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Research Paper: Connective Tissue Lesions of the Oral Cavity: a Survey of 783 Cases in Major Oral Pathology Center in Iran

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ABSTRACT

Introduction: Oral mesenchymal lesions account for a large and diverse range from reactive to tumoral lesions. Many studies have been conducted on the frequency of reactive lesions in different countries, though few studies are available on the frequency of soft tissue neoplasms. The present study aimed to investigate the frequency of these lesions in a major oral pathology center in Iran

Materials and Methods: This retrospective study was carried out on the documents of Oral Pathology Department, Shahid Beheshti University of Medical Sciences, Iran. Files with a diagnosis of oral mesenchymal lesions were selected. The lesions were categorized into "reactive" and "neoplastic" groups. Chi-square, Kruskal-Wallis, Fisher exact, and T-test were used for statistical analysis.

Results: During the 11 years, 783 patients had oral mesenchymal lesions (22.24%). From these cases, 82.12 % had reactive lesions and 17.75% showed neoplastic lesions. The majority of cases were in their 6th decade of life and the female to male ratio was 1.49:1. Gingiva was the most common site of involvement (45%). 98.46% of the neoplastic lesions were benign and 1.4% were malignant. The most common reactive lesion was irritation fibroma, epulis fissuratum, and pyogenic granuloma respectively. Giant cell fibroma and lipoma were the most common neoplasm.

Conclusion: This study provides a large set of demographic and histopathological data on reactive and neoplastic lesions of the oral connective tissue lesions and showed the rate of reactive lesions was approximately 4.6 times higher than neoplastic lesions. Benign mesenchymal lesions were also 70 times more common than sarcomas.

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Introduction

Connective tissue lesions include a large number of various entities extending from reactive lesions to neoplasms. Reactive conditions have mesenchymal origin and vary from fibrous hyperplasia to exuberant proliferation of granulation tissue. Tumors of connective tissue are heterogeneous. Traditionally, these tumors are divided into subgroups of fibrous, fibrohistiocytic, myofibroblastic, vascular, neural, muscular, adipose, and other types of tissue.(1) Sarcomas are rare cancers originating from transformed cells of mesenchymal lineage with a broad range of histopathologic features .(2) Frequent studies have been conducted on the prevalence of reactive lesions in different countries In these studies, the most common reactive lesions included irritation fibroma, pyogenic granulomas, and epulis fissuratum (3-11). However, epidemiological studies on benign connective tissue tumors are scarce because previous research had been conducted on benign lesions of the oral mucosa or all lesions of the oral cavity which makes it difficult to use their information for mesenchymal tumors .(12-14) On the other hand, some researchers preferred to evaluate each of the mesenchymal tumors separately .(15-18) Thus the aim of this study was to investigate the frequency of oral mesenchymal lesions in one of the major oral pathology centers in Tehran, Iran

Materials and Methods

This study was approved by the ethics committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.DRC.REC.1397.052). The files of the Oral and Maxillofacial Pathology Department of Shahid Beheshti University of Medical Sciences, which were recorded during 11 years from 2007 to 2017, served as the source of the material for this descriptive, retrospective cross-sectional study. Clinical data including patient's age, gender, tumor site, and microscopic diagnosis of connective tissue (mesenchymal) lesions were assessed and classified in tables. Samples with unclear pathologic report or without demographic information were excluded. The lesions were categorized into "reactive" and "neoplastic" groups.

For statistical analysis, Chi-square, Kruskal-Wallis, Fisher exact, and T-test were used in SPSS software version 21 (IBM Corp., Armonk, N.Y., USA) and statistical significance was set at P-value < 0.05.

Results

Among 3520 biopsy reports documented in the named center, 783 patients (22.24%) had connective tissue lesions, 643 of which (82.12%) were reactive, and 140 cases (17.75%) were neoplastic. 468 cases (59.77%) were female and 314 cases (40.10%) were male. The frequency of reactive and neoplastic lesions in male and female were showed in figure 1.

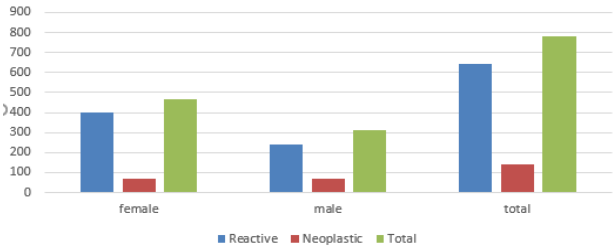

Figure1: Distribution of reactive and neoplastic lesions based on gender.

Pearson Chi-Square test showed that reactive lesions compared to neoplastic lesions in women were significantly higher than men (P-value = 0.002).

The percentage of benign lesions (reactive and neoplastic) in women (60%) is higher than men (40%). However, in sarcoma cases, the percentage of lesions in the male group (54.5%) is higher than the female group (45.5%). However, considering the sex, there was no statistically significant difference between malignant and benign lesions (P-value = 0.32). Most cases were diagnosed in the sixth decade of life. The mean age for reactive and neoplastic lesions was 44.70±18.65 and 41.34 ±19.35 years, respectively. In neoplastic group, the mean age of patients with benign and malignant lesions were 44.09±18.80 and 43.09±20.82 years, respectively.

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Gingiva (45%) was the most common site in both reactive and neoplastic groups. In the reactive group, gingiva (50%) and vestibules (19.9%) were more common than other locations (Table1).

Table-1: Distribution of reactive and neoplastic lesions based on the affected site. Based on the Fisher exact test, there was a statistically significant relationship between the affected site and the type of lesion (P-value <0.000).

Location	Type of lesions		Total N (%)
	Reactive N (%)	Neoplastic N (%)	
Gingiva	320(49.8%)	34(24.3%)	354(45.2%)
Vestibule	128(19.9%)	3 (2.1%)	131(16.7%)
buccal mucosa	78 (12.1%)	30(21.4%)	108(13.8%)
Palate	26 (4.0%)	10 (7.1%)	36 (4.6%)
Lips	33 (5.1%)	15(10.7%)	48 (6.1%)
Tongue	40 (6.2%)	28 (20%)	68 (8.7%)
floor of mouth	4 (0.6%)	1 (0.7%)	5 (0.6%)
Retromolar	11 (1.7%)	9 (6.4%)	20 (2.5%)
maxillary sinus	0 (0.0%)	3 (2.1%)	3 (0.4%)
Maxilla	0 (0.0%)	2 (1.4%)	2 (0.3%)
Mandible	0 (0.0%)	4 (2.9%)	4 (0.5%)
Submandible	0 (0.0%)	1 (0.7%)	1 (0.1%)
buccla mucosa + lip	1 (0.2%)	0 (0.0%)	1 (0.1%)
tongue+ floor of the mouth	1 (0.2%)	0 (0.0%)	1 (0.1%)
Total	642 (100%)	140(100%)	782 (100%)*

* In one case, the location was unknown.

The most common lesions were irritation fibroma (IF) (22.1%) followed by epulis fissuratum (EF)(17.4%), pyogenic granuloma (PG) (17.1%). Almost all reactive lesions are more frequent in females except PGCG and traumatic neuroma (Figure 2).

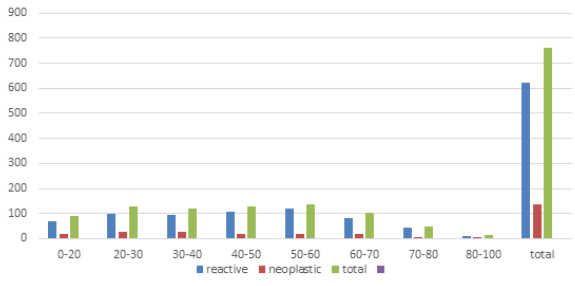

Figure2: Distribution of reactive and neoplastic lesions based on decades of life.

According to the Chi-square test, there was no significant relationship between age groups and the type of reactive and neoplastic lesions (P-value = 0.271).

Among reactive lesions, EF revealed the highest age range and POF the lowest. There was a significant relationship between age and the microscopic subgroup of reactive lesions (P-value <000).

In the neoplastic group, common lesions included giant cell fibroma (GCF) (5.9%) and lipoma (3.3%). Gingiva (24.3%), buccal mucosa (21.4%), and tongue (20%) were more common than other locations. (P-value < 0.000). GCF, Lipoma, and Neurofibroma were more common in men, but hemangiomas were more common in women (Table-2).

Table-2: Distribution of neoplastic subgroups based on gender. Chi-square test showed no significant relationship between gender and neoplastic subtypes (P-value = 0.423)

		Sex		Total N(%)
		Female N (%)	Male N(%)	
Neoplastic	giant cell fibroma	22 (32.8%)	24 (33.3%)	46 (33.1%)
	lipoma	9 (13.4%)	17 (23.6%)	26 (18.7%)
	hemangioma	13 (19.4%)	6 (8.3%)	19 (13.7%)
	neurofibroma	7 (10.4%)	10 (13.9%)	17 (12.2%)
	lymphangioma	4 (6.0%)	1 (1.4%)	5 (3.6%)
	spindle cell tumor	2 (3.0%)	1 (1.4%)	3 (2.2%)
	PEN	0 (0.0%)	1 (1.4%)	1 (0.7%)
	FH	1 (1.5%)	0 (0.0%)	1 (0.7%)
	fibromyxoid tumor	1 (1.5%)	2 (2.8%)	3 (2.2%)
	myofibroma	1 (1.5%)	0 (0.0%)	1 (0.7%)
	angiomyoma	1 (1.5%)	0 (0.0%)	1 (0.7%)
	hemangioendothelioma	1 (1.5%)	0 (0.0%)	1 (0.7%)
	schwanoma	0 (0.0%)	1 (1.4%)	1 (0.7%)
	fibromatosis	0 (0.0%)	2 (2.8%)	2 (1.4%)
	chorisitoma	0 (0.0%)	1 (1.4%)	1 (0.7%)
	spindle cell sarcoma	2 (3.0%)	3 (4.2%)	5 (3.6%)
	MFH	2 (3.0%)	1 (1.4%)	3 (2.2%)
	rhabdomyosarcoma	0 (0.0%)	1 (1.4%)	1 (0.7%)
	MPNST	1 (1.5%)	1 (1.4%)	2 (1.4%)
	total	67 (100.0%)	72 (100.0%)	139 (100.0%)

Between neoplastic lesions, the mean age of lipoma patients was higher than the rest, and neurofibroma showed a lower mean age. There was a significant relationship between age and the microscopic subgroup of neoplastic lesions. (P-value = .02). Spindle cell sarcoma (0.63%), malignant fibrous histocytoma (0.38%), malignant peripheral nerve sheath tumor (0.25%), and rhabdomyosarcoma (0.12%) were the malignant lesions.

Discussion

In the present study, reactive lesions were present in 18.26% of oral biopsies, which is consistent with several other studies.(5,6,10) The percentages mentioned in various studies varied from 10.6% to 48%,(3- 7, 9- 11, 19) however, in most of these articles, the sample size was less than our study, so the large sample size of current study make the statistics more reliable. In the current study, neoplastic lesions accounted for approximately 4% of all lesions, similar to Mendez et al.(13)The ratio of reactive to neoplastic lesions was approximately 4.6. Sixty percent of the patients were female and the most common site of the lesion was gingiva.

In the reactive lesions group, 62.36% of patients were female. In previous studies also, females showed a higher percentage.(3-7, 9-11]) The mean age in the present study was 44.7 and the highest number was in the 6th decade. Several studies reported lower age averages,(3-5, 7, 9, 19) but the Maturana-Ranirez et al .(10) found that the more common decade to be the 6th, which is similar to our study. The most common sites were gingiva and vestibule, respectively. Almost all studies in this area mentioned gingiva as the most common site.(3-7, 9, 19)Aghbali et al, (19) like this study, mentioned vestibule as a second most common site, but in other studies, the buccal mucosa (4, 9, 11)

or the tongue (7)was in the second place. The commonest lesions in the current study were IF, EF, PG, and PGCG, respectively. In many studies, IF has been reported as the most common reactive lesion of the oral cavity. (4, 9, 10, 11, 19) But in other studies, PG was considered the most common lesion.(3, 5, 8) Dutra et al, (6) also described EF as the most common lesion. In all reactive lesions the female sex was predominant, but PGCG was found more in men, similar to that found in Dutra et al,(6) and Zarei et al.(8)

Our finding demonstrated that 17.75% of mesenchymal lesions were neoplastic with a slight male predilection (51.79%). The mean age of neoplastic lesions was slightly lower than reactive ones and more common in the third decade of life. There are few epidemiological studies on benign neoplastic lesions with a mesenchymal origin, so it is difficult to compare the data obtained in this research with other studies because previous studies have examined the total benign lesions of the oral mucosa or the entire lesions of the oral cavity (soft & hard tissues).(12-14, 20)In the tumoral group, the most common lesions were GCF, lipoma, hemangioma, and neurofibroma, respectively. In previous studies, hemangioma and lipoma were reported as common mesenchymal tumors.(14, 20) GCF accounted for about 1.3% of all oral biopsies. Others reported the prevalence of 1.76% (12) and 1.62% (6) of the total oral lesions. Mendez et al,(13) no found any cases of GCF. Maybe, one of the reasons for the difference among these statistics is the similarity of this lesion to IF and squamous papilloma, which leads to incorrect diagnosis.(17) The mean age of patients with GCF was 39.58 years with relatively equal sex predilection, and the most common sites were the tongue and gingiva. The average age in other studies was 28 ,29 and 39 years.(17, 21, 22) Others had found a higher prevalence in women , (23) or men (21) or no specific sexual predilection,(17, 22) and report the gingiva and tongue as the most common sites for this lesion.(17, 21, 22) In this study, lipoma accounted for 3.3% of mesenchymal lesions and among mesenchymal tumors, the frequency was 17.26%. The average age for oral lipoma was 53.58 years with a male predilection and the buccal mucosa as the common location. Alkhateeb

,(14) reported the frequency of 6.5% among mesenchymal tumors. Juliasse et al,(16) found the lipoma accounted for 0.4% of total oral lesions. The average age was 57.6 years and the most common location was buccal mucosa, which is similar to our findings on age and location. In previous studies oral lipoma demonstrated a more similar sex distribution or a greater frequency among males (24, 25).

This tumor has different subgroups, but in our study, lipoma and fibro lipoma were reported. It was suggested that due to the low prevalence of this lesion in the oral cavity, multi-center studies will be very helpful in obtaining information related to this lesion.(16)

In the current research, hemangioma/vascular malformation accounted for 2.4% of total mesenchymal lesions and 13.66% of neoplastic lesions. The mean age was 48 years with a 2:1 female-to-male ratio and a tendency to involve the lip. Alkhateeb (14) found that this lesion accounted for 8.8% of benign oral lesions. Correa et al (18) obtained the prevalence of it to be about 2.2% of oral lesions and the lip and ventral surface of the tongue as a common sites. (18)

The frequency of neural lesions in our study was 0.6% of total oral lesions, 2% of mesenchymal lesions, and 16% of neoplastic lesions. In neural subgroups, the most common lesion was neurofibroma, which averaged 33 years of age and was more common in men. The most common site was the gingiva, tongue, and buccal mucosa. Alotaiby(15) mentioned that neural lesions accounted for 0.2% of oral lesions. Neurofibroma was also reported as the most common neural lesion, with an average age of 47.4 years, a female tendency and the commonest sites of involvement were gingiva and palate. (15) Sarcomas accounted for 0.3% of oral lesions, 1.4% of mesenchymal lesions, and 8% of tumoral lesions in this research. Mendez (13) stated that the frequency of oral sarcomas is 10% of oral

lesions.

In consistent with us, the male predilection was reported for oral sarcomas.(2, 26, 27) The most common lesions were spindle cell sarcoma and MFH, respectively. The commonest locations were the gingiva/mandible and the maxillary sinus.Pandy (27) mentioned the most common oral sarcomas were spindle cell sarcoma and rhabdomyosarcoma and reported the buccal mucosa as the most common site.(27)

Conclusions

This study was conducted with a higher sample size than other similar studies and found that the rate of reactive lesions was approximately 4.6 times higher than neoplastic lesions. Benign mesenchymal lesions were also 70 times more common than sarcomas. This study provides a large set of demographic and histopathological data on reactive and neoplastic lesions of the oral connective tissue lesions, which will be helpful for accurate diagnosis

Acknowledgement

None

Conflict of interest

None

Authors' contribution

SAM. Conceptualization, writing and editing manuscript; SR, Data gathering, editing manuscript; SS, Writing and editing manuscript

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