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ABSTRACT Studies on oral cancer based on reliable data analyses have not been published to date in Iran. This epidemiological study has been undertaken in an attempt to analyze possible patterns or oral SCC distribution in Iran between 1972 and 1991. In this study, more than 2180 cases of lip and intraoral squamous cell carcinoma (SCC) were found and analyzed for age, sex, lesion site, histologic grading and finally, possible etiologic factors associated with the lesions. The primary results showed that SCC was the most common type of oral cancer comprising 50.7% of all tumors. The lips were the most common site followed by the tongue, the gingiva, the buccal mucosa, the palate and the floor of the mouth. The peak age was the sixth decade (50-59 years), the mean age was 57.2 years and the m/f ratio was 3.6. It seems that cigarette smoking, opium smoking and tobacco chewing followed by denture injuries play a significant role in the etiology of the lesions. In addition, evidence shows an association between lip cancer and an HSV-1 infection.

Key words: Epidemiologic study; oral cancer; Iran.

Introduction

Epidemiological studies have provided important information regarding the origin, relative prevalence and trends of diseases which can also furnish etiological clues. This study is an attempt to provide comprehensive and reliable information regarding the most common malignant neoplasm of the oral cavity (SCC) to aid in recognition of significant data related to oral cancer in Iran, and to emphasize the importance of early diagnosis and consequently, better prognosis and treatment.

Materials and Methods

This study is based on reviewing the archives of two main centers; the first, the Department of Oral Pathology, Tehran University of Medical Sciences and the second the Meraj Cancer Institute.

Lesions were categorized according to their anatomical locations. These include: the lips, tongue, gingiva (or alveolar ridge), buccal mucosa, hard palate, floor of the mouth, palatine arch, and unspecified sites of the mouth.
Furthermore, to limit our study to squamous cell carcinoma, cases of carcinoma in situ, verrucous carcinoma and other types of carcinomas were excluded.

Owing to statistical differences between the two groups of patients, cases of each center were analyzed separately. Patients’ ages were divided into 10 year intervals. In order to evaluate possible changes in epidemiological patterns, the study period was divided into 10 subgroups, (every 2 years). Patients’ age, sex, lesion sites and grades and their correlations were analyzed and examined statistically.

Results

1) TDS (Tehran Dental School)
Reviewing 5605 total cases of biopsy specimens reported during the study period (1972-1991), 320 cases of malignant neoplasms were extracted. Invasive squamous cell carcinoma was the most common type of oral cancer (50.7% of all cases), followed by malignant salivary gland tumors (17.8%), sarcomas (10.6%) and lymphomas (9.7%).

Male preponderance was found in all anatomic subsites. The m/f ratio ranged from 5.0 in lip to 1.1 in buccal mucosa, and the tongue, gingiva, hard palate and floor of the mouth had similar ratios. The most common site involved in both sexes was the gingiva followed by the buccal mucosa, and the palatine arch had the lowest involvement rate.

Both sexes showed a peak age distribution in the sixth decade (50-59 years). This rate was the same in different anatomic subsites except for the buccal mucosa and the hard palate, where the peak age distribution was in the seventh decade (60-69 years). The mean age varied considerably for various anatomic sites. The youngest mean age was seen in the hard palate (51.7 years) whereas the oldest was in the buccal mucosa (56.8).

A study of histologic grading of lesions showed that well differentiated tumors were the predominant type, constituting 67.4% of all cases followed by moderately and poorly differentiated carcinomas with 20.7% and 12.0% of all lesions, respectively. The only exceptions were the tongue lesions where the number of poorly differentiated tumors exceeded moderately differentiated ones, and the palatine arch where the single tumor was poorly differentiated.

2) MCI (Majer Cancer Institute)
In reviewing the MCI archives and excluding 435 cases showing recurrence, radiotherapy and incomplete data, 2020 cases of lip and intraoral SCC remained for final analysis. Male preponderance was found in all anatomic subsites. The tongue had the lowest m/f ratio whereas the lip had the highest. Furthermore, this ratio tended to decrease over the period of the study, for example the m/f ratio has decreased from 3.6 in 1972-73 period to 2.4 in 1990-91. For males, the most common site was the lip followed by the tongue. For females, the tongue was the most common site followed by the lip. The third and fourth most common sites for both males and females were the gingival and buccal areas. See Table I.

The age distribution of cases showed that the peak age was the sixth decade (50-59 years). This rate was applicable to males, but in females, the peak age group was 60-69 years. The mean age was 57.2 years. The age range was between 6 and 100 years old. The mean age varied from 54.0 in the floor of the mouth to 58.8 years in lip lesions. There was a statistically significant increase in the mean age of patients from 1972-1991 (P = 0.00).

The histologic evaluation of the SCC cases showed that well differentiated tumors were the most common type of SCC lesions (76.7%). This was followed by moderately and poorly differentiated tumors, (15.6% and 7.7%). This was true in both males and females, and all anatomic subsites except for palatal tumors where grade II lesions were the predominant type and the palatine arch in
which the number of poorly differentiated cases exceeded moderately differentiated ones.

Cigarette smoking was the most common type of addiction (45.4%). Opium and cigarette smoking was the second most common followed by pipe smoking (3.9% & 2.4%).

Of the 99 cases with a history of Herpes Simplex Virus Type 1 (HSV-1) infection, 96% had lip tumors. Fifty-three cases had presented with evidence of denture injuries, 44 patients had a history of tooth extraction, 35.8% of the first group and 56.8% of the second had gingival lesions. Due to the lack of information about these factors in other cases, further studies are needed to determine their possible association with the disease.

**Conclusion**

Based on the results from the two centers in Tehran, Iran, SCC was the most common type of oral neoplasm, accounting for 50.7% of all malignant lesions. This figure is significantly lower than those reported by other studies: USA (California) 90%, USA (Connecticut) 63.7%, and 72.5% Australia (Victoria) 70%, India 98.7%, Singapore 85.5%, and Hong Kong 86.3%.

Our findings with respect to male preponderance of SCC, agree with reports from other parts of the world. However the male to female (m/f) ratio varies depending upon the site of the lesion.

Pindborg postulated that in England, the m/f ratio for many sites of oral cancer would decrease to 1:1. This decrease has already been reported from many parts of the world. Our study does not support this trend for several reasons: in general, smoking is less prevalent among Iranian women. The decrease in rate may also be due to other factors namely a possible decrease among males. Nevertheless, lack of accurate incidence figures precludes a definitive statement.

Oral SCC is more commonly seen in the lips, tongue and floor of the mouth. In our study there was a remarkable difference in site prevalence of SCC between the two centers.

Our findings in TDS are in agreement with a Nigerian study on black populations in which gingiva was reported to be the most
common site for oral SCC. Similarly, their samples were taken from a school of dental sciences. Their findings were in agreement with the observation made by Kroll and Hoffman that in black Americans, the gingiva was the most commonly affected site for SCC. Reports from India, showed buccal mucosa and gingiva to be the more commonly affected sites. They suggested tobacco chewing and the placement of betel quid preparations in the buccal vestibule to be the etiology. Since these habits are rare in Iran, we believe our findings in the Meraj Cancer Institute represent the true profile of SCC in Iran.

The age distribution of cases in this study, confirm those reported in foreign studies. Lesions were most commonly found during the sixth and seventh decades in life. However the increase of mean age in males, females, and total cases is in contrast to those reported by other studies. Oral cancer is becoming more prevalent amongst younger patients in the USA. This was not found to be true in our study. On the contrary, the mean age increased with time.

In regard to histological grading, our findings confirm previously reported results, although in general, histologic grading is quite subjective, based on individual opinion among pathologists. Interestingly, lesions involving the hard palate and palatine arch were less differentiated than those affecting other sites of the mouth. This may in part be due to lower visibility and accessibility of these tumors, causing delay in diagnosis.

In terms of etiology, histories of smoking habits were available for 1545 cases. Since there is no reliable data regarding the prevalence of these habits in the general population in Iran, their possible role as a cause of oral cancer remains to be proven. There was a correlation between lip cancer and HSV-1 infection. However, this must be studied more conclusively as well. Farmers constituted 39.4% of our sample, therefore the role of ultraviolet radiation should be considered, especially in regards to lip lesions. Histories of denture injuries, tooth extraction, cheek biting and poor oral hygiene were also cited. Further studies are needed to evaluate a possible association between these factors and oral SCC. Case control and prospective studies will be of greater value in this respect.

References