

Prevalence of oral cavity cancer according to anatomical sites in Karachi, Pakistan

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Objectives: To analyze the different anatomical sites of oral cavity affected by the cancer in patients presenting to a tertiary care public sector hospital in Karachi, Pakistan.

Methodology: This retrospective observational study was conducted at the department of Ear, Nose and Throat (ENT), Head and Neck Surgery, Civil Hospital and Dow Medical College, Karachi, Pakistan from February 2015 to January 2016 and included 100 patients with biopsy-proven oral cavity cancer. Anatomical location was carefully noted for each patient and analyzed. Patients with premalignant oral conditions, patients with inconclusive histopathology reports and patients suffering from oropharyngeal carcinoma were excluded.

Results: The mean age of patients was 49.53 ± 13.64 years (range 27 to 84). Out of 100 patients, 76 (76%) were male and 24 (24%) females. Male to female ratio was 3.1. Most of the patients belonged to low socio-economic group. A total of 142 cancer lesions were documented. In

18 patients, more than one site was involved, reflecting multiplicity and extension of the lesions. Buccal mucosa was the most commonly involved anatomical site. A total of 62 out of 100 patients (62%) had tumors localized to the buccal mucosa. Tongue was the second most commonly involved anatomical site with 30 cancers (30%) located in the oral tongue. In 10 (10%) patients, lips were involved. In 20 (20%) patients, the disease was first discovered on the floor of the mouth. Gums and cheeks were involved by 10 tumors (10%) and hard palate by 10 tumors (10%).

Conclusion: The most common involved anatomical site in oral cancer was buccal mucosa. This pattern differs from the western world, where tongue is the most commonly involved anatomical site of the oral cavity. This may reflect different risk factors in our population. (Rawal Med J 201;41:450-453)

Keywords: Oral cancer, buccal mucosa, tongue, betel nut.

INTRODUCTION

Oral cancer is a common malignancy in Karachi, Pakistan with increasing incidence noted in recent years.¹⁻⁵ Ethnic, cultural, and the popularity of addictive habits are the causes of this disease in this community. Tobacco, tobacco-related products, betel nut, genetic predisposition, dietary deficiencies and hormonal factors are suspected as possible causative factors of oral cavity carcinoma.¹⁻

³ Betel nut and chewing tobacco are two of the ingredients of a number of chewing products like paan, gutka and paan masala. Betel nut and tobacco chewing is used to achieve satisfaction, euphoria and to combat fatigue.²⁻⁵

Chewing betel nut and tobacco on a habitual basis is very injurious to human health. The World Health Organization (WHO) and International Agency for Research on Cancer (IARC) have classified betel

nut as group 1 human carcinogen. According to the IARC, paan and gutka are the substances, which contain known human carcinogens. Betel nut, even when consumed in the absence of tobacco or lime may lead to potentially harmful effects on the oral cavity.⁶⁻¹⁰

The shape of oral cavity is oval and is separated into the vestibule and the oral cavity proper. It is divided into many specific areas, and different types of cancers may involve each of these parts of oral cavity. This pattern varies from region to region and from country to country. The site of location is one of the important prognostic factors in oral cancer. The most common anatomical site for oral cavity cancer in the United States is the tongue. Previous studies from Pakistan have found conflicting results.¹¹⁻¹⁶ This study was carried out to determine the distribution pattern of oral cancers according to

different anatomical regions affected in patients presenting to a tertiary care public hospital in Karachi, Pakistan.

METHODOLOGY

This study was conducted at the Department of ear, nose and throat (ENT), Head and Neck Surgery, Civil Hospital and Dow Medical College, Karachi, Pakistan. Civil Hospital is an 1800-bed, public tertiary care hospital. A total of 100 patients with biopsy-proven oral cancer were selected for this study. Patients with premalignant oral conditions and patients suffering from oropharyngeal carcinoma were excluded.

Written informed consent was taken from all the patients before undertaking examination and diagnostic procedures. The research followed the tenets of the Declaration of Helsinki. Detailed biodata, socioeconomic status, presenting complaints, history of presenting illness, past, family, personal and drug history were recorded. A detailed enquiry was made regarding the consumption of pan, gutka, or different forms of tobacco. Complete ENT, head and neck and general physical examination of every patient was done and recorded. Local oral cavity examination including inspection and palpation of the lesion was carefully done. The site, size and extension of the lesion was inspected, palpated and recorded. The anatomical site involved by the lesion is especially noted and recorded. Fiberoptic laryngoscopy (FOL) of every patient was carried out to locate any second primary in the aerodigestive tract. Detailed neck examination of every patient was carried out especially to palpate neck nodes. Baseline investigations of every patient were performed to see the general condition of the patient. X-ray chest and ultrasound abdomen and pelvis were done to see any distant metastasis. Every patient with neoplastic lesion underwent CT scan from skull base up to neck root to see the site, size, extension of the disease and neck nodes to stage the tumor.

RESULTS

Out of 100 patients, 76(76%) were male and 24(24%) females with male to female ratio of 3:1. The mean age of patients was 49.53±13.64 years

(range 27 to 84). Most of the patients belonged to low socio-economic group. History of intake of pan, gutka, or different forms of tobacco was available in 74% of the cases.

A total of 142 cancer lesions were documented in these 100 patients. In 18 patients, more than one site was involved, reflecting the multiplicity and extension of the lesions. In 6 patients, 3 anatomical sites were involved at presentation, whereas in 12 patients, 2 sites were involved. The most common patterns of multiple tumors/extension were found involving buccal mucosa, gums and lips, oral tongue and floor of mouth and gums and hard palate. This obviously affected the T stage of the tumor, with higher stage of tumor in such cases.

Table. Anatomical sites of 142 oral cancers n=100).

Anatomical site of oral cavity	n (%)	Primary tumors n (%)	Secondary involvement n (%)
Buccal mucosa	62 (62%)	50 (80.6%)	12 (19.4%)
Tongue	30 (30%)	22 (73.4%)	8 (26.4%)
Floor of mouth	20 (20%)	10 (50%)	10 (50%)
Gums and alveolus	10 (10%)	8 (80%)	2 (20%)
Hard palate	10 (10%)	5 (50%)	5 (50%)
Lips	10 (10%)	5 (50%)	5 (50%)
Total	142(100%)	100	42

Buccal mucosa was the most commonly involved anatomical site. A total of 62 out of 142 tumors (43.7%) were localized to the buccal mucosa. Among these, 50 were primarily localized to this site, while in 12 cases, the tumors from adjacent structures involved this region. Tongue was the second most commonly involved anatomical site with 30 cancers (30%) located in the oral tongue. Among these, tongue was the only site of involvement in 22 cases, whereas in 8 cases, tumors of adjacent areas extended to involve this structure. In 20 (20%) cases, the tumors were localized to the floor of the mouth. Among these, in 10 cases this was the only site of tumor involvement, whereas in remaining 10 cases, tumors of adjacent structures such as ventral aspect of oral tongue extended to involve it. In 10 cases (10%), lips were involved by the disease. Among these, 5 were localized to the lips primarily, whereas in 5 cases, tumors of adjoining structures involved lips secondarily. Gums and cheeks were involved by

10 tumors (10%) (8 primary and 2 extensions) and hard palate by 10 tumors (10%) (5 primary and 5 extensions from adjacent structures) (Table).

DISCUSSION

Amongst the population of Karachi, the chewing habits of tobacco, betel quid (paan), betel nut (chhaliya), gutka, niswar and manpuri are very common. The male population is more indulged in this habit. Due to illiteracy, poverty and lack of awareness of the harmful effects of these substances, people become addicted to these chewing habits at a very early age. Gutka is considered to be the most harmful and carcinogenic chewing substance in Karachi. Various types of unhygienic, packed, unpacked and Indian imported gutkas are freely available in Karachi markets. So many people in Karachi chew these hazardous betel nut and tobacco preparations whole day. They only take breaks from these products during their meal times. Most of the addicted people even sleep with these injurious products in their mouths.

The carcinogens in these products cause insult to the parts of oral cavity. The addicted people develop premalignant conditions like submucosal fibrosis, lichen planus, leukoplakia and erythroplakia. As most of these premalignant conditions are painless; they ignore these conditions and keep on chewing these agents. Ultimately the premalignant conditions lead to carcinoma of oral cavity. Most of the people, due to poverty and illiteracy, do not pay attention to the non-healing cancer wound. They seek healthcare advice when their disease reaches to advanced stage.⁶⁻¹²

The mean age of our patients was quite young. This is more or less similar to that observed in other local studies and may reflect the widespread use of carcinogen-containing substances from the very early age.¹⁻⁸ In contrast, the peak age of occurrence in western societies is slightly older.

The gender distribution of cases in our study also concurs with previous studies from this region.^{1-4,8-10}

We divided the oral cavity into six different anatomical sites. It is noteworthy that all the lesions were symptomatic. No screening program is available in our country for the early detection of oral cancer. Determination of the distribution sites help in

determining the possible etiological or risk factors for oral cancer. Buccal mucosa was found to be most common involved anatomical site as reported from other study from Karachi.¹⁷ This pattern of involvement of buccal mucosa differs from the western world, where tongue is the most commonly involved anatomical site of the oral cavity.¹⁸⁻²⁰ In our study, tongue was the second most commonly involved anatomical site. These two sites together constituted almost two third of the cases in our study. It is noteworthy that lips were uncommonly involved in our study. Lip cancer is more common in western societies. Multiplicity of tumors and/or involvement of more than one subsite of oral cavity was also a common finding in our study. This may partly be explained by the delayed presentation of cases in our set-up. This adversely affects the stage of disease at presentation and its subsequent management and prognosis.

It is high time now in Pakistan, for the private and public sector to launch an aggressive plan to curb the practice of betel nut and tobacco chewing. Government should impose a practical ban on the sale and purchase of these lethal products. Side by side electronic and print media should also pay heed for the awareness of the common person regarding the carcinogenic effects of these products on oral health. There should be topics pertaining to the effects of these chewing agents in the school and college syllabus.

CONCLUSION

The anatomical distribution of oral cancer in our patients is different from that reported in the West and this may reflect different risk factors in our population.

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Conception and design: TZK, ZA, TJ

Collection and assembly of data: TZK, TJ

Analysis and interpretation of the data: TZK, TJ

Drafting of the article: TZK, ZA

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