

Research Article

Etiopathological study of oral and oropharyngeal carcinoma

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ABSTRACT

Background: Oral cancer is thought to be the sixth most common form of cancer causing upto 50% of all malignancies in parts of India and South-East Asia, and an increasing trend in oral cancer mortality have been observed in several countries. The aim of the study was to evaluate the etiological factors contributing to oral and oropharyngeal carcinomas and its association with histopathological findings.

Methods: This one year duration study was carried out on 100 patients diagnosed as oral and oropharyngeal cancer attending the Department of Otorhinolaryngology and Head and Neck Surgery, Gajra Raja Medical College and J.A. Group of Hospitals, Gwalior, Madhya Pradesh, India.

Results: 98% of the patients were histologically squamous cell carcinomas, with well differentiated carcinoma being the most common i.e. 59%. The etiological factors which were found to have statistically significant association in oral cancers were poor oral hygiene, tobacco chewing and pan chewing. Other factors like cigarette/bidi smoking, alcoholism were also common.

Conclusions: Any irritation or ulceration in the mouth not attributed to a recognizable causal factor and not healing within four weeks, especially in presence of risk factors must be investigated for its malignant potential. There is a need for improvement in early detection of oral and oropharyngeal carcinomas, because in the initial stages, treatment is more effective and the morbidity is minimal.

Keywords: Oral and oropharyngeal carcinoma, Squamous cell carcinoma, Histopathology

INTRODUCTION

All multicellular animals and certainly all vertebrates, can develop cancer. The ability to develop cancer is a characteristic of all cells that are capable of reproduction and growth. Cancer, by its very nature, an abnormal seemingly unrestricted growth of body cells, is distinguished from other forms of illness.¹

Oral cancer is thought to be the sixth most common form of cancer causing upto 50% of all malignancies in parts of India and South-East Asia, and an increasing trend in oral cancer mortality has been observed in several countries.² Many etiological factors contribute to the development of oral malignancy, such as the use of all

forms of tobacco, alcohol consumption, viruses, nutritional factors, poor oral hygiene, chronic inflammation and repeated traumatic irritation. Many genetic and idiopathic factors also may predispose to the development of oral cancer.³

It is estimated that more than 90% of all oral neoplasms are squamous cell carcinomas.⁴ Although the most common oral cancer is squamous cell carcinoma, there is a wide variety of primary and secondary malignancies that may occur in the oral cavity, including other types of epidermoid carcinoma, salivary gland carcinoma, lymphoma etc., diagnosis of which may alter the management modalities and prognosis.

The early diagnosis of manifest carcinoma in the oral cavity and oropharynx tends to be a problem as there are no truly specific early symptoms. Following onset of invasive growth, oral cancer goes through an asymptomatic early stage of varying duration. Some lesions are considered premalignant because they are statistically correlated with subsequent associated cancerous changes.

No tumour should be treated without confirmation of the diagnosis by histopathological examination. The biopsy specimen should be adequate and be obtained from a representative portion of the tumour so that the pathologist can examine the tissue appropriately.

Neoplasms of the oral cavity and oropharynx are usually discovered by clinical examination and confirmed by surgical biopsy and histopathological examination. Imaging studies may then be employed to study the extent of disease, bone invasion, cervical lymphadenopathy and to evaluate the adherence of the tumour with carotid artery.⁵

METHODS

The present study entitled was carried out on 100 patients diagnosed as oral and oropharyngeal cancer in the Department of Otorhinolaryngology and Head and Neck Surgery, Gajra Raja Medical College and J.A. Group of Hospitals, Gwalior (MP) during the period of July 2013 to June 2014. Patients with synchronous malignancies elsewhere in the body were excluded from the study. The study was done to evaluate the etiopathological factors contributing to oral and oropharyngeal carcinomas and its association with histopathological findings.

Clinical history and examination was performed in detail for all these patients with more stress on probable risk factors of the disease including habits of tobacco use,

alcohol consumption, dietary habits, history of radiotherapy, symptoms, signs and past history of Vitamin A deficiency, Plummer vinson syndrome, poor oral hygiene, herpetic gingivostomatitis, oral papilloma, oral lichen planus, oral candidiasis, chronic irritation (broken teeth, dental stump and denture).

Blood investigation was performed in each case - Haemoglobin, HIV 1&2. In cases with anemia, MCV, MCH, MCHC investigations was carried out to detect iron deficiency. All the details were noted on a specific proforma after taking informed written consent.

Biopsy technique

Patients were made to gargle an adequate amount of 4% xylocaine solution and intramuscular injection of 1cc glycopyrrolate was given. After about 15 min biopsy was taken from the lesion using Luc's forceps in the form of small bits from different sites and margins. These samples were dipped in formaldehyde and sent for histopathological examination. The histopathology reports of the patients were studied.

Statistical analysis was done using chi square test with SPSS version 17 software. p value less than 0.05 was considered statistically significant.

RESULTS

In this study the most common age group involved was 41- 60 years, which constituted 50% of the patients. No patients were seen in the age group of 0 – 20 years and >80 years. The youngest ones who suffered with oral cancer were two 24 year old male patients, and the oldest was 80 year old male patient. Well differentiated squamous cell carcinoma was predominantly seen in all the age groups [Chi square- 5.074, df-6, p- 0.534] (Table 1).

Table 1: Age distribution.

Age group	HPE findings				No of patients
	Well diff SCC	Mod diff SCC	Poorly diff SCC	Adenocystic carcinoma	
0 – 20	0	0	0	0	0 (0%)
21- 40	17	8	1	1	27 (27%)
41-60	27	19	4	0	50 (50%)
61-80	15	7	0	1	23 (23%)
>80	0	0	0	0	0 (0%)
Total	59	34	5	2	100

79% of the patients who suffered from oral cavity and oropharyngeal carcinomas were males and 21% females, with M:F ratio 3.76:1. 47 males and 12 females developed well differentiated SCC and adenocystic

carcinoma was seen in one male and female patient. Chi square- 2.490; df- 3, p- 0.477 (Table 2).

86% of the patients were of lower class and 14% of middle class. No patients belonged to upper class [Chi square- 3.185; df- 3, p- 0.364].

64 patients had mixed diet and 36 patients were vegetarians. Of the 100 patients studied, 69 patients had complaints of oral ulceration, 49 had difficulty in

swallowing, 18 had difficulty in mouth opening, 23 patients presented with lump in neck, 44 had pain and 4 patients had change in voice as the complaint. Most of the patients had more than one complaint. The major complaint was ulcer in mouth, followed by difficulty in swallowing (Table 3).

Table 2: Sex distribution.

Sex	HPE findings			Adenocystic carcinoma	No. of patients
	Well diff SCC	Mod diff SCC	Poorly diff SCC		
Male	47	26	5	1	79 (79%)
Female	12	8	0	1	21(21%)
Total	59	34	5	2	100

Table 3: Distribution of complaints.

Complaints	No. of patients	Percentage
Oral ulceration	69	69%
Difficulty in swallowing	49	49%
Difficulty in mouth openin	18	18%
Neck lump	23	23%
Pain	44	44%
Change in voice	4	4%

The habit of smoking was prevalent among 65 patients i.e. 65% of the total cases. Among these 65 patients 52.31% smoked 1- 5 times daily and 47.69% smoked 6-10 times daily. It was observed that 73.85% had been smoking for 1-20 years followed by 23.08% for 21- 40 years. Only 2 patients smoked for more than 40 years. [Chi square- 6.123; d.f- 3 p- 0.106] (Table 4).

Table 4: Habit of smoking.

Cigarette/ bididi	No. of patients	Percentage
Non-smokers	35	35%
Smokers	65	65%
No.of times per day		
1-5	34	52.31%
6-10	31	47.69%
>10	0	
Duration in years		
1-20 years	48	73.85%
21-40 years	15	23.08%
>40 years	2	3.07%

It was observed that 39% of the patients were pan/betel nut chewers. Among them 82.05% of the patients had been taking pan/betel nut atleast 1-5 times per day while 17.95% of the patients chewed pan /betel nut 6-10 times daily. 87.18% of the patients had been indulging in the practice for 1-20 years [Chi square -7.541; df -3 p - 0.057] (Table 5).

Table 5: Habit of pan/betel nut chewing.

Pan/ betel nut	No. of patients	Percentage
Non Chewers	61	61%
Chewers	39	39%
No. of times per day		
1-5	32	82.05%
6-10	7	17.95%
>10	0	
Duration in years		
1-20 years	34	87.18%
21-40 years	5	12.82%
>40 years	0	

Among the patients, 72 had the habit of tobacco chewing. Among the tobacco chewers the practice of chewing tobacco 1-5 times daily was popular (79.17%). 88.89% of the patients chewed tobacco for a period of 1-20 years, followed by 9.72 % for a period of 21-40 years [Chi square- 14.636; df- 3 p - 0.002] (Table 6).

Table 6: Habit of tobacco chewing.

Tobacco/guthka	No. of patients	Percentage
Non-chewers	28	28%
Chewers	72	72%
No. of times per day		
1-5	57	79.17%
6-10	15	20.83%
>10	0	
Duration in years		
1-20 years	64	88.89%
21-40 years	7	9.72%
>40 years	1	1.39%

Among the patients, 35 had the habit of alcoholism. 51.43% of the patients used to drink 1-50 ml of alcohol daily followed by 25.71% who had 51- 100ml and 22.86% had >100ml of alcohol. All the patients had been

drinking for a period of 1- 20 years [Chi square - 5.745 df- 3 p - 0.125] (Table 7).

Table 7: Habit of alcoholism.

Alcohol	No. of patients	Percentage
Non-drinkers	65	65%
Drinkers	35	35%
Amount per day		
1-50 ml	18	51.43%
51-100 ml	9	25.71%
>100 ml	8	22.86%
Duration in years		
1-20 years	35	100%
21-40 years	0	0
>40 years	0	0

67 patients had poor oral hygiene and 33 had moderate oral hygiene. No patient scored well in terms of oral hygiene [Chi square – 7.394; df-3, p- 0.06].

61% of the patients presented with an ulceroproliferative growth, irrespective of the subsites in which they have occurred. The second most common type of growth was ulcerative (32%) followed by proliferative (5%) and then indurative (2%).

Of the 100 patients studied, 4 patients suffered from iron deficiency anemia and was absent in the remaining 96. In the present study, 13 patients had broken sharp tooth or dental stump causing traumatic irritation as one among the risk factor in the development of oral cancer. 1 patient had cheilitis. None of the patients had symptoms/signs/history of oral lichen planus, oral candidiasis, oral papilloma, herpetic gingivo stomatitis, Vitamin A deficiency, HIV infection. No patient had habit of mouth wash gargling.

Among 100 patients in the study, 12 patients had submucous fibrosis and 7 had leukoplakia. Remaining 81 patients did not have any premalignant condition / lesion.

26 patients had malignant lesion arising from tongue, followed by buccal mucosa in 20 patients, base of tongue in 19, tonsil in 15, anterior pillar and soft plate in 7 patients. 4 patients each had retromolar area and hard palate as the site of lesion. Floor of mouth was the site of lesion in 2 patients and 3 patients had alveolar lesion. Among the 100 patients studied, 59 patients had oral cavity as the main site and 41 had oropharynx as the site (Table 8).

In the present study, 98% of the patients were histologically squamous cell carcinoma, with well differentiated carcinoma being the most common ie 59%, followed by moderately differentiated carcinoma in 34% and poorly differentiated carcinoma in 5% patients. 2 patients had adeno cystic carcinoma (Table 9).

Table 8: Site of growth.

Site	No. of patients	Percentage
Lips	0	0%
Alveolus	3	3%
Buccal mucosa	20	20%
Floor of mouth	2	2%
Tongue	26	26%
Retromolar area	4	4%
Hard palate	4	4%
Soft palate, anterior pillar	7	7%
Tonsil	15	15%
Base of tongue	19	19%
Posterior pharyngeal wall	0	0%
Total	100	100%

Table 9: Histopathological findings

HPE	No. of patients	Percentage
Well differentiated SCC	59	59%
Moderately differentiated SCC	34	34%
Poorly differentiated SCC	5	5%
Adeno cystic carcinoma	2	2%
Total	100	100%

DISCUSSION

The most common age group involved was 41- 60 years, which constituted 50% of the patients. Well differentiated squamous cell carcinoma was predominantly seen in all the age groups. Naseem B et al in their study reports that majority of the patients presented in the age group between 40- 60 years.⁶ Syam SB et al also reports similar observation of the highest affected age group between 41- 70 years of age.¹⁰

79% of the patients who suffered from oral cavity and oropharyngeal carcinomas were males and 21% females, with M: F ratio 3.76: 1. A high male to female ratio of 4:1 was also reported by Casal et al.⁷ The main reason for variation in findings is due to the difference in the sample size in the different studies. Moreover as men usually are more addicted to tobacco and betel nut, the chances of oral cancer would thus be more in males.

Of the 100 patients studied, 69 patients had complaints of oral ulceration, 49 had difficulty in swallowing, 18 had difficulty in mouth opening, 23 patients presented with lump in neck, 44 had pain and 4 patients had change in voice as the complaint. Most of the patients had more than one complaints. Syam SB et al in their study claims oral ulceration to be the major clinical feature accounting in 60.97% of the patients consulting a doctor. In that study 21.95% of the cases presented with swelling.¹⁰

According to our study, it was found that 65% of the patients were smokers. 39% of the patients were pan/betel nut chewers and 72% of the patients were tobacco/gutka chewers. Alcohol abuse was seen in 35% patients. Silverman studied 174 California patients with primary intra oral carcinoma, 159 (91%) of whom habitually used tobacco for long periods of time.¹ Rakesh PD et al in his study in Bhopal, claimed that 81.1% of the patients chewed tobacco or gutka, while 48.6% of the patients had the habit of smoking.⁸

Jabber MA et al reports on the many different factors associated with an increased risk for oral squamous cell carcinoma (SCC), tobacco and alcohol seem to be the most studied.⁹ Individuals who smoke more than 20 cigarettes a day and consume more than 100 gm of alcohol a day are at increased risk for epithelial dysplasia. Syam SB et al in their study mentioned smoking to be the dominant habit with 61.89% of patients being smokers while tobacco and pan chewing was reported in 5.18% of patients and 7.01% of patients respectively.¹⁰

It is very much expected because the cultural and social habits of the people are influenced by many factors, and these habits tend to vary according to different geographical, social and religious aspects.

Iron deficiency, especially in severe, chronic form known as Plummer-Vinson syndrome is associated with an elevated risk for squamous cell carcinoma of the mouth.¹¹

In the present study, the most common site of carcinoma was tongue (26%), followed by buccal mucosa (20%). 19 patients had lesion at the base of tongue and tonsillar growth was seen in 15 patients. Evandro NA et al reported 32.2% of the patients presented with tongue cancer, which was the highest for that study.¹² Syam SB et al in his study reports that the buccal mucosa was the most commonly affected site (52.7%) followed by the tongue and floor of mouth, hard palate, lip, retro molar area respectively.¹⁰

In the present study, 98% of the patients had squamous cell carcinoma of which 59% were well differentiated SCC, 34% were moderately differentiated SCC and 5% were poorly differentiated SCC. Two cases of adenocystic carcinoma was found. Neville BW et al reports that in the oral cavity, squamous cell carcinoma (SCC) is the most prevalent malignant neoplasm.¹³

Casal et al reported 94.7% of cases to be of squamous cell carcinoma.⁷ Syam SB et al in his series reports that among 331 cases, 328 cases were squamous cell carcinomas, remaining cases are salivary gland tumors.¹⁰ The histological grading of squamous cell carcinomas revealed that the majority of the cases were well differentiated squamous cell carcinomas (62.19%) followed by moderately (30.48%), poorly differentiated (7.31%) squamous cell carcinomas.

CONCLUSION

Tobacco in either form (smoking, chewing), alcohol consumption and poor oral hygiene are the most important etiological factors in the development of oral and oropharyngeal malignancy.

Not all the patients who have the risk factors develop oral cancer. In addition, many patients in our study found to have multiple risk factors. So a study on more number of cases seems to be an absolute necessity.

Since the oral cavity is more accessible to complete examination, early detection of precancerous and cancerous lesions is possible. But either due to ignorance or inaccessibility of medical care, the disease gets detected in the later stages. Thus, there is a need for improvement in early detection of oral and oropharyngeal carcinomas, because in the initial stages, treatment is more effective and the morbidity is minimal.

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