

ORAL AND UPPER AERO-DIGESTIVE TRACT MALIGNANCY: A REVIEW OF A FIVE-YEAR EXPERIENCE

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Cancer is a major health problem in Saudi Arabia, and is one of the most frequent causes of death in the country.¹ It has been reported that in the frequency of cancer, head and neck tumors rank third and fourth place in males and females, respectively.² Oral cancer constitutes less than 5% of cancers.³ This percentage is higher than that reported from the US (2.1%),⁴ Singapore (under 1.5%),⁵ and Taiwan (2.4%).^{5,6}

The most frequent oral cancer is squamous cell carcinoma, comprising almost two-thirds of cancers affecting the oral cavity. The most affected site, intraorally, has been reported to be the tongue, followed by the oropharynx.⁷ Until now, there have only been a few reports concerning the prevalence and pattern of oral cancer. This report was designed to study its prevalence and pattern in a selected population in Saudi Arabia.

Materials and Methods

The records of surgical and biopsy specimens received at the surgical pathology laboratory of Riyadh Medical Complex from January 1990 to December 1995 were reviewed. All malignant lesions at the following sites were included: oral cavity, pharynx (including nasopharynx, oropharynx and hypopharynx), major and minor salivary glands, cervical lymph nodes, neck, jaws, lips, muscles, tonsils, nose, larynx (including glottis and epiglottis), and skin of the head and neck. All malignancies were recorded, tabulated and analyzed according to site, age and sex.

Results

A total of 70,108 biopsies were reviewed, and of these only 258 were found in the specified sites. The ages of the subjects ranged from four months to 120 years (as documented in the patient's records), with a mean age of 45.5 years. The mean age was 44.7 years for females, and 47.93 for males, and there were 67 females

(25%) and 179 males (69.4%). In 12 cases (4.7%), sex was not specified. The most affected age group was between 41-50 years (24.5%), and the least affected were those above 91 years and below 11 years (Table 1). The most common malignancy was squamous cell carcinoma (50.7%), followed by basal cell carcinoma (15.9%). Metastatic carcinoma constituted about 13.2%, non-Hodgkin's lymphoma 10.8%, including Burkitt's lymphoma (1.2%), and adenocarcinoma was 2.3%.⁵ The lowest incidence was mucoepidermoid, verrucous carcinoma, and melanoma, accounting for 1.2%. This was followed by Hodgkin's (0.8%) and adenoid cystic carcinoma (0.5%). There were three cases of anaplastic carcinoma (1.2%). Rhabdosarcoma and neuroblastoma constituted 0.8%. (Table 2). Lymph nodes were the most affected site, with malignancy comprising 20.2%. The skin of the head and neck was the second most common site (19.3%), followed by the nasopharynx (15.9%), buccal mucosa (9.7%), tongue (8.9%), neck (6.9%), and larynx and salivary glands (3.9% each) (Tables 3 and 4). The least involved sites were the minor salivary glands and gingiva. The sternocleidomastoid was involved with rhabdosarcoma in one case.

TABLE 1. *Distribution of malignancies by age and sex.*

Age range	Male	Female	Total
0-10	5 (2.8%)	—	5 (1.9%)
11-20	4 (2.2%)	7 (10.5%)	11 (4.3%)
21-30	9 (5.1%)	7 (10.5%)	16 (6.2%)
31-40	26 (14.5%)	10 (14.9%)	36 (13.9%)
41-50	51 (28.5%)	12 (18.0%)	63 (24.5%)
51-60	42 (23.5%)	11 (16.4%)	55* (21.3%)
61-70	23 (12.8%)	10 (14.9%)	34** (13.1%)
71-80	8 (4.4%)	3 (4.4%)	11 (4.3%)
81-90	3 (1.7%)	—	3 (1.2%)
≥90	1 (0.5%)	2 (2.9%)	3 (1.2%)
Missing	7 (3.9%)	5 (7.5%)	21† (8.1%)
Total	179 (100%)	67 (100%)	258 (100%)

*Two cases with unspecified sex; **one case with unspecified sex; †nine cases with unspecified sex.

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Accepted for publication 10 February 1998. Received 18 November 1997.

TABLE 2. *Distribution of malignancy types by sex.*

Type	Male	Female	Total frequency
Squamous cell carcinoma	93 (52.0%)	28 (41.8%)	131* (50.7%)
Basal cell carcinoma	30 (16.9%)	11 (16.5%)	41 (15.9%)
Metastatic carcinoma	22 (12.3%)	12 (17.9%)	34 (13.2%)
Malignant lymphoma	18 (10.1%)	7 (10.5%)	25 (9.6%)
Adenocarcinoma	3 (1.7%)	4 (5.9%)	7 (2.3%)
Mucoepidermoid carcinoma	2 (1.1%)	1 (1.5%)	3 (1.2%)
Verrucous carcinoma	3 (1.7%)	–	3 (1.2%)
Burkitt's lymphoma	1 (0.5%)	–	3** (1.2%)
Hodgkin's lymphoma	1 (0.5%)	1 (1.5%)	2 (0.8%)
Melanoma	2 (1.1%)	1 (1.5%)	3 (1.2%)
Adenocystic carcinoma	–	1 (1.5%)	1 (0.5%)
Anaplastic carcinoma	2 (1.1%)	1 (1.5%)	3 (1.2%)
Rhabdosarcoma	1 (0.6%)	–	1 (0.5%)
Neuroblastoma	1 (0.6%)	–	1 (0.5%)
Total	179 (100%)	67 (100%)	258 (100%)

*Ten cases with unspecified sex; ** two cases with unspecified sex.

TABLE 3. *Distribution of malignancy sites by sex.*

Site	Male	Female	Total frequency
Lymph node*	34 (18.9%)	16 (24%)	52** (20.2%)
Skin	37 (20.7%)	13 (20.9%)	50 (19.3%)
Nasopharynx	33 (18.4%)	6 (8.9%)	41** (15.9%)
Buccal mucosa	16 (8.9%)	6 (8.9%)	25† (9.7%)
Tongue	14 (7.9%)	5 (7.5%)	23†† (8.9%)
Neck	10 (5.5%)	8 (11.9%)	18 (6.9%)
Salivary glands	6 (3.3%)	4 (5.9%)	10 (3.9%)
Larynx	10 (5.6%)	–	10 (3.9%)
Lip	6 (3.3%)	2 (3.0%)	8 (3.1%)
Nose	6 (3.3%)	2 (3.0%)	8 (3.1%)
Mandible	1 (0.6%)	1 (1.5%)	4** (1.5%)
Palate	1 (0.6%)	2 (3.0%)	3 (1.2%)
Alveolar ridge	2 (1.1%)	–	2 (0.8%)
Muscle	1 (0.6%)	–	1 (0.4%)
Tonsils	–	1 (1.5%)	1 (0.4%)
Minor salivary gland	1 (0.6%)	–	1 (0.4%)
Gingiva	1 (0.6%)	–	1 (0.4%)
Total	179 (100%)	67 (100%)	258 (100%)

*Including metastasis; ** two cases with unspecified sex; † three cases with unspecified sex; †† 4 cases with unspecified sex.

Discussion

Oral cancer is a major worldwide health problem, with increasing significance and considerable mortality and morbidity. Despite its seriousness in Saudi Arabia, only a few reports have been presented regarding its prevalence, pattern, therapy and survival rate. The high predominance of the disease may be linked to habits such as the chewing of betel nuts, tobacco or "khat," and host factors such as nutrition.⁸⁻¹⁰ However, other pathogenic mechanisms and etiologic factors responsible should also be considered.

Oral and upper aero-digestive tract malignancy was found to constitute 0.37% of all biopsies. Squamous cell carcinoma (SCC) was the most common cancer, representing 50.7% of all cancers. This ratio, though high, is less than data reported from Connecticut, USA (69.7%),¹¹ Nigeria (76.4%),¹² Sudan (66.5%),¹³ Singapore (85.5%),⁵ Egypt (85.1%),¹⁴ and Hong Kong (82%),¹⁵ but is close to that reported from Lebanon (56.2%).¹⁶ The most commonly affected site was the nasopharynx, followed by the tongue and buccal mucosa intra-orally, a result comparable to figures reported earlier.^{7,17,18} In contrast, in Connecticut, USA, the most commonly affected site was the minor salivary gland, whereas in Indiana, the tongue and floor of the mouth were most predominantly involved.^{11,19} The variation in site is probably due to differences in risk factors among the population.²⁰⁻²²

Surprisingly, the results of this study showed that SCC had declined by 1.5 times since the findings reported by Al Dosari between 1966-1980.⁷ The change in the trend of oral cancer is most probably due to the increase in health care services and awareness, and/or changes in lifestyle causing the spread of other forms of cancer. Similar changes have also been reported in northern Thailand.²³ Basal cell carcinoma (BCC) was the second most common skin malignancy in Saudi Arabia. Males were affected more than females at a ratio of 3:1, contrasting with data reported earlier by Bahamdan and Morad (1.6:1).²⁴ BCC comprises about 36.5% of all skin cancers, and 98% of them are on the head and neck area. This may emphasize the role of solar radiation in carcinogenesis.^{20,24}

A noteworthy and impressive finding is the frequency of metastasis. It ranks as the third most frequent cancer, with 13.2% of the total. This may indicate late attendance of patients to the primary care clinics. It also signifies the need for public health awareness of cancer warning signals, and the training of general practitioners to detect early signs of malignancy.

The age of incidence in this study is similar to that reported previously by Al Dosari in 1987. A higher prevalence was noted in the 41-60-year age group, accounting for 45.7%. Males, however, showed more involvement and wider age range than females.¹⁵ In contrast to previously reported studies, there was an early cancer involvement at age 31 in males,⁷ and male to female ratio was 2.7:1, a ratio higher than formerly reported, but close to others reported in the US, India and elsewhere.²⁵⁻²⁷

Conclusion

Cancer is a major health problem that requires continuous attention and more thorough investigations. The results of this study indicate that the most common cancer in Saudi Arabia is squamous cell carcinoma, affecting mostly the nasopharynx and the buccal mucosa. This is followed by basal cell carcinoma and metastatic carcinoma. In view of the high incidence of metastatic carcinoma, the early presentation and diagnosis of

TABLE 4. Distribution of the four most common malignancy types by site.

Age range	Squamous CA	Basal cell CA	Lymphoma	Metastatic CA
0-10			2 (8.3%)	
11-20	3 (2.3%)	2 (4.9%)	4 (16.7%)	2 (5.8%)
21-30	3 (2.3%)	2 (4.9%)	2 (8.3%)	7 (20.6%)
31-40	15 (11.5%)	7 (17.1%)	4 (16.7%)	4 (11.8%)
41-50	35 (26.9%)	7 (17.1%)	8 (29.2%)	6 (17.7%)
51-60	30 (23.1%)	13 (31.7%)	3 (12.5%)	8 (23.5%)
61-70	20 (15.4%)	4 (9.7%)	2 (8.3%)	5 (14.7%)
71-80	7 (5.4%)	2 (4.9%)		2 (5.9%)
81-90		2 (4.9%)		
≥90	3 (2.3%)	1 (2.4%)		
Missing	14 (10.8%)	1 (2.4%)		
Total	130 (100%)	41 (100%)	25 (100%)	34 (100%)

CA=carcinoma.

malignancy is mandatory. A good training program for general practitioners along with public awareness is essential.

Acknowledgement

The author would like to thank Dr. Mervat Bamani for her assistance during the preparation of this manuscript.

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