



Epidemiological Evaluation of Palatal Cancers in Iran: A Study on 303 Cases

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Abstract

Background: Palatal neoplasms may demonstrate different microscopic features compared with other anatomic area of the oral cavity, which is due to the accumulation of a large amount of salivary gland structure.

Objectives: Due to lack of adequate information on malignant neoplasms of this unique anatomic site, the current study aimed at evaluating the prevalence of palatal cancers in Iranian population during a 6-year period.

Methods: The files of Iran cancer registry, ministry of health and Medical education have been used as the source of the materials from 2003 to 2009 for this study. This center has been collecting data on patients with cancer from all main hospitals located in various cities of Iran. All palatal malignant lesions were recorded. Patients' gender, decades of life, and histopathologic type of cancers were evaluated. Statistical analysis was performed, using SPSS 21 software and the results with $P < 0.05$ were considered significant.

Results: Palatal cancers accounted for 8.66% of the oral malignancies. During this period, 303 cases of palatal malignancies had been registered in this center. The majority of cases were in the 5th to 8th decades of life with male to female ratio 1.29. Salivary gland malignancies were the most common cancers in palatal region (47.19%) followed by epithelial cancers (36.3%) and non-Hodgkin lymphoma (5.94%).

Conclusions: This study provided a large series of demographic data and microscopic variations of palatal cancers in Iran, which may contribute to precise diagnosis and better treatment of these malignancies.

Keywords: Cancer, Palate, Oral, Prevalence, Salivary Gland

1. Background

The palate has a distinctive anatomic characteristic because of the abundance of minor salivary glands. Therefore, palatal neoplasms may demonstrate different microscopic features compared with other anatomic area of the oral cavity (1). Several studies in the literature, including whole oral cavity, have made it difficult to assess their actual frequency of palatal malignancies (2-6). On the other hand, some studies on the palate have discussed just salivary gland tumors (7-9). Generally, epidemiologic studies with large series may be beneficial as they potentially could provide invaluable information on the prevalence of the lesions. It is noteworthy that clinicopathologic characteristics of the lesions within different countries could best

be utilized by health practitioners (10). The curriculum of cancer control is based on early detection and appropriate treatment (11).

2. Objectives

The overall prevalence of palatal cancers has not formerly been evaluated in Iran. Therefore, the results of this research can aid in determining the prevalence and demographic information of palatal malignancies in Iranian population.

3. Methods

In this retrospective cross sectional study, the files of Iran cancer registry, Ministry of Health and Medical Education were served as the source of the materials from 2003 to 2009. All malignant lesions of palate were recorded. For ethical consideration, unnamed records were provided for research group. Patients' gender, decade of life, and histopathologic type were evaluated. These data were collected from all main hospitals located in various cities of Iran since 2003. The material included identity and demographic data of patients, name of the respective physician, name of the hospital, site of biopsy, and final pathological diagnosis. On the Basis of the collected data, Chi-Square exact test, Kruskal-Wallis test and Dunn- Bonferroni, Mann-Whitney, and Fisher exact test were performed, using SPSS 21 software and the results with $P < 0.05$ were considered significant.

4. Results

Palatal cancers accounted for 8.66% of the oral malignancies. During this period, 303 cases of palatal malignancies had been registered in this center. Malignant neoplasms of palate, generally, had the highest frequency in the 5th to 8th decades of life. One hundred and seventy-one cases (56.43%) were men and 132 cases (43.56%) were women (male to female ratio 1.29). Four different types of malignant lesions (salivary gland, epithelial, hematopoietic, and mesenchymal) were diagnosed (Table 1). Salivary gland malignancies were the most common cancers in palatal region (47.19%) followed by epithelial cancers (36.3%), non-Hodgkin lymphoma (5.94%), and sarcoma (2.31%). A significant difference in age distribution was detected between groups of malignant lesions by Kruskal-Wallis test ($P < 0.001$). Pairwise comparison with Dunn- Bonferroni test demonstrated that patients with epithelial tumors were significantly older than patients with sarcoma and salivary gland carcinoma ($P = 0.007$, $P < 0.0001$). Moreover, in our sample, 67 (46.95%) of salivary gland carcinomas, 46 (41.8%) of epithelial samples, 5 (27.8%) of lymphoma, and 3 (42.9%) of sarcomas were female. No significant association was found between gender and tumor type with Chi-Square exact test ($P = 0.47$).

Among salivary gland malignancies, adenoid cystic carcinoma (AdCC) and mucoepidermoid carcinoma (MEC) were the most common malignancies in this region (Table 2). There was a significant difference between salivary gland subgroups and gender with Chi-Square test ($P = 0.003$), which was attributed to a female predominance

in MECs and male predominance in AdCC and adenocarcinoma not otherwise specified (NOS). Squamous cell carcinoma (SCC) was the commonest lesion among epithelial malignancies (Table 3). Diffuse large B cell lymphoma (DLBL) was the most prevalent in hematopoietic group (Table 4). Mesenchymal malignancies made up 2.3% of the cancers. The total number of cancers occurring in young people under 20 years was 12, representing 3.9% of all malignancies.

5. Discussion

In the present study, palatal cancers accounted for 8.66% of all oral malignancies. These findings are consistent with other studies (1, 2). In the current study, 56.43% of palatal cancers occurred in men and 43.56% in women (ratio: 1.29). In a study conducted by Aydil et al. (1), no sex predilection was evident. It is well-known that the commonest oral cancer is SCC (2, 11), but It is noteworthy to refer to Duzlu et al. (2) who found that a large number of SCC was detected in all sub-sites of the oral cavity except the hard palate. The present study considers salivary gland malignancies as the most common cancers of palate (47.19%) followed by epithelial cancers (36.3%), non-Hodgkin lymphoma, and sarcoma. This is in accordance with Aydil et al.'s (1) research, substantiating that 42.8% of the palatal cancers had salivary gland origin. SCC, melanoma, lymphoma, and sarcoma comprised 28.5%, 14.2%, 7%, and 7% of the malignancies in their series, respectively. Palate is the most common site for minor salivary gland tumor (1, 11, 12). Salivary gland neoplasms depict a heterogeneous group of tumors, with a broad range of microscopic types (13-15). In our series, AdCC and MEC were the commonest malignancies of salivary gland origin (77.6%) followed by adenocarcinoma NOS (8.4%) and PLGA (5.6%). Similar to the findings of this research, several studies reported that (AdCC) and (MEC) were the most common salivary gland carcinoma of palatal region (1, 8, 12, 16). In salivary gland carcinomas, the peak incidence was in the 4th to 7th decade almost equally. This is in agreement with Copelli et al.'s (8) study. Moreover, in salivary gland group, the male to female ratio was equal. However, there was a female predominance in MEC ($F/M = 1.7$) and a male predominance in AdCC ($M/F = 2$). Some reports revealed a male predominance (10, 17) and others depicted female predilection (18). Tian et al. (16) found that males were more frequently affected except in MEC. In the present research, certain tumors showed a female predilection, such as PLGA, clear cell carcinoma, and acinic cell carcinoma in contrast; some tumors, such as carcinoma ex PA and papillary adenocarcinoma revealed

Table 1. Distribution of 303 Palatal Cancers by Sex and Decades of Life^a

Histopathologic Type	Age, Y										Total
	0 - 9	10 - 19	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80	Unkown	
Malignancy (not specified)											
Female	1	1		1		3	4	1			11
Male			2	1	3	2	1	4	1		14
Salivary gland											
Female		3	10	13	19	7	8	4	1	2	67
Male		4	5	13	10	18	16	5	5		76
Epithelial											
Female			4	1	3	7	9	11	7	1	46
Male			2	3	8	14	12	15	9		64
Hematopoietic											
Female					1			1	2	1	5
Male	1		2		3	2	2	2	1		13
Mesenchymal											
Female	1		1						1		3
Male		1		1	2						4
Total	3	9	26	33	47	43	52	43	27	4	303

^a Chi-Square exact test was performed for checking the association between sex and tumor type ($P = 0.47$). Kruskal-Wallis and Dunn-Bonferroni test were performed for checking the association between age and tumor type ($P = 0.007$, $P < 0.0001$).

a male predilection. Palate is the most common site for PLGA. It occurs most frequently in the 6th and 7th decades of life and there is a female preponderance (19). In our series, the frequency of PLGA was low and comprised 5.5% of salivary gland malignancies of palate. This tumor demonstrates peak incidence in 6th decade and there was a female predilection (ratio: 1.66). Several reports indicated that PLGA was the third commonest malignancy of the minor salivary glands (10, 20-22). However, some indicated that this tumor is rare in minor salivary gland (8, 10, 16, 23). Interestingly, in two studies, PLGA was the commonest salivary gland malignancies (18, 24). Finally, one study demonstrated that the percentages of PLGA considerably differed by continent, ranging from 3.9% in Asia to 20% in Oceania (20). These differences may reflect diverse diagnostic criteria or actual geographic variations (16-18, 20).

In epithelial series, SCC comprised 83.63% of specimens followed by melanoma (10%). The male to female ratio was 1.39 and the peak incidence was in the 6th to 8th decades of life. Aydil et al. (1) also found that SCC is the second malignancy after salivary gland tumors in palate. Oral melanoma is rare and it accounts for only 0.5% of all oral malignancies, but palatal mucosa is the commonest location and there is a male predilection with the mean age of

65 years (25). In this study, melanoma comprised 3.6% of all palatal cancers with strong male predilection (ratio: 4.5) and old-aged group tendency.

According to several investigations, lymphomas consist of 1.5% to 8.8% of the oral malignancies. Palate is one of the most common sites of involvement for oral lymphoma (26). The prevalence of non-hodgkin lymphoma (NHL) increases from the 5th to 7th decades of life and has a male predilection. In the present research, lymphoma comprised 5.94% of palatal cancers. It should be noted that there is a male predominance (ratio: 2.6) and the most typical variant found was diffuse large B cell lymphoma (DLBL).

Head and neck sarcomas are extremely rare malignancies and they make about 4% - 10% of all sarcomas (27). Oral sarcomas show male preponderance with the average age of 42 years (28). Similar to previous reports, in the current research, sarcomas made about 2.3% of all palatal cancers with lower age tendency (under 40 years) and slight male predilection (ratio: 1.3).

It is worth mentioning that 3.9% of cancers occurred under 20 years and there was a male predilection (ratio: 1.4). In this age, group MEC was the most common type (50%) that is similar to a study carried out by Locati et al. (29).

Table 2. Histopathologic Type of Salivary Gland Carcinoma with Sex and Decades of Life Distribution^a

Histopathologic Type	Age										Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80	Unkown	
Mucoepidermoid carcinoma											
Female		3	6	7	8	1	5	2		2	34
Male		3	2	4	4	3	1	1	2		20
Adenoid cystic carcinoma											
Female			2	2	7	2	3	1	1		18
Male		1	3	6	6	6	12	3	2		39
Adenocarcinoma NOS											
Female			1	1	2						4
Male				2		4	1	1			8
Polymorphous low grade adenocarcinoma											
Female					1	3		1			5
Male						2	1				3
Clear cell carcinoma											
Female			1	3							4
Male											
Carcinoma ex PA											
Female											
Male							1		1		2
Acinic cell carcinoma											
Female					1	1					2
Male											
Papillary adenocarcinoma											
Female											
Male						2					2
Lymphoepithelial carcinoma											
Female											
Male						1					1
Basal cell adenocarcinoma											
Female											
Male				1							1

^a Due to the small number of specimens in different salivary gland carcinomas, we only evaluated the first three groups of the table. Accordingly, there was significant differences between salivary gland subgroups and gender with Chi-Square test ($P = 0.003$).

One of the strengths of epidemiologic studies with large series is that due to the high sample size and data collection from different cities, reliable information about the lesions in the country is provided to the health services. However, it can be inferred that the great amount of information entry to this center has made the recording process a more cumbersome task. As a result, the patients' detailed information such as clinical sign and symptoms have been

excluded. In addition, we could not measure the survival rate of patients due to the lack of sufficient data.

In conclusion, salivary gland malignancies are the commonest cancers of palatal region followed by SCC. In this study, the prevalence of PLGA is similar to Asian countries. MEC is the most common cancer between young patients. As a final point, large series on the palatal cancers aid in recognizing the precise prevalence, demographic

Table 3. Histopathologic Type of Epithelial Cancer with Sex and Decades of Life Distribution

Histopathologic Type	Age										Total
	0 - 9	10 - 19	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80	Unknown	
Squamous cell carcinoma											
Female			4	1	2	7	8	10	6	4	42
Male			1	3	7	12	7	12	7	1	50
Basaloid Squamous cell carcinoma											
Female									1		1
Male							1				1
Verrucous carcinoma											
Female							1				1
Male					1		2		1		4
Melanoma											
Female					1						2
Male						2	2	3	1		9
Total			5	4	11	21	21	25	16	4	110

Table 4. Histopathologic Type of Lymphoma with Sex and Age Distribution

Histopathologic Type	Age, Y										Total
	0 - 9	10 - 19	20 - 29	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80	Unkown	
NHL											
Female									2		2
Male			1				1				2
DLBL											
Female								1		1	2
Male			1		1	1		1	1		5
SLL											
Female					1						1
Male						1	1	1			3
MALT											
Female											
Male					1						1
Burkit lymphoma											
Female											
Male	1										1
Plasmacytoma											
Female											
Male					1						1
Total	1		2		4	2	2	3	3	1	18

Abbreviations: MALT, Mucosa Associated Lymphoid Tissue Lymphoma; SLL, Small Cell Lymphoma.

data, and histopathological variation, which may contribute to accurate diagnosis and better treatment of these malignancies.

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Footnotes

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