patients diagnostic data are collected from N.R.S. hospital, Kolkata and age group are divided into four groups: 30-39, 40-49, 50-59 and above 60. Risk factors are also divided into seven categories. The statistical analysis was carried out by SPSSv16.0. Risk estimation and measure of association was calculated in terms of Odds ratio (OR). 95% confidence interval (CI) and subsequent p-value of significance (<0.05) were included as well.

Results: This statistical retrospective study indicates that conventional risk factors are the cause of primary head and neck malignancies. However cancer site wise patient numbers and cancer male to female ratio are different among different demographic areas demanding a state wise thorough analysis to get an overall HNC distribution picture of India.

Conclutions : Our study concludes that tobacco related products are indeed risk factors.Our age- wise analysis shows patients aged between 40-49 are worst affected by HNC malignancies . Death rate in HNC is highest in aged over 50 which indicate the effect of prolong exposure of tobacco products on death rate.We found higher male to female HNCA ratio than northern india, bihar and north eastern india. However, our retrospective study demands a state wise analysis to get an overall HNCA distribution picture in India.

INTRODUCTION

Head and neck cancer is a major concern in the Indian public health field as it is one of the most common types of cancer among cancer patients and still spreading at alarming rate **[1].** In India, 25% of all male cancers and 10% of female cancers are reported to be HNC **[2].** HNC cases among Indian females are highest in the world **[3].** By the year 2020, 19% of all cancers are expected to be HNC **[4].** 57.5% of global HNC do occur in Asia **[5]** especially in India. 60-80% cases in India are diagnosed with later stages of cancer reducing the survival rate **[6].**

Being a lifestyle related disease, addiction among cancer patients is the major risk factor. Several studies have been performed in Indian population especially in northern India, Bihar, and north eastern India. Because of the vast demographic difference among Indian population multiple studies are required for a broad view. In this present study our main focus is on etiology and risk factor analysis among Bengali speaking population.

Materials and methods:

This epidemiological retrospective study was carried out in N.R.S. Hospital and Medical College, Kolkata between years 2009-2014. Patients with confirmed head and neck cancer diagnosis (as per ICD-10, International Classification Dieses 10th Rivision.) are selected, interviewed and labeled as 'cases'. Ages of the patients are determined on the date of diagnosis. Control populations were chosen on the exact age range group and sex reducing age adjusted bias.

Patients were divided in four age groups i.e. 30-39 age group, 40-49 age group, 50-59 age group and above 60 age group. Addictions were classified in 7 individual categories with following easy to read codes- smoke only (s+), chewing only (t+), alcohol only (a+), both smoking and chewing (s+t+), both smoking and alcohol consumption (s+a+), both alcohol and chewing (a+t+) and all types addiction (all+).

The statistical analysis was carried out by SPSSv16.0. Risk estimation and measure of association was calculated in terms of Odds ratio (OR). 95% confidence interval (CI) and subsequent p-value of significance (<0.05) were included as well. For each age range group/ sex group no addiction personal was used as base.

Results:

A total of 245 patients and 759 controls were included in this study. Patients were diagnosed with head neck cancer by NRS medical college and hospital, Kolkata, W.B.

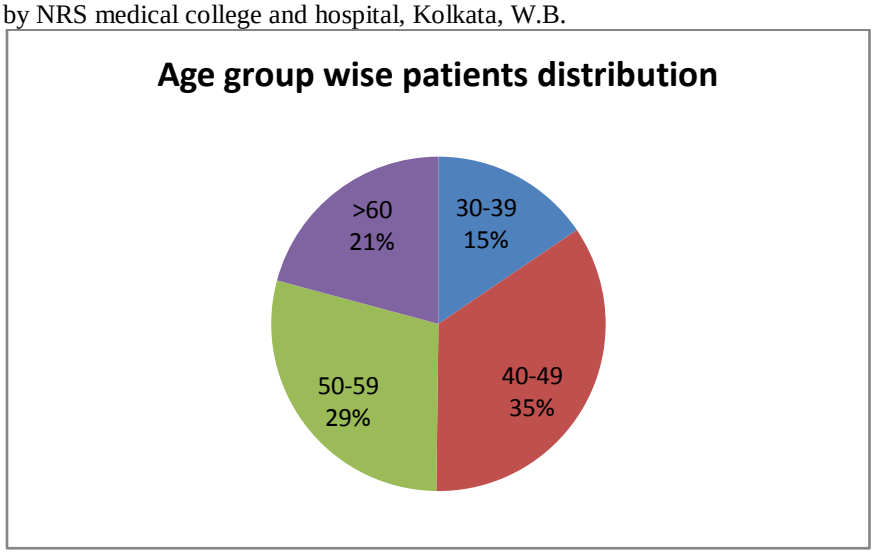

Chart 1: Age group wise distribution of patients. Age group [30-39] bears the least observed number of patients (15%) and age group [40-49] bears the highest observed number of patients.

Total 245 patients were distributed in four age groups. The starting age group of 30-39 consists of 38 patients followed by 85 patients in age group 40-49, 71 patients in age group 50-59 and finally 51 patients in more than 60 (>60) age group [chart 1].

District wise distribution	**Number of Patients**
Murshidabad	76
Medinipur	72
Nodia	32
24 Parganas	65
Symptoms wise distribution	**Number of Patients**
Problems associated while talking	100
Problems associated while eating	114
Continuous Pain	31
Sex wise distribution	**Number of patients**
Male	205
Female	40

Table1: Place, symptoms and sex wise patients' distribution profile
Table 1 shows patients' distribution summary according to districts, symptoms and sex. Overall male to female patients' ratio is 5.125:1.

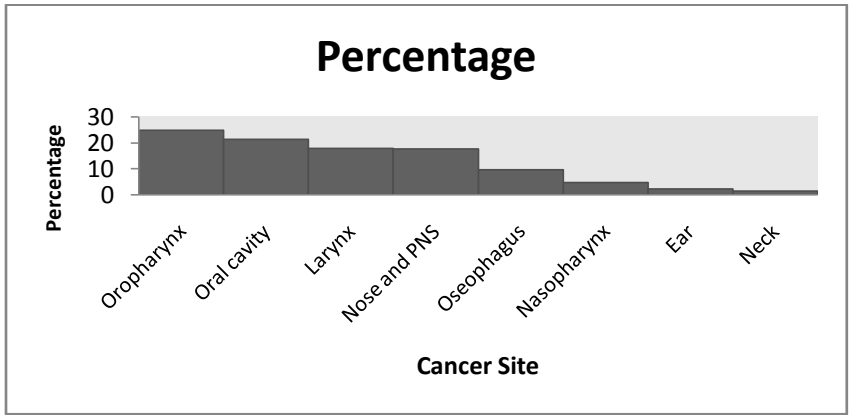

Chart2: Cancer site wise distribution of head and neck cancer
Oropharynx (24.78%) and oral cavity (21.35%) region is found out to be most frequent site of neoplasm followed by larynx (17.87%) and nose (17.66%) [chart 2].

Risk factors	cases	controls	OR	95%CI	p-value
Age group 30-39					
Smoke+	6	7	11.14	3.141-39.53	0.0006
Tobacco+	22	20	14.30	5.910 to 34.60	< 0.0001
No Addiction	10	130	-	-	-
Sub total	38	157			
Age group 40-49					
Smoke+	5	5	4.720	1.270 to 17.54	0.0257
Tobacco+	40	15	12.59	6.042 to 26.22	< 0.0001
Alcohol+	3	1	14.16	1.413 to 141.9	0.0220
Tobacco&smoke+	12	3	18.88	4.958 to 71.89	< 0.0001
No addiction	25	118	-	-	-
Sub total	85	142			
Age group 50-59					
Smoke+	1	7	2.694	0.289 to 25.04	0.3681
Tobacco+	34	12	53.43	19.54 to 146.1	< 0.0001
Tobacco&smoke+	14	9	29.33	9.464 to 90.92	< 0.0001
Alc.&smoke+	5	31	3.041	0.904 to 10.23	0.0731
All+	10	22	8.571	2.951 to 24.90	0.0001
No addiction	7	132	-	-	-
Sub total	71	213			
Age group >60					
Smoke+	11	31	4.731	1.801 to 12.43	0.0018
Tobacco+	9	29	4.138	1.508 to 11.35	0.0068
Alc.&smoke+	15	4	50.00	13.70 to 182.5	< 0.0001
Tobacco&smoke+	7	63	1.481	0.526 to 4.166	0.5859
No addiction	9	120	-	-	-
Sub total	51	247			
Total	245	759			
All age group					
Smoke +	23	50	4.5098	2.546 to 7.98	<0.0001
Tobacoo+	105	76	13.545	8.967 to 20.46	<0.0001
No addiction	51	500	-	-	-

Table2: Age group wise distribution and odds ratio estimation of risk factors amongst head and neck cancer patients.
Age group wise risk factors analysis reveals odds ratio of smoking is 11.14 in age group 30-39 followed by 4.72 in age group 40-49, 2.694 in age group 50-59 and 4.731 in patients aged 60+. Similarly consumption of tobacco has been found in all age groups and corresponding odds ratios are 14.30, 12.59, 53.43 and 4.138. Both tobacco consumption and cigar smoking has been exhibited by total 33 patients belong to age group [40-49], [50-59] and >60. Only 3 patients have shown drinking problem (OR- 14.16; age group 40-49) and 20 patients both smoking and drinking problem (age group 50-59 and >60).
Smoking and tobacco consumption has been found in all of the age groups with total patients of 23 for smoking and 105 for tobacco chewing. The overall odds ratio for cigar and tobacco use is 4.5098 (CI-2.546 to 7.98, p<0.0001) and 13.545 (CI-8.967 to 20.46, p<0.0001) correspondingly.

Risk factors	Case	Control	OR	95%CI	p-value
Female					
Tobacco+	10	13	6.000	2.420 to 14.88	0.0003
No addiction	30	234	-	-	-
Male					
No addiction	21	266	-	-	-
Smoke+	23	50	5.827	2.998 to 11.32	< 0.0001
Tobacco+	95	63	19.10	11.06 to 33.00	< 0.0001
Alcohol+	3	1	38.00	3.784 to 381.7	0.0019
Tobacco+Smoke+	33	75	5.573	3.046 to 10.20	< 0.0001
Smoke+Alcohol+	20	35	7.238	3.570 to 14.67	< 0.0001
All+	10	22	5.758	2.413 to 13.74	0.0003
Total	245	759			

Table3: Sex wise distribution and odds ratio estimation of risk factors among HNCA cancer patients.
No other addictions except tobacco have been found in women. Tobacco only, smoking only and both tobacco and smoking are most prominent addictions amongst male patients with OR 19.10, 5.827 and 5.573 accordingly.

Discussion:

This study supports the previous works on head and neck subset based cancer studies **[7, 8 ,9]** and concludes that tobacco related products (both chewable as well as smoking form) are indeed risk factors for HNCA.
However, alcohol consumption and its effect on head and neck cancer subsets are contradictory. The association varies from no association **[10]** to highly significant association **[11, 12]**. Our study found only 3 patients and 1 control hence no significant conclusion cannot be drawn out of alcohol effect. On the other hand when paired with smoking habit, a significant result yields. Studies done by Subapriya R,2007 confers a significant rise of relative risk (OR 11.34) among patients who are addicted to chewing as well as drinking **[13]** showed that combine effect of alcohol and smoke had a 300-times higher risk of head and neck cancer than people with no addiction habit. Considering the stand alone effect of smoking from our study and data from these previous studies, the combined effect of alcohol and smoke is expected.
Age group wise analysis reveals most affected age group is 40-49 followed by age group 50-59 while other parts in India fifth decade **[14, 15]** and sixth decade **[16]** proved to be the most prevalent peak age group. Another significant point is the absence of patients aged less than 30 proving malignant HNC mostly affect elder individuals. The logical assumption is the prolong exposure of tobacco products. The death rate in HNC is highest in the people aged over 50 **[17]**. Another way to explain why majority of HNC patients observed in our study are in their fourth decade.
We found a higher male to female ratio (5.125:1) among Bengali speaking population compared to previously reported findings where ratio of 2.14:1 in northern India **[14]**, 3.1:1 in Bihar **[16]** and 2.9:1 in north eastern India **[15]** had been demonstrated. Direct assumption would be low frequency of tobacco user amongst Bengali females, yet we cannot exclude the possibility of false answer given by respondent due to possible social stigma.
In summary, this retrospective study indicates that conventional risk factors are the cause of primary head and neck malignancies. However cancer site wise patient numbers and cancer male to female ratio are different among different demographic areas demanding a state wise thorough analysis to get an overall HNC distribution picture of India.

Acknowledgement:

We sincerely want to thank Dr.Pakhira (H.O.D of E.N.T, N.R.S. hospital and medical college) to collect the patients history and also would like to thank Prof. S.K.Dey (Biotech Dept., W.B.U.T.) for his timely help.

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