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Primary malignant tumors of orofacial region at Benghazi, Libya: A 17 years review

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ABSTRACT

The aim of this study was to systematically analyze the clinical presentations of orofacial malignant tumors in a Libyan population over a period of 17 years and compare the results with the reports from other countries. During the study period, tumors of epithelial origin were found in 160 patients (82%), followed by tumors of immune system, 22 (11%) and tumors of mesenchymal origin, 14 (7%). Of the total malignant tumors, 115 were men and 81 were women and the male to female ratio was 1.41:1. Malignant non-odontogenic tumors were seen in 194 patients (99%) and malignant odontogenic tumors were seen in 2 patients (1%). Among the epithelial tumors, squamous cell carcinoma (50.6%) was the most common neoplasm, followed by mucoepidermoid carcinoma (15%) and adenoid cystic carcinoma (8.7%). The incidence of oral malignancy is impressively low with respect to the corresponding levels in other countries in Africa and some European countries.

1. Introduction

Cancers of the mouth and oropharynx are the sixth most common malignancy globally [1]. Epidemiology shows that head and neck cancers constitute between 5% and 50% of all cancers, while the orofacial region is found to be the commonest site [2]. It poses a serious health problem for the patient, a challenge for the surgeon and a burden for the society.

The incidence of oral cancer shows huge geographic variation, from as low as 1–2% of all malignant tumors in Japan, to around 50% in India [2]. Although the incidence of oral cancer is relatively low (2–6%) in Western countries, there has been a recent dramatic increase in the mortality rate in some European countries [3–8].

There have been only few reports published on malignant neoplasms of the orofacial region from the African continent [9–11]. Till date, no epidemiological studies on malignant tumors of the orofacial region have been done in Libya, except one study on intraoral minor salivary gland tumors [12]. Knowledge on the incidence of malignant tumors of orofacial region is vital for better understanding of the biology of the disease and for proper diagnosis, treatment and prevention.

The purpose of this study was to systematically analyze the clinical presentations of orofacial malignant tumors in a Libyan population seen over a period of 17 years and compare the results with the reports from other countries. This paper could be of good clinical importance in assessing all the risk factors in addition to the genetic and environmental influences, because of the fact that although Libya is geographically in the continent of Africa, it has an ethnic population of Arabs.

2. Materials and methods

This retrospective study was carried out at the Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Garyounis University, Benghazi, Libyan Arab Jamahiriya. Libya is located in Northern Africa, bordering the Mediterranean Sea, between Egypt and Tunisia. While Tripoli is the capital of Libya, Benghazi is the second largest city in the country. The faculty of Dentistry at Benghazi was established in 1977 and since then it serves as the only referral center for maxillofacial trauma and pathology for the population of eastern Libya. Libya has an estimated population of about 6.03 million, and the life expectancy at birth of 76.88 years. About 97% of the populations are Arab and Berber and most of them are Muslims [13].

The medical reports and biopsy files of patients who underwent biopsy in the maxillofacial region for various reasons between January 1991 and December 2007 were retrieved from the Department of Oral and Maxillofacial Pathology. For all the cases, the clinical records were re-examined by the authors and the histological sections were also re-confirmed by two senior staffs from the Department of Pathology. The following were the

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exclusion criteria: incomplete clinical data, reports with doubtful or controversial diagnosis, those with metastatic tumors and reports of non-Libyan nationals.

The primary malignant tumors were broadly classified into three categories: tumors of epithelial origin, tumors of mesenchymal origin and tumors of the immune system. Information about age, sex, tumor location and histological type were obtained from each record.

Age adjusted standardized incidence rates of squamous cell carcinoma (SCC) were calculated by using the direct method and the world standard population expressed per 100,000 persons using the standard 10-year age divisions. Thus the incidence rates are compared with data from other countries. The population of eastern Libya in 2005 was estimated to be 2.1 million, which is about slightly more than one third of total population of Libya. The patients seen here are thus fairly representative of the Libyan population. The purpose of this study was intended to provide information to health professionals and health authorities, which could be used for community education, diagnosis, early treatment and research.

Data was analyzed using the SPSS for Microsoft Windows (version 13; SPSS, Chicago, Ill) statistical software package. Descriptive statistics and test of significance were used as appropriate. The critical level of significance was set at $P < 0.05$.

3. Results

During a period of 17 years, we reviewed the files of 2390 patients who underwent biopsy for various reasons in the orofacial region. Of the total 2390 patients who underwent biopsy in maxillofacial region at our center, 906 (38%) patients had inflammatory and reactive diseases, 432 (18%) had developmental and inflammatory cysts, 405 (16%) had benign odontogenic and non-odontogenic tumors, 196 (8%) had primary malignant tumors, 138 (6%) had premalignant epithelial lesions of mucosa and skin, 89 (4%) had immune based diseases, 7 (<1%) had metastatic tumors and 217 (9%) were grouped as miscellaneous (developmental disturbances, gingival hyperplasia, non-neoplastic salivary gland diseases, etc.).

The malignant tumors of orofacial region were broadly classified into three groups: tumors of epithelial region, tumors of mesenchymal region and tumors of the immune system. The relative frequency of different types of primary malignant tumors was classified according to the histological classification, age, gender and location.

During the study period, tumors of epithelial origin were found in 160 patients (82%), followed by tumors of immune system, 22 (11%) and tumors of mesenchymal origin, 14 (7%). Of the total malignant tumors, 115 were men and 81 were women and a male to female ratio of 1.41:1. The mean age of the patients in both the sexes was 46 years (range: 2–93 years). Twelve of these patients (6%) were less than 20 years of age. 43% ($n = 71$) of the epithelial tumors, 85% ($n = 12$) of the mesenchymal tumors and 50% ($n = 11$) of the tumors of immune system were seen in patients aged 50 years and less. Malignant non-odontogenic tumors were seen in 194 patients (99%) and malignant odontogenic tumors were seen in 2 patients (1%).

3.1. Tumors of epithelial origin (carcinoma)

Tumors of epithelial origin accounted for 7% (160 of 2390) of the total biopsies done during this period. The mean age of these patients was 47 years with a range of 14–93 years. Most of the patients were aged 40 years and above (69%). Palate ($n = 39$) and cheek ($n = 38$) were the most common sites of occurrence. The peak age of incidence was seen in the sixth and seventh decade of life. There were 91 males and 69 females at a ratio of 1.31:1 (Tables 1 and 2).

Among the epithelial tumors, SCC (50.6%) was the most common neoplasm, followed by mucoepidermoid carcinoma (15%) and adenoid cystic carcinoma (8.7%). About 3.4% of the all the biopsied lesions and 41% of all the primary malignant tumors seen during this period was found to be SCC. Majority of the SCC (85%) were seen in patients of 40 years and above and of them, 62% were males. The tongue (23%) and cheek (21%) were the most commonly involved regions for SCC. Two female patients with malignant ameloblastoma were seen in mandibular posterior region.

The incidence of SCC was found to be 2.12 for men and 1.25 for women, with a male to female ratio of 1.61:1. About 85% of the SCC studied during this period occurred in patients aged 40 years and above. By calculating the odds ratio, we found that patients aged 40 years and above were 4.06 times more likely to develop SCC than those aged less than 40 years. Well-differentiated SCC (59%) was found to be the commonest histological subtype of SCC (Tables 3 and 4).

3.2. Tumors of immune system

Tumors of immune system accounted for 1% (22 of 2390) of the total biopsies done in this period. Lymphoma constituted 8% (16 of 196) of the total primary malignant tumors and 72% (16 of 22) of the malignant tumors of immune system. Non-Hodgkins lymphoma (36%) was the most common tumor, followed by Burkitt's

Table 1
Tumors of epithelial origin according to age and sex.

Epithelial tumors	Age group in years									Sex			
	0–10	11–20	21–30	31–40	41–50	51–60	61–70	71–80	>81	Male	Female	Total	(%)
Squamous cell carcinoma	0	0	6	6	14	22	21	6	6	51	30	81	50.6
Mucoepidermoid carcinoma	0	2	6	10	0	4	2	0	0	12	12	24	15
Adenoid cystic carcinoma	0	0	2	4	2	2	4	0	0	4	10	14	8.7
Adenocarcinoma	0	0	0	0	0	0	4	4	0	6	2	8	5
Malignant pleomorphic adenoma	0	0	2	2	2	2	0	0	0	4	4	8	5
Verrucous carcinoma	0	0	0	0	1	4	0	1	0	6	0	6	3.7
Adeno squamous cell carcinoma	0	0	2	0	2	0	0	0	0	0	4	4	2.5
Polymorphic low grade adenocarcinoma	0	0	0	2	0	2	0	0	0	2	2	4	2.5
Malignant ameloblastoma	0	0	0	1	1	0	0	0	0	0	2	2	1.2
Nasopharyngeal carcinoma	0	0	0	0	0	2	0	0	0	2	0	2	1.2
Papillary cystic adenocarcinoma	0	0	0	2	0	0	0	0	0	1	1	2	1.2
Acinic adenoid carcinoma	0	0	2	0	0	0	0	0	0	1	1	2	1.2
Salivary duct carcinoma	0	0	0	0	0	0	2	0	0	1	1	2	1.2
Spindle cell carcinoma	0	0	0	0	0	0	1	0	0	1	0	1	0.6
Total	0	2	20	27	22	38	34	11	6	91	69	160	100