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RESEARCH ARTICLE

HEAD AND NECK CANCER AND SITE DISTRIBUTION WITH COMBINED EFFECT OF SMOKING AND DRINKING

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ABSTRACT

The united cause of smoking and alcohol drinking verses the site distribution of the upper aero digestive tract was evaluated using a case-control design on data from conducted between 2011to 2013 in Mahatma Gandhi cancer Hospital, Visakhapatnam, Andhrapradesh, India. Data collected from 103 incident head and neck cancer cases were analyzed using odds Ratio and p values. The odds ratios (ORs) for larynx in males 12 (18.46%) and females 4 (11.43%) OR=1.753, 95% confidence interval (CI)= (0.52to 5.82). But male and female ratio is different in oral cavity, and highest among the total site of diseases with (58.25%)OR=0.876, 95% (CI)= (0.45 to 1.68). Pharynx has males with 17 (26.15%), and females are 7 (20%) OR=1.4198. 95% (CI)= (0.53 to 3.73). The P value shows insignificant. In conclusion, the higher incidence of oral cancer in the head and neck region was observed in this study. Occurrence of head and neck cancer mostly observed in male patients. Alcohol and tobacco alone does not show any significant influence on the site of disease along with gender statistics. But combined effect of drinking and smoking association is statistically significant as the p value is within the range.

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INTRODUCTION

Head and neck cancers occupy the sixth place among common cancer through out the world (Parkin *et al*., 1984). It is the most common cancer of males in India and the fifth most common in females (International Agency for Research on Cancer GLOBOCAN 2008). Age-adjusted rates is the highest in females (Sankaranarayanan *et al*., 1998). Depending on the site of disease according to the epidemiological studies and national cancer registries varies from 2:1 to15:1. It is large scale reported the male to female ratio (Mehanna *et al*., 2010). Due to the environmental irrelevant exposure causes increase of HNC in females was observed recently (Alvarenga *et al*., 2008). Globally the highest rates have been reported from Trivandrum of India and South Karachi of Pakistan representing the abnormal number of cases due to the heavy addiction of alcohol, chewing tobacco and smoking. In all countries men are affected almost twice as often as women, the incidence of tongue and other intraoral cancers are also common among women. In females, the highest rate was reported in South Karachi of Pakistan and Karunagapally, Poona, Chennai, Trivandrum of India (Curado *et al*., 2007). Though India is developing country, oral cancer ranks the first most common cancer in males and third most common cancer in rural Indian females (Mathews *et al*., 2007). Pharynx is the common site in France whereas predominant site in India is oral cavity (Coleman *et al*., 1993). Oral cancers range from as high as 21.5% among males in South Karachi, Pakistan to as low as 0.8 in Ecuador, Quito (Curado *et al*., 2007). Due to attributable to tobacco smoking and heavy alcohol consumption 80% of oral cancers are increasing (Warnakulasuriya *et al*., 2005). Prevailing risk habits of the population depends on the likening shown by the individual leading to difference in disease (Sankaranarayanan *et al*., 1998; Menvielle *et al*., 2004). Smoking cigarettes, cigars, or pipes; chewing tobacco and using snuff are the single largest risk factors for head and neck cancer. The oral and pharyngeal cancers risk increases through Alcohol consumption. The association between alcohol and individual head and neck cancer, was observed by a few prospective studies which sub sites to the larynx, oral cavity, or pharynx (Schottenfeld *et al*., 1974; Adami *et al*., 1992; Tonnesen *et al*., 1994; Sigvardsson *et al*., 1996). Most of these studies have not adjusted for tobacco use, an important potential confounder of the relation between alcohol and head and neck cancer (Boffetta and Garfinkel, 1990). The combination exposure of alcohol and tobacco has a multiplicative effect on carcinogenesis of this tract. Increased risk of various cancers, including those of the

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upper aero-digestive tract and liver are prolonged with the combination of Alcohol and tobacco (Bagnardi *et al*., 2001). Smoking accompanied with drinking results in intense damage of the body's cells. It is of risk to developing throat and mouth cancer than doing either on their own. That's because whenever drink alcohol it's easier for the mouth and throat to absorb the chemicals in tobacco that cause oral cancer (Franceschi *et al*., 1990). The persons those drank alcohol were around a third more likely to develop mouth and upper throat cancer than those who didn't drink alcohol. Using alcohol and tobacco together increases this risk even more Cigarette smoking and alcohol consumption.

MATERIALS AND METHODS

This study presents a relation to cigarette smoking and alcohol consumption with Head and Neck cancer based on data from Mahatma Gandhi cancer Hospital, Visakhapatnam, Andhra Pradesh, India. During the period 2011 to 2013, the associations between head and neck cancer and cigarette smoking by drinking status and between head and neck cancer and alcohol drinking by tobacco use verses site distribution were assessed by estimating odds ratios (ORs) and 95% confidence intervals (CIs). The significance of correlation for the present data was calculated by Medcalc software.

RESULTS

The adjusted odds ratios (ORs) for larynx in males 12 (18.46%) and females 4 (11.43%)OR=1.753, 95% confidence interval (CI)= (0.52to 5.82) but in oral cavity, male and female ratio is different and highest among the total site of diseases with (58.25%)OR=0.876, 95% (CI)= (0.45 to 1.68). However, pharynx has males with 17 (26.15%), and females are 7 (20%)OR=1.4198. 95% (CI)= (0.53 to 3.73) Using the odds ratio and confidence intervals, the P value shows insignificant. Occurrence of head and neck cancer mostly observed in male patients. In this study the site of the disease with smoking and drinking habits statistical data revealed that among smokers and non smokers P value=0.986 whereas in drinking habit Pvalue=0.942. When comparing with these both associations, these are statistically in significant. From the Table 3, the smoking and drinking habits data has been taken and calculated mean and standard error. Drinking with Bidi/Cigarettes is 27(95% Confidence Interval=1.09 to1.34) and reverse smoking is 8 patients (95%=1.02 to 1.64), tobacco chewing is 13(95%=1.14 to 1.58). Drinking only is 47 patients (95%=1.06 to 1.28), Non Drinkers with Bidi/Cigaretts is 7 patients (95%=1.05 to 1.84), reverse smoking 16(95%= 0.95 to 1.43) tobacco chewing is 17(95%=1.81 to 2.23).

Table 1. Site of the disease and gender

Site of disease N= 103	Gender	Frequency	Odds Ratio	95%Confidence Interval	P Value
Larynx	Male	12 (18.46)	1.7538	0.5281 to 5.8247	0.3589 NS
	Female	4 (11.43)			
	Total	16 (15.53)			
Oral Cavity	Male	36 (55.38)	0.8769	0.4562 to 1.6856	0.6936 NS
	Female	24 (68.57)			
	Total	60 (58.25)			
Pharynx	Male	17 (26.15)	1.4198	0.5399 to 3.7339	0.4774 NS
	Female	7 (20.00)			
	Total	27 (26.21)			

*p< 0.01- Significant; **p< 0.02 -moderately Significant; ***p< 0.005-Highly Significant; NS-not significant

Table 2. Anatomy of the disease with smoking and drinking habits

Habit	Mean	Std. Error	95% Confidence Interval	P Value
Smoking				
1)Bidi/Cigaretts (n=34)	2.1453	0.1312	1.8436 to 2.5721	
2)Reverse Smoking (n=20)	2.1223	0.1451	1.7155 to 2.3654	0.986NS
3)Tobacco chewing (n=10)	1.9231	0.09434	1.4413 to 1.8151	
4)Non smokers (n=39)	2.2235	0.09942	1.9943 to 2.5676	
Drinking				0.942NS
1)Drinkers (n=46)	1.1751	0.05769	1.0608 to 1.2894	
2)Non Drinkers (n=56)	2.1290	0.15661	1.9431 to 2.5776	

*p< 0.01- Significant; **p< 0.02 -moderately Significant; ***p< 0.005-Highly Significant; NS-not significant.

Table 3. Combind effect of smoking and drinking habits

Habit	Mean	Std. Error	95% Confidence Interval	P value
Drinking*smoking habit	1.1945	0.07697	1.0948 to 1.3408	0.005*
Drinking+Bidi/Cigarettes (n=27)	1.3333	0.1561	1.0242 to 1.6425	
Drinking+ Reverse Smoking (n=08)	1.3567	0.1160	1.1446 to 1.5846	
Drinking+tobacco chewing (n=13)	1.1751	0.05769	1.0608 to 1.2894	
Drinking only (n=47)	1.4321	0.1761	1.0542 to 1.8425	
Non Drinkers + Bidi/Cigaretts (n=7)	1.1769	0.06770	0.9542 to 1.4316	
Non Drinkers + Reverse Smoking (n=16)	1.8231	0.1340	1.8131 to 2.2331	
Non Drinkers + tobacco chewing (n=17)	1.2173	0.06210	1.0624 to 1.4522	
Non Drinkers + Non-smoker (n=32)				

*p< 0.01- Significant; **p< 0.02 -moderately Significant; ***p< 0.005-Highly Significant; NS-not significant

But, non drinkers and non smokers are 32 patients (95%=1.06 to 1.45). Both drinking and smoking association is statistically significant as the p value is within the range.

DISCUSSION

In the present study, the most common involved site is oral cavity (58.25%). It is globally accepted site of or of acial malignancy (Ajayi *et al*., 2007; Alvarenga *et al*., 2008; Andisheh-Tadbir *et al*., 2008). The most important reason for this high incidence is the habit of tobacco, betel and nut chewing (Parkin *et al*., 1999). In another small study Kola nut-chewing habit is observed commonly in oral cancer (Otoh *et al*., 2005). Another study reports, increased risk among cigarette smokers may be 10 or more times that of non-smokers. Pipe or cigar smoking is associated with higher and excess risk of oral cancer (Odukoya *et al*., 1989). Previous studies explains Chewing tobacco with or without areca (betel) nut is strongly linked with oral and pharyngeal cancers (Otoh *et al*., 2005). More intense use of tobacco increases risk. In agreement with another report (Otoh *et al*., 2005). Pharynx was the second most common malignancies in patients with head and neck cancer. Larynx (15.53%) occupies the third most common malignancies. In this study the site of the disease with smoking and drinking habits are statistically insignificant. Most patients (63%) in current study were male. Similar observation was reported in literature (Bhatia and Jha, 1981; Arotiba *et al*., 2006). National death rates due to cancers of the oral cavity, pharynx and larynx are currently increasing among men and are most strongly associated with the level of per capita consumption of alcohol. This is correlated to a study conducted in Puerto Rico on oral and pharyngeal cancers of both sexes in relation to alcohol consumption (Arotiba *et al*., 2006). Another study reports oral cancers are more common in men because of strong association with increased alcohol consumption (Blot *et al*., 1988). In present study individual use of alcohol and tobacco does not show any influence on the site of disease along with gender statistics. In comparison, both associations are statistically insignificant. In this study, combined effect of drinking and smoking association is statistically significant with head and neck cancer. This might be explained that smoking is the most important risk factor to the high proportion of tobacco chewers and alcohol drinkers in this study area. Epidemiologic research also confirmed the above said reason strongly. One study reported that people who drank up to five units of alcohol and smoked up to eight cigarettes per day could increase their risk of this cancer 13 times for men and 19 times for women (Castellsagué *et al*., 1999). Scientific evidences have found that the effects of alcohol and tobacco together are much worse than either by itself (Otoh *et al*., 2005). Previous studies explains, for heavy drinkers who are also heavy smokers, the risk of oral cancer is over 35 times more than those who neither smoke nor drink, and a similar observation is found with cancer of the larynx (Blot *et al*., 1988; Talamini *et al*., 2002).

Conclusion

In conclusion, the higher incidence of oral cancer was observed in head and neck region. The speedy occurrence can be seen in male patients. Individual effect of alcohol and tobacco, does not show any influence on the site of disease along with gender statistics. Drinking alcohol combined with tobacco is more highly significant with head and neck cancers than either alone. Risk is very high in people who are both heavy drinkers and heavy smokers. Public health interventions that simultaneously discourage smoking and heavy drinking would have greater benefits to prolong the survival rate.

REFERENCES

Adami HO, McLaughlin JK, Hsing AW, Wolk A, Ekbom A, Holmberg L, Persson I. Alcoholism and cancer risk: a population-based cohort study. *Cancer Causes Control*, 1992; 3:419–425.

Ajayi O, Adeyemo W, Ladeinde A, Ogunlewe M, Effiom O, Omitola O, *et al*. Primary malignant neoplasms of orofacial origin: a retrospective review of 256 cases in a Nigerian tertiary hospital. *International Journal of Oral and Maxillofacial Surgery*, 2007;36(5):403–8.

AlvarengaLdM, Ruiz MT, Pavarino-Bertelli ÉC, Ruback MJC, Maniglia JV, Goloni-Bertollo M. Epidemiologic evaluation of head and neck patients in a university hospital of Northwestern São Paulo State. *RevistaBrasileira de Otorrinolaringologia*. 2008; 74(1):68-73.

AlvarengaLdM, Ruiz MT, Pavarino-Bertelli ÉC, Ruback MJC, Maniglia JV, Goloni-Bertollo M. Epidemiologic evaluation of head and neck patients in a university hospital of Northwestern São Paulo State. *RevistaBrasileira de Otorrinolaringologia*. 2008; 74(1):68-73.

Andisheh-Tadbir A, Ashrafi M, Jafari-Ashkavandi Z, Paknahad M, Taheri F. Head and neck squamous cell carcinoma in Southern Iran. *Iran Red Crescent Med J*., 2008; 10:309-13.

Arotiba G, Ladeinde A, Oyeneyin J, Nwawolo C, Banjo A, Ajayi O. Malignant orofacial neoplasms in Lagos, Nigeria. *East African Medical Journal*, 2006;83(3):62.

Bagnardi, V; Blangiardo, M.; LA Vecchia, C.andCorrao G. A metaanalysis of alcohol drinking and cancer risk. *British Journal of Cancer*, 2001; 85:1700– 1705.

Bhatia P, Jha B. Pattern of head and neck cancer in Manipur. *Indian Journal of Cancer*, 1981;19(5):241–8.

Blot WJ, McLaughlin JK, Winn DM, *et al*. Smoking and drinking in relation to oral and pharyngeal cancer. *Cancer Res*., 1988; 48:3282.

Blot WJ, McLaughlin JK, Winn DM, *et al*. Smoking and drinking in relation to oral and pharyngeal cancer. *Cancer Res*., 1988;48:3282-3287.

Boffetta P, Garfinkel L. Alcohol drinking and mortality among men enrolled in an American Cancer Society prospective study. *Epidemiology*, 1990;1:342–348.

Castellsagué X, Muñoz N, De Stefani E, Victora CG, Castelletto R, Rolón PA, Quintana MJ. Independent and joint effects of tobacco smoking and alcohol drinking on the risk of esophageal cancer in men and women. *Int J Cancer,* 1999; 82: 657–64.

Coleman MP, Estève J, Damiecki P, Arslan A, Renard H. Trends in cancer incidence and mortality. *IARC Sci Publ*., 1993;(121):1-806.

Curado MP, Edwards B, Shin HR, Storm H, Ferlay J, Heanue M, Boyle P, eds. Cancer incidence in five continents, vol. 9. IARC Scientific Publications No. 160. Lyon: IARC, 2007.

Franceschi S, Talamini R, Barra S, Barón A, Negri E, Bidoli E, Serraino D, Vecchia CL. Smoking and drinking in relation to cancers of the oral cavity, pharynx, larynx and esophagus in Northern Italy. *Cancer Res*., 1990; 50:6502–6507.

Hayes RB, Bravo-Otero E, Kleinman DV, Brown LM, Fraumeni JF Jr, Harty LC, *et al*. Tobacco and alcohol use and oral cancer in Puerto Rico. *Cancer Causes Control*, 1999;10:27-33

International Agency for Research on Cancer GLOBOCAN 2008. 2010. (accessed January 27, 2014)

Mathews, M.,West, R. and Beuhler, S. How important are out ofpocket costs to rural patients' cancer care decision? *Cana.J.Rural Med*., 2007;14:54-60.

Mehanna H, Paleri V, West C, Nutting C. Head and neck cancer–Part 1: Epidemiology, presentation, and prevention. *BMJ*., 2010;341(7774):663-6.

Menvielle G, Goldberg P, Bugel I, Leclerc A 2004. Smoking,alcohol drinking and cancer risk for various sites of the larynxand hypopharynx. A case-control study in France. *EurJCancerPrev*., 13, 165-72.

Odukoya O, Roberts T, Aroll G. A cytologic study of the effect of Kolanut on the keratinization of the palatal mucosal of Nigerian smokers. African dental journal: official publication of the Federation of African Dental Associations=Journal dentaireafricain/FADA. 1989; 4(1-5):1–5.

Otoh E, Johnson N, Danfillo I, Adeleke O, Olasoji H. Primary head and neck cancers in North Eastern Nigeria. *West African Journal of Medicine*, 2005;23(4):305–13.

Otoh E, Johnson NW, Olasoji H, Danfillo I, Adeleke O. Intra-oral carcinomas in Maiduguri, north-eastern Nigeria. *Oral diseases*, 2005; 11(6):379-85.

Parkin DM, Pisani P, Ferlay J. Estimates of the worldwide incidence of 25 major cancers in 1990. *International Journal of Cancer*, 1999; 80(6):827-41.

Parkin DM, Stjernsward J, Muir CS. Estimates of the worldwide frequency of twelve major cancers. *Bull WHO*, 1984;62:163–82.

Sankaranarayanan R, Masuyer E, Swaminathan R, Ferlay J, Whelan S. Head and neck cancer: a global perspective on epidemiology and prognosis. *Anticancer Res*., 1998; 18:4779–86.

Sankaranarayanan R, Masuyer E, Swaminathan R, Ferlay J, Whelan S. 1998. Head and neck cancer: a global perspective on epidemiology and prognosis. *Anticancer Res*., 18, 4779-86.

Schottenfeld D, Gantt RC, Wyner EL. The role of alcohol and tobacco in multiple primary cancers of the upper digestive system, larynx and lung: a prospective study. *Prev Med.*, 1974; 3:277–293.

Sigvardsson S, Hardell L, Przybeck TR, Cloninger R. Increased cancer risk among Swedish female alcoholics. *Epidemiology*, 1996;7:140–143.

Talamini R, Bosetti C, La Vecchia C, *et al*. Combined effect of tobacco and alcohol on laryngeal cancer risk: a case-control study. *Cancer Causes and Control*, 2002;13:957-964.

Tonnesen H, Moller H, Andersen JR, Jensen E, Juel K. Cancer morbidity in alcohol abusers. *Br J Cancer*, 1994;69:327–332.

Warnakulasuriya, S., G. Sutherland, and C. Scully 2005. "Tobacco, oral cancer, and treatment of dependence. *Oral Oncol*., 41(3): 244-260.

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