Biosciences, Biotechnology Research Asia Vol. **3**(2), 329-334 (2005)

SITE DISTRIBUTION OF ORAL CARCINOMA REPORTED CASES IN SOME TOBACCO CHEWERS OF BIHAR INDIA WITH SPECIAL REFERENCE TO KHANINI (TOBACCO - LIME MIXTURE)

Mohammad S. Ahmad[1], Sharique A. A.li[2]*, Ayesha S. Ali[2]

[1]Department of Oral Medicine, Budha Dental College, Panta,
[2]College of Medical Health Science, Dammam, Kingdom of Saudi Arabia)
*Departmentof Biotechnology, Saifia College of Sceince and Education, Bhopal (India)

(Received: October 03, 2005; Accepted: December 11, 2005)

ABSTRACT

The present investigation deal with hospital based retrospecitve study. Patients record for 1999-2001 in Bihar state Government Hospitals and dental center of the district Hospitals were searched to identify oral cancer cases. Total 1155 cases of oral cancer resident in Bihar were recorded from all Hospitals. The commonest intra oral site aficted was the gingive. In male it was more common amongst tobacco chewers. Khaini alone induced 35 per cent ginival cancer. In the smokers oropharyngeal cancer was more common. A high male preponderance was observed (male: female rato was almost 4:1. Only 15.8 per cent were living during the time of data collection. Preponderance of gingival cancer was attributed to the local practice of chewing tobacco. Males mostly practiced chewing andsmoking tobacco. Mortality rate was quite high due to late reporting of the disease.

Key words: Oral cancer, Khaini chewers, Incidence.

INTRODUCTION

Oral cancer is the sixth most common cancer in the world and ismostly preventable (Parkin et al 1988; Raubenheimer et al 1989; Gupta and Nandkumar 1999). India has the highest number of cancers of the oral cavity in the world and 90 per cent of these cancers are due to the use of khaini, biri, cigarette, zarda, panmasala, and gutkha. Approximately 30, 000 persons in USA and 2000 persons in UK develop oral cancer annualy (Johnson and Warnakulasuriya 1991; Park et al 1998). However in India it is the most common malignant neoplasm, accounting 20-30 per cent of all cancers as reported by Naer el al in the 1990s. The latest information on the incidence of oral cancer is about 40 per cent. It was estimated that annually 75,000 to 80, 000 new oral cancer cases develop in India. It has also observed that only 15 per cent of patients get a proper dignosis when the disease was at a localized stage (National Cancer RegistryProgramme 1996). It may be mentioned here that there are almost no OralCancer Registration or Evaluation Programs, except the one of 1998-1999 reported by Sen et al 2002, from the eastern Kolkata region of India. Highest incidence of oral cancer in India has been linked to the wide spread habit of betel quied chewing. The quied consists of tobacco, slaked lime and betel nut wrapped in betel leaf. A variety of tobacco habits are prevalent in India and they differ from region to region (Bhonsle et al 1992). The useof tobacco slaked lime and betel nutwarpped in betel leaf. A variety of tobacco haibts are prevalent in India and they difer from region to region (Bhonsle et at 1992). The use of tobacco in any from increases the risk of oral cancer (Gupta and Nand Kumar,1999; Dikshit and kanhere 2000; Znaor et at 2003).

The state of Bihar is very densely populated having a population of more than 85 million (Census of India 2001 and there is a very

high prevalenceof oralcancer in this state due to high rate of consumption of variety of tobacco products such as gutkha, panmasala, zarda and khaini (Bhonsle et al 1992; Dixit and Kenhere 2000). Khaini is a form of raw tobacco, which is cheap and mostly used by the lower socio-economic group in urban and sub-urban environments in villages. Each mouthful of khaini weighs about 2-3 grams and cost even less than 1/5th of a cent,but it contains all theharmful ingredients such as tobacco leaves (N-Nitroso-N-Nicotine) and lime responsible for oralcancer. The habit of placing khaini, a mixture of locally grwon and sun dried tobacco mixed with lime in the mandibular or mazillary groove close to the gum is prevalent among men in Bihar (Bhonsle et al 1992). The consumption of khaini isso common that it starts as early as 12-13 years and continues up to old age. Appporximately about 60 per cent people of the state are adicted to this habit.

Due to sue of a varietyof tobacco proudcts there are several sites of oral cancer such as tongue, floor of the mouth, alveolous, buccal mucosa, hard and soft palate; howerver nothing is known about the incidence of prevailing sites of oral cancer, due to consumption of khaini, amongst the population of Bihar and data compared with well matched control subject of the same age and socieconomic group. In the present stduy an attempt has been made to evaluate the site distribution and incidence oforalcancer due to use of khanini.

MATERIAL AND METHODS

Hospital records were screened for information on lip, oral and oropharyngeal cancer according to WHO patternof occurrence during 1998-2001 in Bihar Government Hospital and dental centers, where oncology patients visit for treatment or for palliative care. A total of 1155 new cases of oral and oropharyngeal cancer were recorded in the three cancer treatment centers and two district hospitals from amongst the residents of Bihar. Data from Hospital records included age, gender, sex, primary siteof neoplasm, life, style and habits of tobacco use such as quantity, type frequency, consumption per day and long-term use. Statical analysis was done by SPSS.Survivaldata were not available in the hospital registries beacause no one reported after death. Two methodsof surveillance were adopted: by contacting the next of kin by post or by examining the records of relevant localdistrict authority.

RESULTS AND DISCUSSION

There were no significant differences in the trend of actual frequencies over the three years period (x_2=385± 24.7) per annum. The age and sex distribution of the cases are shown in Table-1.

Table - 1: Age and sex distribution of recorded cases of oral carcinoma

Age (years)	Male		Female		Total	
	N	(%)	N	(%)	N	(%)
12 -39	108	11.7	36	15.6	144	12.4
40 - 59	480	51.19	138	59.6	618	53.6
>60	336	36.36	57	24.7	393	33.9
All ages %	924	100	231	100	1155	100
	(80.0)		(20.0)		(100.0)	

A high male preponderance was observed (male: female ratio was almost 4:1) The mean age of the sample was 51.9± 11.4 years. The youngest patient in the series was 12 years of age. (144 cases (12.5%) were nunder the age of 40 years while cases over the age of 60 years amounted to 393 (34%).

The site distribution of the 1155 cancers by gender is shown in Table 2. The commonest intra-oral site in males afflicted was the gingival followed by oropharynx, tonuge, lip, chek unspecified parts of mouth, retromolar area and lastly floor of the mouth. However in case of females a variation in the pattern of susceptibility of oralcancer was

observed, as the most afflicted site was oropharynx followed by gingival, tonuge,chek, unspecified parts of mouth, lip, retromolar area and lastly floor of the mouth (Table-2).

Tabel - 2: Site distribution of recorded casesof oral carcinoma by gender

Site of lesion	Male		Female	
	N	%	N	%
Lip (L)	119	12.9	14	6.1
Tongue (T)	140	15.2	38	16.5
Gingival (G)	231	25.0	43	18.6
Floor of the mouth (FM)	9	1.0	2	0.9
Cheek (C)	114	12.3	38	16.5
Unspecified parts of mouth (UM)	82	8.9	27	11.7
Retromolar area (RA)	46	5.0	14	6.0
Oropharynx (OP)	183	19.8	55	23.7
Total	924	100	231	100
Male	G>OP>T>L>C>UM>RA>FM			
Female	OP>G>T>C>UM>L>RA>FM			

With referecne to distribution of recorded cases of oal carcinoma by tobacco habits it was observed that to 80 per cent of the males in this series used tobacco in some form; 45 per cent was used as khaini as chewing tobacco, 11.9 per cent used smoking tobacco and only 21 per cent did not use any type of tobacco either smoking or chewing. In case of females, 65, per cent did not use tobacco 17.7 per cent used smoking tobacco whereas khaini chewer was only 6.8 per cent (Talbe 3a & 3b). When examined by site distribution, chewing tobacco habit was more perdominant in patients with gingival cancer, khaini alone induced 35 per cent gingival cancer followed by lip, cheek and tongue; while oropharyngeal cacer was more frequent amont tobacco smokers that is 41.7 per cent (Table 4). Only 182 cases (15.8%) were living, with or without residual disease at the time of this survey, 2-4 years after the origianl diagnosis was established at the treatment centers. Information about 51 cases (4.4%) was not available whether they were alive or dead (Table 5).

For many developing countries in Asia orAfrica accurate data are not yet available on cancer incidence and mortality (Parkin, et al 1993; Sen et al 2002). Sankaranarayan, (1990) had reviewed epidemiological and clinical aspects of oral cancer in India form several published studies. Most of these relate to few urban populations living in Bombay, Ernakulum, Banglore, Ahmedabad, Uttar Pradesh and Andhra Pradesh but there are

Table - 3a: Disribution of recorded casesof oral carcinoma by tobacco habits

Gender	Khaini tobacco		Chewing tobacco		Smoking tobacco		Mixed tobacco		No tobacco	
	N	%	N	%	N	%	N	%	N	%
Male	410	44.7	116	12.6	109.	11.9	90	9.8	193	21.2
Female	16	6.8	23	9.7	42	17.7	2	0.8	154	65.0
All	426	36.9	139	12.0	151	13.1	92	8.0	347	30.0

Table - 3b: Distribution of recorded cases of oral carcinoma (OC) in male and female subjects showing variation in precentage by using defferent type of tobacco habits

Total no. of oral cancer cases studied	No.of males studied	No. of females studied	OC% due to chewing khaini	OC% due to chewing other tobacco	OC% due to smoking tobacco	OC% due to mixed tobacco use	OC% due to no use of tobacco as stated by subjects
Male+ Females			Male Females	Male Females	Male Females	Male Females	Male Females
1155	924	231	44.7 6.8	12.6 9.7	11.9 17.7	9.8 0.8	21.2 65.0

no data available for larger states like Bihar and Madhya Pradesh.

In the present study the overall male; female ratio observed was 4:1 a figure close to that exhibited in most parts of the world several decades ago (Smith, 1973). The current sex distribution of male to female in many countries is around 2:1, (Chen et al 1990). Higher rates among males in Bihar may be due to heavier indulgence in tobacco chewing, especially khaini habits by men. It is of interest to note that a high male to female ratio close to 4:1 also featured in Brazil, a country with high oral cancer incidence (Hamada et al 1991).

The age distribution of oral cancer in studied hospitals of Bihar was strking. the west, 98 per cent of the cases are reported to be over 40 years of age (Johnson 1991). In the present study however, 12.5 per cent of the patients were younger than 40 years and the younger was 12 years of age. It is probable that, these subjects starts tobacco habits from a very young age but the possibility of genetic host factors that contribute to tissue susceptibility in individual cases must also be recognized as reported by Krishnamurthi and Shanta (1994). A significant difference in the etiology and the biological behaviour of oral cancer in young patients in India distinct form older cases

Table - 4: Stie incidences of recorded cases of oralc carcinoma according to tobacco usage.

Leson sites	Khaini		Chewing tobacco		Smoking tobacco		Mixed tobacco		No tobacco		Total
	N	%	N	%	N	%	N	%	N	%	
Lip	75	17.6	25	18.0	5	3.3	18	19.6	10	2.9	133
Tonuge	63	14.9	21	15.1	20	13.3	15	16.3	59	17.0	178
Gingivae	150	35	51	36.7	15	19.9	20	21.7	38	11.0	274
Floor of mouth	4	0.9	2	1.4	3	2.0	1	1.1	1	0.3	11
cheek	64	15.0	18	12.9	23	15.2	15	16.3	32	9.2	152
Mouth unspecified	23	5.0	10	7.2	13	8.6	9	9.8	54	15.6	109
Retromolar area	22	5.2	4	2.9	9	6.0	4	4.4	21	6.0	60
Orpharynx	25	5.7	8	5.8	63	41.7	10	10.8	132	38	238
Total	426 100		139 100		151 100		92 100		347 100		1155

Table - 5: Current statuses of reported cases of oral carcinoma (dead or Living)

State	Male	Female	Both sex	Total %
Dead	731	191	922	79.8
Living	151	31	182	15.8
Unknown	42	9	51	4.4
Total	924	231	1155	100

was demonstrated by Kuriakose et at (1992). A relative lack of older cases (>50 yrs) in this series may be due to the low life expectancy and death from other causes.

Association of use of khaini to labial/ gingival cancer was first described in study from Bihar by Khanolkar (1994). The preponderance of gingival, labial and check cancers in the present study was strongly associated with khaini use and smoking with oropharyngeal cancer. This is in contrast to the high prevalence of buccal cancer noted in many parts of South India (Gupta et al 1986) and Sri Lanka (Warnakulasurya 1988). Sen et al (2002 and Znaur et al (2003) observed the cheek, lip and gingival cancer is more commonly associated with khaini chewing because they place the tobacco in labial groove or some time in buccal groove to avoid tobacco staining of anterior teeth. Our finding that smokeless tobacco use resulted in the oral cavity is consistent with earlier reports on the associations of tobacco use and oral cancer in India (Sanghvi 1989).

In the present study, what is perhaps somewhat surprising from this analysis is the significant proportion (30%) of overall male and female oral cancer cases that described themselves to be non-users of tobacco. The Percentage of non-users of tobacco was particularly quite high in the females, being 65 per cent (Table 3a). This is likely to be due to an under reporting of tobacco use by these patients during hospital consultations: a common error inherent in retrospective studies undertaken by the survey of case notes. In order to confirm this assumption a separate control study involving healthy non-tobacco users without oral carcinoma belonging to same age, sex and socioeconomic status was carried out. In a sample comprising 550 healthy volunteers, it was found that only & per cent male and female subject had oral pathologist of different nature such as fibrosis, keratosis of oral mucosa and oral sub moucous fibrosis. Emergence of tongue cancer as the predominant cancer site among the non-habit group is, however, noteworthy. Quite similar results were described by Lathe et at (1994) examining the site distribution of oral cancer in 121 non-tobacco habitues in kerala.

Survival studies on oral cancer are few in India and difficult to perform due to lack of follow up examination at large urban treatment centres. Krishnan-Nair et al (1988) reported a 30% three year survival following radiotherapy for cancer of the tongue. Our study revealed that about 80% of the cases had died of the disease within a 2-4 year period, 4.4% were missing information. Advanced stage of oral cancer at presentation, Advanced stage of oral cancer at presentation, failure to complete therapy because of poor socioeconomic conditions and under nutrition may have contributed to high mortality rates in Bihar.

In equity, health care and outcome for cancer patients in India not ben systematically studied, While in large cities cancer treatment centre offer comprehensive care, rural population do not have access to these facilities. Further descriptive studies on incidence and outcome are needed. Examination of risk factors suggests oral cancer is very much self inflicted. Although the relative risk of betel- quid chewing habit in the causation of oral cancer is widely known (Thomas and Wilson 1993). Khaini chewing habit is very popular in Bihar with tendency to start at younger age, frequently of chewing varies from 10 t0 20 times a day. The role of khaini in its causation has not been fully investigated.

Preventive strategies are however well described (WHO 1984, 1998). Studies at centres of excellence in India and Sri Lanka have shown both early detection using the primary Health Care approach (Warnaculasurya and Pindborg 1990). And tobacco intervention strategies (Gupta et al 1992) are feasible and carry significant cost-benefits compared to tertiary care (CRC 1993). Urgent Public health measures should be

encouraged to control oral cancer in the Indian subcontinent, in the wake of recent challenge of the gutkha menace, which is spreading in young adults of the country like a cancer itself.

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