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Research Paper: Frequency of Oral and Maxillofacial Neoplasms in Iranian Geriatric Population

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ABSTRACT

Introduction: Aging process leads to changes in the oral mucosa and more than 50% of head and neck cancers occur in older adults. This study aimed to assess the frequency of oral and maxillofacial neoplasms in the Iranian geriatric population.

Materials and Methods: The record files of the oral pathology department, Shahid Beheshti University of Medical Sciences, and the pathology departments of Loghman and Imam Khomeini hospitals from 2007 to 2016 served as the source of material for this retrospective study. Data including patient's age, gender, tumor location, and the histopathologic diagnosis were recorded. Chi-Square and one-way ANOVA tests were used for statistical analysis.

Results: During this period, 551 oral and maxillofacial neoplasms of geriatric patients were registered in the aforementioned centers. They generally had the highest frequency in the 7th decade of life with a male to female ratio of 1.45. The oral cavity was the commonest location (52%, p=0.000). Out of 551 samples, 95.59% were found in soft tissue and 4.41% in bone. Epithelial tumors were the most common microscopic subtype (56.8%), followed by salivary gland tumors (27.20%). Squamous cell carcinoma (SCC) was the most common neoplasm (46.50%).

Conclusion: In this study, oral and maxillofacial tumors were most often observed in patients in their 70s with a higher prevalence in male patients. The frequency of cancer was three times that of benign tumors, which emphasizes the need for screening examinations for older adults.

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Introduction

According to World Health Organization, adults older than 60 years of age are considered older adults.(1) Aging is an irrefutable process, which is not completely known yet. Nevertheless, the increased susceptibility and diminished adaptability to environmental stimulants, which may affect cells and organs, are followed by the increased potential for suffering diseases and death in this period of life.(2) More than 50% of head and neck malignancies are seen in people over the age of 60 years and about 28% over the age of 70 years.(3) Most of the studies performed on geriatric oral lesions are clinical studies and they do not lead us directly towards a final diagnosis of malignant or premalignant lesions.(4) Studies in different regions have reported various prevalence rates and patterns for the biopsied oral lesions in older adults.(4-7) Saravani et al.(4) reported oral SCC as the most prevalent lesions followed by non-specific inflammatory lesions and irritation fibroma. Mohan et al.(5) mentioned that malignant tumors, non-neoplastic lesions, potentially malignant disorders, and benign neoplasms were the most common lesions, in respective order. In contrast, de Vasconcelos Carvalho et al. research (6) reported benign tumors were more prevalent than malignancies. Therefore, this study aims to evaluate the frequency of oral and maxillofacial neoplasms in an Iranian geriatric population in a ten-year period.

Materials and Methods

This retrospective study was approved by the ethics com¬mittee of Shahid Beheshti University of Med¬ical Sciences (IR.SBMU.RIDS.REC.1395.423). The record files of the oral pathology department, Shahid Beheshti University of Medical Sciences, and the pathology departments of Loghman and Imam Khomeini hospitals from 2007 to 2016 served as the source of material. We reviewed the pathology reports with a diagnosis of benign or malignant tumors in the oral and maxillofacial region in patients older than 60 years. Non-tumoral lesions were excluded. The oral and maxillofacial region in this study was defined as any site in the oral cavity including the hard tissue and soft tissue (excluding pharynx and tonsils), paranasal sinuses, nasal cavity, nasopharynx, and major salivary glands. Lesions in the posterior third and the base of the tongue were also included. Skin tumors were excluded because most patients with skin lesions are treated in dermatology centers. Record files with missing data or indefinite diagnosis were excluded. Then age, gender, tumor location, and microscopic diagnosis were assessed and classified in tables. The data were analyzed in SPSS (version 21) using Chi-square and one-way ANOVA tests. The P-value < 0.05 was considered statistically significant.

Results

A total number of 135427 samples were recorded in these centers from 2007 to 2016. Of these, 551 cases were tumoral lesions in the orofacial region (0.29%). They generally had the highest frequency in the 7th decade of life (ranging from 60 to 95 years, with a mean age of 71 years) which was statistically significant with the one-way ANOVA test (p=0.00). Of the 551 cases diag¬nosed with neoplasms, 322 (59.2%) were male and 222 (40.8%) were female. Chi-square exact test in¬dicated statistically significant difference between males and females (p=0.007). The most common location was the oral cavity (52%). Chi-square test showed that the frequency of oral lesions was significantly higher in the oral cavity than in other areas (p=0.000) (Table 1).

Table1: Distribution of benign and malignant neoplasms of geriatric patients based on location.

Tumor	location				
	Oral cavity	Sinonasal	Parotod/ submandible	nasopharynx	total
Malignant	256 60.8%	76 18.1%	70 16.6%	19 4.5%	421 100%
Benign	27 22.0%	29 23.6%	66 53.7%	1 0.8%	123 100%
Total	283 52.0%	105 19.3%	136 25.0%	20 3.7%	544

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). Out of 551 samples, 95.59% were found in soft tissue and 4.41% in bone. Primary neoplasms accounted for 544 cases (98.73%), seven cases (1.27%) were metastatic tumors with tendency to male (85.71%) and parotid gland (71.42%) while SCC was the most common neoplasm (46.50%). The frequency of malignancies (77.38%) was tree times that of benign tumors (22.61%). Five different types of tumors were categorized (Figures 1 and 2).

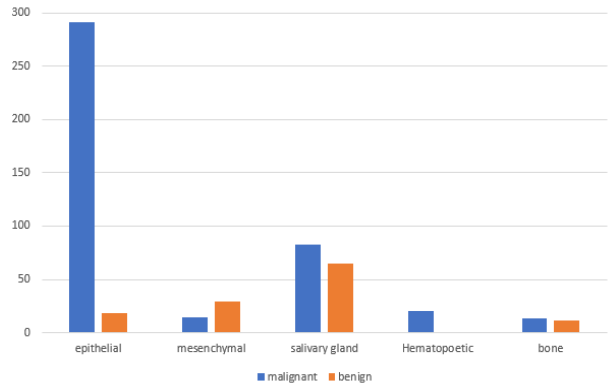

Figure1: Distribution of benign and malignant neoplasms based on microscopic groups.

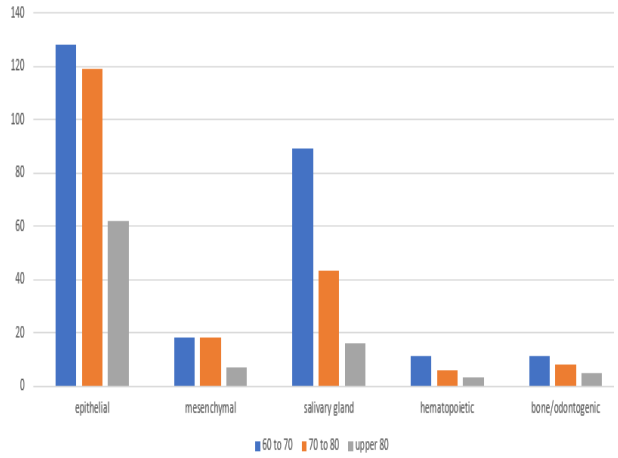

Figure2: Distribution of microscopic groups based on decades of life.

Table 2 shows the distribution of tumor type and location in the epithelial group In the salivary group, mucoepidermoid carcinoma (MEC) (n=34), pleomorphic adenoma (PA) (n=30) and Warthin tumor (n=29) were the most common tumors, in respective order. Mesenchymal group made up 7.90% of tumors and lipoma was the comments lesion. Among osteogenic/odontogenic tumors (4.41%), osteosarcoma (50%) and solid ameloblastoma (33.33%) were the most common lesions with male predominance. The hematopoietic group constituted 3.67% of the lesions (19 lymphomas and 1 plasmacytoma) with sinonasal region predominance (40%). Table 3 shows the distribution of tumor type in oral cavity (Table 2) (Table 3).

Table2: Distribution of microscopic subtypes of epithelial groups based on tumors' location.

Microscopic diagnosis	Tumor Location				
	Oral Cavity	Sinonasal	Parotid /submandible	Nasopharynx	Total
Inverted Papilloma	1 5.6%	17 94.4%	0 0.0%	0 0.0%	18 100.0%
Squamous Cell carcinoma	207 81.8%	30 11.9%	11 4.3%	5 2.0%	253 100.0%
Nasopharyngeal Carcinoma	0 0.0%	1 33.3%	0 0.0%	2 66.7%	3 100.0%
Basaloid / Sarcomatoid Squamous Cell carcinoma	2 66.7%	1 33.3%	0 0.0%	0 0.0%	3 100.0%
Sinonasal carcinoma	0 0.0%	2 100.0%	0 0.0%	0 0.0%	2 100.0%
Undifferentiated/ Anaplastic carcinoma	1 12.5%	1 12.5%	2 25.0%	4 50.0%	8 100.0%
Verrucous carcinoma	13 92.9%	1 7.1%	0 0.0%	0 0.0%	14 100.0%
Malignant Melanoma	2 25.0%	6 75.0%	0 0.0%	0 0.0%	8 100.0%
Total	226 73.1%	59 19.1%	13 4.2%	11 3.65	309 100.0%

Table3: Distribution of tumor type in oral cavity.

Oral cavity	Microscopic group					
	epithelial	mesenchymal	salivary	Bone/ osteogenic	Hematopoetic	Total
Tongue	62 (93%)	3 (4.2%)	1 (1.4%)	1 (1.4%)	0	67 (100%)
Gingiva	48 (82.7%)	8 (13.9%)	2 (3.4%)	0	0	58 (100%)

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Oral cavity	Microscopic group					
	epithelial	mesenchymal	salivary	Bone/ osteogenic	Hematopoetic	Total
Buccal mucosa	35 (81.6%)	5 (11.6%)	1 (2.3)%	2 (4.6)%	0	43 (100%)
Palate	19 (59.7%)	2 (6.2%)	9 (27.9%)	1 3.1%	1 3.1%	32 100%
mouth floor	22 91.7%	2 8.3%	0	0	0	24 100%
Retrom olar	6 100%	0	0	0	0	6 100%
Mandible	0	0	0	1 (11.2%)	8 (88.8%)	9 (100%)
Maxilla	0	0	0	0	3 (100.0%)	3 (100.0%)
Total	226	24	14	6	43	283

Discussion

In the current research, about 95.6% of the neoplasms were found in soft tissues, which is similar to the findings of Saravani et al.(4) The frequency of malignancies was 77.38%, which is in agreement with some studies (1, 4, 5-8), but inconsistent with the study by de Vasconcelos Carvalho et al.(6) who reported benign tumors to be 1.5 times as common as cancers. In the present study, the highest rate of involvement was in the seventh decade of age (47.61%). This is also the most common decade in other studies.(4,9-11) In our research, there was a male predominance, which is observed in most studies.(4, 5, 9,10,12) However, some authors reported female predominance.(11,13) In the current study, the most common location of lesions was the oral cavity (52.0%), followed by major salivary glands and sinonasal areas. Ajaya et al. (14) also reported the most common site of lesions to be the oral cavity, followed by major salivary glands. Moreover, Subhashraj et al. (12) indicated the oral cavity, salivary glands, and maxillary sinus as the most common locations in the orofacial region. In our study, among the lesions of the oral cavity, the tongue was the most common site followed by the gingiva. The most common location in other studies was the gingiva (4), buccal mucosa (5, 9), and labial mucosa.(11) One of the strengths of the present study was the classification of lesions into five categories: epithelial, salivary, hematological, mesenchymal, and osseous/odontogenic. In other studies, these lesions are reported in one group.(4,13) As per our classification, epithelial tumors were the most common microscopic group, followed by salivary gland tumors, which is consistent with other studies.(12,14) SCC was the most common lesion in the present study, as is the case in other studies.(4,9, 5,7,10,11) The male to female ratio was 1.34 in epithelial tumors, and the oral cavity was the most common location, followed by the sinonasal area. Since SCC was the most common type of cancer, the high prevalence of cancer in men can be justified. SCC is more prevalent among older male smokers. Another significant problem is hookah smoking, which is wrongly thought to be less harmful than cigarette smoking and is commonly served in Iranian restaurants and traditional cafes.(15) In this group, inverted papilloma and verrucous carcinoma (VC) were the common tumors after SCC. According to Saravani et al. report (4), VC was the second most common tumor. The difference between our study and theirs can be explained by the fact that they did not evaluate the sinonasal region, and that inverted papillomas are one of the most common benign tumors in the sinonasal area.(16) In the salivary group, mucoepidermoid carcinoma, pleomorphic adenoma and Warthin tumor were the most common tumors. In the study by Saravani.(4) poleomorfic adenoma (PA) was also the most common benign tumor among this age group. However, in malignant salivary tumors, the prevalence of adenoid cystic carcinoma in geriatric patients was higher than in mucoepidermoid caecinoma (MEC) in several studies .(4,14) In the mesenchymal group, lipoma was the most common tumor in the present study. In the hematopoietic group, the most common tumor was lymphoma. In contrast, the frequency of multiple myeloma was higher in older adults in Mohtasham et al. study.(17) The most common intraosseous tumors in the present study were osteosarcoma and ameloblastoma. Com-

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bining all the sarcomas in this study reveals that the frequency of sarcomas in the orofacial area was 5.7%. Among all sarcomas, osteosarcoma was also the most common malignancy, which is consistent with Atarbashi-Moghadam et al. study.(18) In the present study, 1.27% of the lesions were metastatic tumors, most of which were located in the parotid gland. Furthermore, most of them were found in male patients. In an investigation by Lee et al.(19) the frequency of oral metastatic lesions was 1.03% of all malignant tumors in this area with a male predominance. Kılıçkaya et al.(20) reported that about 25% of parotid tumors were metastatic often with head and neck origin because the parotid gland and its associated lymph nodes act as filtering centers for the head and neck region .(20,21)

Conclusion

In this study, oral and maxillofacial neoplasms were most often observed in patients in their 70s with a male predominance. SCC was the most common tumor. The frequency of cancers was three times that of benign tumors, which emphasizes the need for screening examinations for older adults.

Acknowledgments

None

Authors'contributions

Saedeh Atarbashi Moghadam: Conceptualization, Methodology, Writing - Review & **Editing Anahita Abolghasemi:** Resources, Investigation, Visualization **Amir Nader Emami Razavi:** Methodology, Visualization **Farahnaz Bidari Zerehpoosh:** Writing - Original Draft, Data Curation **Sepideh Mokhtri:** Funding acquisition, Project administration, Supervision **Seyedeh Sara Bagheri:** : Writing - Review & Editing Resources

Conflict of Interests

The authors declare no conflict of interest.

Ethical declarations

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Availability of data and material

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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