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The prevalence of oral and maxillofacial pathologic lesions in pathology centers of Zanjan (Iran) over a 5-years period (2014-2020)

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ABSTRACT

Background and Objectives: The oral and maxillofacial region is exposed to many harmful agents and can be affected by a wide range of reactive, infectious, cystic, precancerous, and neoplastic lesions. This study aimed to determine the prevalence of oral and maxillofacial pathological lesions in pathology laboratories in Zanjan.

Materials and Methods: This retrospective descriptive study was conducted in the period 2014-2020 by referring to the hospitals and laboratories with pathologists in Zanjan. Information about patients with histopathological lesions of oral and maxillofacial region was extracted, and studied in terms of age, gender, location and histopathological type of lesion. Finally, the collected data were entered into SPSS software version 22 and statistically analyzed ($P<0.05$).

Results: A total of 176 histopathological lesions were investigated. Of them, 120 cases (58%) were female and 74 (42%) were male. The mean age of the patients was 39.4 years. The most prevalent lesion was periapical cyst (14.8%). In terms of tissue involved, the most lesions were related to soft tissue (67%) and in terms of anatomical location, the most lesions were gingival mucosal lesions (35.2%).

Conclusion: The prevalence of pathological lesions was higher in females than in males. Soft tissue lesions were more than hard tissue lesions. Gingival mucosal lesions were the most prevalent and lesions of the floor of the mouth and nasal vestibule lesions were the least prevalent ones. Given the histopathologic nature of lesions, periapical cyst was the most prevalent lesion.

Keywords: Oral and maxillofacial pathological lesions; Oral lesions; Biopsy; Prevalence.

Introduction

The oral and maxillofacial region has been considered as a mirror of general health. It can be affected by a wide range of reactive, infectious, cystic, precancerous, and neoplastic lesions and conditions, some of which could pose a significant health problem. While the majority of the nonneoplastic lesions of the oral cavity are limited and harmless, certain lesions are considered premalignant and others can result in serious consequences, even death, if untreated [1]. Jaw bones and the associated soft tissues might be potential locations for different lesions, including cysts, inflammatory lesions and neoplasms with different radiographic features such as radiolucent, radiopaque and a mix of both; these lesions might be located around the tooth root, around the crown and in the inter-radicular area and they might also have no relation with teeth.

Based on another classification, intraosseous lesions can be classified as inflammatory lesions, cysts, benign tumors, malignant neoplasms and osseous diseases found in the jaws and as the osseous manifestations of systemic conditions. Differentiation of these lesions from the normal and anatomic structures of the jaws is of particular importance and since a dentist might be the first individual to diagnose these lesions, it is very important to have a proper knowledge of the prevalence and characteristics of these lesions for diagnosis and treatment planning [2]. There are several studies from around the world on the relative frequency of oral and maxillofacial region lesions, but there have been no studies on the relative frequency in Zanjan.

Materials and Methods

This retrospective descriptive study was conducted in the period 2014-2020 by referring to the archives of hospitals with head and neck lesions and laboratories with pathologists in Zanjan. Information about patients with histopathological lesions of mouth, head and neck was extracted and recorded, and patients were studied in terms of age, gender, location and histopathological type of lesion. The data collection tool was a checklist including demographic variables of age, sex, histopathological type of lesion and location of the lesion in terms of exact anatomical location and tissue involved, which were collected and designed after past relevant studies and consultation with professors of Zanjan Dental School. Because the variables were objective, there was no need to determine validity and reliability. Finally, the collected data were entered into SPSS software version 22 and statistically analyzed ($P<0.05$).

Results

In this study, pathological lesions of 176 people including 74 men and 102 women with an age range of 4 to 96 years (mean age 39.4 years) were evaluated (Table 1-4). Among 176 pathology samples, 118 cases (67%) were related to soft tissue and 58 cases (33%) were related to hard tissue (Table 2-4). Among 176 pathology specimens, 62 cases (35.2%) were in gingival mucosa, 31 cases (17.6%) were in posterior mandibular region, 15 cases (8.5%) were in cheek mucosa, 14 cases (8%) were in tongue, 14 cases (8%) were in the posterior region of the maxilla, 11 cases (3.6%) were in the anterior region of the maxilla, 10 cases (5.7%) were in the skin of the face and nose, 8 cases (4.5%) were in lips area, 4 cases (2.3%) were in the palate area, 3 cases (1.7%) were in the anterior mandible, 2 cases (1.1%) were in the floor of the mouth and 2 cases (1.1%) were in the nasal vestibule area was reported (Table 3-4). Among 176 pathology specimens, 26 cases (14.8%) periapical cysts, 17 cases (9.7%) squamous cell carcinoma, 13 cases (7.4%) pyogenic granuloma, 13 cases (7.4%) irritation fibroma, 12 cases (6.8%) epulis fissuratum, 12 cases (6.8%) dentigerous cysts, 10 cases (5.7%) peripheral ossifying fibroma, 10 cases (5.7%) peripheral giant cell granuloma, 6 cases (3.4%) mucocele, 6 cases (3.4%) melanotic nevus, 6 cases (3.4%) oral lichen planus, 6 cases (3.4%) odontogenic keratocyst, 3 cases (1.7%) hemangioma, 3 cases (1.7%) central giant cell granuloma, 3 cases (1.7%) fibrosis dysplasia, 2 cases (1.1%) Squamous papilloma, 2 cases (1.1%) florid cemento-osseous dysplasia, 2 cases (1.1%) Inflammatory hyperplasia, 2 cases (1.1%) Residual cyst, 2 cases (1.1%) ameloblastoma, 2 cases (1.1%) dermoid cyst, 2 cases (1.1%) giant cell fibroma, and the remaining lesions each in 1 case (0.6%) including sialadenitis, adenolipoma, epidermal inclusion cyst, Hematoma, Benign epithelial cyst, Ameloblastic fibroma, Cylindroma, desquamative gingivitis, Vercosis carcinoma, calcifying odontogenic cyst, Traumatic neuroma, pleomorphic adenoma were reported. (Table 4-4). Chi-square test was used to examine the relationship between gender and involved tissue and the result showed that there is a statistically significant relationship between the two so that in female 76 cases (64.4%) involved soft tissue, which is about 2 times more than male (P.value=0.013). These results can be seen in Table 5-4. Also, T-test was used to compare the mean age in the two groups of soft tissue and hard tissue involved, which showed that there is a significant relationship between the two, so that the mean age in the group in which soft tissue was involved was higher than The group in which hard tissue was involved (P.value=0.014). These results can be seen in Table 6-4.

Table 1-4. Sex distribution.

Sex	*Count*	*Percent*
Famale	*102*	*58*
Male	*74*	*42*
Total	*176*	*100*

Table 2-4. Tissue involved distribution.

tissue	Count	Percent
Soft	118	67
Hard	58	33
Total	176	100

Table 3-4. Anatomical location distribution.

Anatomical location	Count	Percent
Gingival mucosa	62	35.2
Posterior mandibular	31	17.6
Cheek mucosa	15	8.5
Tongue	14	8
Posterior maxilla	14	8
Anterior maxilla	11	3.6
Skin of the face and nose	10	5.7
lips	8	4.5
Palate	4	2.3
Anterior mandibular	3	1.7
Floor of the mouth	2	1.1
Nasal vestibule	2	1.1

Table 4-4. Histopathological type of lesion distribution.

Type of Lesion	Count	Percent
Pyogenic granuloma	13	7.4
Melanotic nevus	6	3.4
Peripheral Ossifying Fibroma	10	5.7
Sialadenitis	1	0.6
Epulis fissuratoma	12	6.8
Adenolipoma	1	0.6
Periapical cysts	26	14.8
Irritation Fibroma	13	7.4
Epidermal inclusion cyst	1	0.6
Hematoma	1	0.6
Peripheral giant cell granuloma	10	5.7
Benign epithelial cyst	1	0.6
Dentigerous cysts	12	6.8
Mucocele	6	3.4
Hemangioma	3	1.7
Squamous papilloma	2	1.1
Central giant cell granuloma	3	1.7
Squamous cell carcinoma	17	9.7
lichen planus	6	3.4
Florid cemento osseous dysplasia	2	1.1
Ameloblastic fibroma	1	0.6

Type of Lesion	Count	Percent
Inflammatory hyperplasia	2	1.1
Residual cyst	2	1.1
Ameloblastoma	2	1.1
Odontogenic keratocyst	6	3.4
Cylindroma	1	0.6
Fibrosis dysplasia	3	1.7
Desquamative gingivitis	1	0.6
Vercosis carcinoma	1	0.6
Calcifying odontogenic cyst	1	0.6
Traumatic neuroma	1	0.6
Dermoid cyst	2	1.1
Pleomorphic adenoma	1	0.6
Giant cell fibroma	2	1.1
Hyperkeratosis	1	0.6
Glandular cyst	1	0.6
Nasopalatine duct cyst	1	0.6
Schwannoma	1	0.6
Total	176	100

Table 5-4. The relationship between gender and involved tissue.

			Involved tissue		Total	P.value
			Hard	Soft		
Sex	Female	Count	26	76	102	0.013
		Percent	44.8	64.4	58	
	Male	Count	32	42	74	
		Percent	55.2	35.6	42	
Total		Count	58	118	176	
		Percent	100	100	100	

Table 6-4. Relationship between age and tissue involved.

Tissue involved	Count	Mean age	P.value
Soft	118	41.83	0.014
Hard	58	34.51	

Discussion

The results of the present study, for the first time in Zanjan, determine the prevalence of pathological lesions of the oral and maxillofacial region based on sex, age, location and type of lesion. The high prevalence of these lesions in the population prompts oral health planners and policy makers to identify high-risk subsets and to optimize the allocation of health services as well as prevention programs in take the necessary and appropriate measures in this regard. According to the results of the present study, the prevalence of lesions was higher in women (58%) than men (42%). Hassanzadeh et al. Also concluded that the prevalence of lesions in women (52.9%) was higher than men (47.1%) [3]. In the study of Alhindi et al., it was found that the prevalence of lesions in women (52.8%) was higher than men (47.2%) [4]. Therefore, according to statistical analysis and the results of various studies, it can be said that the frequency of pathological lesions of

the oral and maxillofacial region is higher in women than men. In the present study, it was found that (67%) the lesions were related to soft tissue and (33%) were related to hard tissue. In the study of Aljazaeri et al. (66.96%) of the lesions were related to soft tissue and (33.04%) were related to hard tissue, which was closer to the results of our study [5]. Also in the study of Alhindi et al. (62.8%) of the lesions were related to soft tissue and (37.2%) were related to hard tissue [4], but in the study of Fierro et al. (35.9%) of the lesions were related to soft tissue and (64.1%) were related to hard tissue, which compared to the results of our study, the rate of soft tissue involvement was less recorded [6]. The differences between the results can be attributed to different criteria of pathologists regarding the prevalence of lesions, access to equipped centers, genetics and differences between different races [6].

The present study showed that based on the exact anatomical location, the most lesions were in the gingival mucosa (35.2%) and the least lesions were in the floor of the mouth and nasal vestibule (1.1%). In the study of Aljazaeri et al., The most lesions were observed in the tongue (18.1%) and the least lesions in the upper lip (2.14%) [5]. In the study of Fierro et al., the most lesions were in the posterior mandible (32.1%) and the least lesions in the floor of the mouth (0.7%), which was similar to the results of our study [6]. According to the results of the present study, in terms of histopathological nature of the lesions, periapical cysts had the highest value with 14.8%, followed by Epulis fissuratum and pyogenic granuloma with 9.7% each, respectively. However, in the study of Hassanzadeh et al., Peripheral Giant cell granuloma had the highest value with 13.3%, followed by inflammatory hyperplasia with 12.1% and fibroma with 8.6% in the second and third ranks [3]. In the study of Pardis et al., the most lesions with 21.6% were related to lichen planus, followed by inflammatory hyperplasia with 15.8% and SCC with 7.6% [7]. In the study by Moridani et al., OKC and periapical cysts each had the highest value with 7.39%, Irritation Fibroma with 6.30% were in the second place and periapical granuloma with 5.43% were in the third place [8].

The present study showed that the rate of soft tissue involvement in women (64.4%) was almost 2 times higher than men (35.6%). It was also found that the mean age in the group in which the soft tissue was involved was higher than the group in which the hard tissue was involved. In the study of Mohammad Ali et al., it was found that the rate of soft tissue involvement in men (53.3%) was higher than women (46.7%), which was different from the results of our study [1]. In the study of Pardis et al., the rate of soft tissue involvement in men (17.8%) and women (16.8%) was not significantly different [7]. In the study of Guedes et al., It was found that the rate of soft tissue involvement in men (45.61%) and in women (54.39%) was similar to the results of our study in terms of higher rate of soft tissue involvement in women [9].

Conclusion

The present study showed that:

- The prevalence of pathological lesions was higher in women than men.

- The prevalence of pathological lesions related to soft tissue was higher than hard tissue.

-The most common site of pathology was the gingival mucosa.

- In terms of histopathological nature, the most common lesion was periapical cyst.

Conflict of Interest

There is no conflict of interest to declare.

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