Evaluation the histopathological findings of oral lesions in patients referred to the pathology department of Semnan city (Iran)

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ABSTRACT

Background: The aim of this study was to evaluate the histopathological findings of oral lesions in patients referred to the pathology department of Kosar Hospital of Semnan city (Iran) in 2012-2018.

Materials and Methods: This population-based cross-sectional study was concocted on the histopathological findings of oral lesions 137 patients referred to the pathology department of Kosar Hospital of Semnan city (Iran) in 2012-2018. The sampling method was census. The data collection tool was a check including demographics and dentistry (type of dental lesion, location of the lesion, malignancy of lesions, origin of dental lesions, side of the lesion conflict, jaw involved, anterior-posterior position and type of biopsy). SPSS24 was used for data analysis and a significance level of less than 0.05 was considered.

Results: The most common type and the most common location of oral lesions were periapical cyst (16.7%) and periapical (28.3%); respectively. The most common sources of oral lesions were related to inflammation and connective tissue with 27.5 and 26.8%, respectively. Mandible (47.8%) was the most common involved jaw and 5.1% of reported lesions were malignant. In addition, the prevalence of periapical cyst (78.3 vs. 21.7%) and pyogenic granuloma (82.4 vs. 17.6%) were significantly higher in women than men (P-Value=0.035).The highest rates of periapical cyst (43.5%) and pyogenic granuloma (58.5%) were observed in the age group ≤30 and 31-40 years; respectively (P-Value=0.013).

Conclusion: This study suggests that the female patients and over 40 years should be more careful to check for periapical cyst. However, more detailed studies with higher sample sizes are recommended.

Keywords: Histopathological findings; Oral lesions; Periapical; Periapical cyst; Iran.

Introduction

Today, oral health and its impact on quality of life is clear to everyone in the world. Oral health is one of the factors involved in various life processes such as eating, tasting food, talking and laughing [1,2]. The oral cavity is covered by a mucous membrane called the epithelial layer; One of the functions of this layer is to

protect the underlying structures. Changes in this protective layer can endanger oral health. Histologically, in addition to epithelial cells, oral mucosa also contains mesenchyme cells, which each of these cells can become tumorous or undergo hyperplastic changes due to stimulation and trauma, eventually leading to oral mucosal lesions [3,4]. Various studies have reported the prevalence of oral mucosal lesions between 9.7 to 61.6% in adults [5]. Oral lesions can have different origins because the oral cavity is made up of different structures. In general, the pathological origin of oral lesions can be bone, connective tissue, epithelial, salivary glands, hematological, allergic, infectious or developmental defects [6]. Pathological processes such as periapical lesions, cysts or neoplasms can develop in the oral cavity; however, oral lesions do not necessarily have a local source and may spread in different ways depending on the nature of the lesion and manifest as another disease, therefore, recognizing these common lesions is very important [7]. Oral lesions are generally divided into benign and malignant, while a large proportion of them are benign and do not require active treatment, however, some of them may be associated with significant damage and become malignant [6,8]. Oral mucosal lesions have an adverse effect on oral health through changes in oral taste, difficulty swallowing, speech, lactation, and maxillary growth and development, and can have psychological and physical consequences [9].

Correct diagnosis of oral lesions is the key to successful treatment and requires proper cooperation between the clinician and the pathologist. Each oral lesion has clinical and historical characteristics that knowing these characteristics makes it possible for clinicians to diagnose lesions. However, there are many similarities in the clinical manifestations of different types of oral diseases, which reduces the possibility of a definitive diagnosis [10]. The main basis for diagnosing lesions is based on history, the patient's main complaint and systematic clinical examination. Some oral diseases have specific diagnostic symptoms. However, clinical evidence alone is usually not sufficient to diagnose them, and the final diagnosis is usually made by histopathological examination of the lesion [11,12]. Therefore, the most effective way to achieve an accurate diagnosis of oral lesions is tissue biopsy. However, the pathologist, in addition to examining the tissue sample, needs a history and clinical signs of the lesion to reach a final diagnosis. If for any reason one of these cases is deficient, it will be effective in clinical and pathological diagnosis, therefore, successful treatment requires

proper communication between clinician and He is a pathologist [13,14]. On the other hand, in order to diagnose oral lesions, their classification is important. Oral lesions are classified in different ways. Some researchers consider the location and type of tissue involved as criteria for classification, such as mesenchymal tissue tumors, ectoderm, and soft tissue tumors. Others consider the source of the disease as classification criteria, such as odontogenic cysts or reaction lesions. Some are based on radiographs of intraosseous lesions and some classify based on clinical appearance such as color, shape and surface of the lesion [15].

Pathological study of oral lesions in Iran can be in order to determine the prevalence of oral lesions in society and compare with other parts of the world. On the other hand, due to the fact that most skin diseases and sometimes internal diseases have manifestations of oral mucosa and can be diagnosed through the diagnosis of oral lesions skin or internal diseases, so, this study was designed to evaluate the histopathological findings of oral lesions in patients referred to the pathology department of Kosar Hospital of Semnan city (Iran) in 2012-2018.

Materials and Methods

I. Study Design and Subjects

This population-based cross-sectional study was designed to evaluate the histopathological findings of oral lesions in patients referred to the pathology department of Kosar Hospital of Semnan city (Iran) in 2012-2018. The population under study included all patients with oral lesions who referred to to the pathology department of Kosar Hospital of Semnan city (Iran) from 2012 to 2018. Considering that records of all patients with oral lesions referred to the pathology department were examined during the above-mentioned period, the sampling method was census and there was no need to calculate the sample size. Inclusion criteria consisted of records with definitive histopathological diagnosis of oral lesions. Exclusion criteria consisted of dental records with incomplete information.

II. Data Collection

In the present study, the data collection tool was a check including demographics and dentistry. Demographic variables included age, sex, level of education, and smoking history. Dental variables included type of dental lesion, location of the lesion, malignancy of lesions, origin of dental lesions, side of the lesion conflict, jaw involved, anterior-posterior position and

type of biopsy. Specialists used clinical examinations for differential diagnosis of lesions and, if necessary, laboratory tests and immunofluorescence. After biopsy, the samples were sent to the Department of Oral and Maxillofacial Pathology of Semnan Dental School for histopathological examination. The relevant microscopic slides were histologically examined by an oral and maxillofacial pathologist and after a re-examination of the sample, a definitive diagnosis was made.

III. Statistical Analysis

The relevant data were entered into the SPSS24 for analysis. In descriptive analyzes, mean and standard deviation were used for quantitative variables, and number and relative frequency were used for qualitative variables. Then, chi-square test was used to examine the relationship between malignancy of lesions and type of dental lesion with demographic variables in the patients under study and P-Value<0.05 was considered as a significant level.

Ethics Statement

This study was conducted according to the principles expressed in the Declaration of Helsinki and was approved by the Deputy of Research and Ethics Committee of Semnan university of medical Sciences (Iran).

Results

The aim of the population-based cross-sectional study was to evaluate the histopathological findings of oral lesions in patients referred to the pathology department of Kosar Hospital of Semnan city (Iran) in 2012-2018. A total of 138 patients with oral lesions were referred to the pathology unit of this center during this period. Table 1 shows the demographic characteristics of the patients under study. The mean (SD) age of patients was 39.78 (16.95) years. The numbers (%) of men and women were 52 (37.7) and 86 (62.3); respectively. In addition, 39.1% people had academic education and also 26.1% mentioned a history of smoking (Table 1). Table 2 shows the dental characteristics of the patients under study. The most common types of dental lesions were periapical cyst, pyogenic granuloma and granuloma with 16.7, 12.3 and 10.1%, respectively. The most common locations of the lesion were periapical, gum, buccal mucosa and tongue with 28.3, 18.8 and 11.6 and 10.90%; respectively. Also, 5.1% of reported lesions were malignant. The most common sources of oral lesions were related to inflammation and connective tissue with 27.5 and 26.8%, respectively. In terms of the conflict side, most of the lesion conflict occurred

on the left side (48.6). Mandible with 47.8% was the most common involved jaw and oxygenal biopsy was the most common type of biopsy with 80.4%. To examine the relationship between demographic variables and malignancy of lesions in the patients under study, Chi-square test was used which the results of this test showed that there is no statistically significant relationship between age, sex and education with malignancy of lesions (P-Value>0.05) (Table 3).

Table 4 shows the relationship between demographic variables and type of dental lesion in population under study. As can be seen, the results of chi-square test showed that there is a statistically significant relationship between sex with the type of dental lesion of patients, so that the prevalence of periapical cyst (78.3 vs. 21.7%) and pyogenic granuloma (82.4 vs. 17.6%) was significantly higher in women than men (P-Value=0.035). Also, a significant relationship was observed between age and this variable, so that the highest rates of periapical cyst (43.5%) and pyogenic granuloma (58.5%) were related in the age group≤30 and 31-40 years; respectively (P-Value=0.013). However, no statistically significant relationship was found between education and type of dental lesion (P-Value=0.771).

Table 1. Demographic characteristics of participants under study.

Qualitative Variables		Number	%
Sex	Female	86	62.3
	Male	52	37.7
	Total	138	100
Age (year)	≤30	42	30.4
	31-40	36	26.1
	>40	60	43.5
	Total	138	100
Education	Academic	54	39.1
	Nonacademic	84	60.9
	Total	138	100
History of smoking	YES	36	26.1
	NO	102	73.9
	Total	138	100

Table 2. Dental characteristics of participants under study.

Qualitative Variables		Number	%
Type of dental lesion	Periapical cyst	23	16.7
	Pyogenic granuloma	17	12.3
	Granuloma	14	10.1
	Other	84	60.9
	Total	138	100
Location of the lesion	Periapical	39	28.3
	gum	28	18.8
	Buccal mucosa	16	11.6
	Tongue	15	10.9
	Pericaronal	13	9.4
	Other	29	21
	Total	138	100
Malignancy of lesions	Yes	7	5.1
	No	131	94.9
	Total	138	100
Origin of dental lesions	Inflammation	38	27.5
	Tissue bond	37	26.8
	Evolutionary	14	10.1
	Mucocutaneous	12	8.7
	Epithelial	12	8.7
	Total	138	100
Side of the lesion conflict	Right	60	43.5
	Left	67	48.6
	Other	11	7.90
	Total	138	100

Jaw involved	Magzilla	41	29.7
	Mandible	66	47.8
	Missing	31	22.5
	Total	138	100
Anterior-posterior position	Anterior	41	29.7
	Posterior	82	59.4
	Missing	15	10.9
	Total	138	100
Type of biopsy	Oxygenal biopsy	111	80.4
	Excisional biopsy	27	19.6
	Total	138	100

Table 3. The relationship between demographic variables and malignancy of lesions in population under study by chi-square test.

Variable		Malignancy of lesions		P-Value
		Yes (%)	No (%)	
Sex	Male	1 (14.3)	51 (38.9)	0.190
	Famale	6 (85.7)	80 (61.1)	
	Total	7 (100)	131 (100)	
Age	≤30	1 (14.3)	41 (31.3)	0.309
	31-40	1 (14.3)	35 (26.7)	
	>40	5 (71.4)	55 (42)	
	Total	7 (100)	131 (100)	
Education	Non–academic	6 (85.7)	78 (59.5)	0.167
	Academic	1 (14.3)	53 (40.5)	
	Total	7 (100)	131 (100)	

Table 4. The relationship between demographic variables and type of dental lesion in population under study by chi-square test.

Variable		Malignancy of lesions				P-Value
		Periapical cyst (%)	Pyogenic granuloma (%)	Granuloma (%)	Other (%)	
Sex	Male	5 (21.7)	3 (17.6)	8 (57.1)	36 (42.9)	0.035
	Famale	18 (78.3)	14 (82.4)	6 (42.9)	48 (57.1)	
	Total	23 (100)	17 (100)	14 (100)	84 (100)	
Age	≤30	10 (43.5)	4 (23.5)	6 (42.9)	22 (26.2)	0.013
	31-40	6 (23.1)	10(58.8)	2 (14.3)	18 (21.4)	
	>40	7 (30.4)	3 (17.6)	6 (42.9)	44 (52.4)	
	Total	23 (100)	17 (100)	14 (100)	84 (100)	
Education	Non–academic	13 (56.5)	9 (52.9)	8 (57.1)	54 (64.3)	0.771
	Academic	10 (43.5)	8 (47.1)	6 (42.9)	30 (35.7)	
	Total	23 (100)	17 (100)	14 (100)	84 (100)	

Discussion

The process of diagnosing body lesions is a scientific and systematic process that guides the clinical physician towards the correct diagnosis of the disease [16]. Some lesions have specific signs or symptoms that allow quick and accurate diagnosis, but some lesions have a more complex diagnosis process and therefore clinical evidence alone is not sufficient for diagnosis. Oral lesions, which in most cases have similar clinical manifestations, can be classified into this category of lesions. Therefore, histopathological examination is required for the final diagnosis of these lesions. It is in such cases that the importance of cooperation and providing sufficient information about the lesion is determined between the treating physician and the pathologist. Advances in this science will lead to a better understanding of the pathogenesis of diseases and the identification of effective treatments [17,18]. The aim of the population-based cross-sectional study was to evaluate the histopathological findings of oral lesions in patients referred to the pathology department of Kosar Hospital of Semnan city (Iran) in 2012-2018. The results of this study showed the most common type and the most common location of oral lesions were periapical cyst (16.7%) and periapical (28.3%); respectively. The most common sources of oral lesions were related to inflammation and connective tissue with 27.5 and 26.8%, respectively. Mandible (47.8%) was the most common involved jaw and 5.1% of reported lesions were malignant. In addition, the incidence of periapical cyst (78.3 vs. 21.7%) and pyogenic granuloma (82.4 vs. 17.6%) were significantly higher in women than men (P-Value=0.035). The highest rates of periapical cyst (43.5%) and pyogenic granuloma (58.5%) were observed in the age group≤30 and 31-40 years; respectively (P-Value=0.013). Oral and maxillofacial pathology is the bridge between basic and clinical dental sciences.

Out study showed the most common type and the most common location of oral lesions were periapical cyst (16.7%) and periapical (28.3%); respectively. The most common sources of oral lesions were related to inflammation and connective tissue with 27.5 and 26.8%, respectively. Mandible (47.8%) was the most common involved jaw and 5.1% of reported lesions were malignant which was consistent with a number of studies conducted in this regard and yet was not consistent with some others. For example, in a cross-sectional study by Tortorici S et al. (2016) to determine the prevalence of oral mucosal non-malignant lesions in the western Ciclin region in the United Kingdom,

out of 2539 subjects, coated tongue was the most common lesion with 16.7% . In contrast, geographic tongue (1%), actinic cheilitis (0.8%), and erythroplakia (0.1%) were the rarest lesions [19]. In another study by Patil S et al. In India (2015) to assess the prevalence and distribution of oral mucosal lesions in 5,100 patients aged 98-60 years, smoker's palate (43%), denture stomatitis (34%), oral submucous fibrosis (30%), frictional keratosis (23%), leukoplakia (22%), and pyogenic granuloma (22% were the most common lesions [20]. In a cross-sectional study by Bajracharya et al. (2017) to determine the prevalence of oral mucosal lesions in Kathmandu, 111 biopsies were examined, of which 16 (14.4%) were neoplastic and 16 (14.4%) were benign. The most common location of oral lesion were buccal mucosa 23 (20.7%) and anterior gingiva 23 (20.7%). In addition, malignant oral lesions were more common in men than women. Finally, this study suggests that non-neoplastic and benign lesions are more common in the oral mucosa and that the buccal mucosa and anterior gingiva are the most common sites of lesions [21].

In a study conducted by Ghanaei FM et al with the aim of prevalence and types of oral lesions on 1581 people over 30 years old in Rasht, the prevalence of mucosal lesions was 19.4%. A higher prevalence of mucosal dysfunction was observed in men and the age group of 30-40 years. The most common mucosal lesions were fissured tongue (4%), fordyce granules (2.8%), geographic tongue (2.6%), pigmentation (2.5%); respectively [1]. In addition, a cross-sectional study on the prevalence of oral mucosal lesions in 5000 persons of the adult population, the prevalence of these lesions in this study was 15.5% and the most common lesions were normal anatomical changes [22]. The reasons for the difference in the prevalence of lesions in the various studies mentioned above can be due to differences in the studied populations, different criteria and diagnostic methods, different sample size and sampling method. Of course, it should be noted that nutritional status, race, health and oral habits can be effective in varying the prevalence of oral lesions in different countries Lack of clinical examination of the oral mucosa and failure to consider anatomical variations in our study can also cause this difference [23]. In the present study, there was a statistically significant relationship between age and the type of dental lesion which was consistent with the results of studies conducted in this field; these studies have reported a higher prevalence of oral lesions in elderly patients than in young people and reported a statistically significant

relationship between oral mucosal disorders and aging [24-27]. Of course, age is not the only factor associated with oral lesions, and the role of factors such as judges, trauma, poor oral hygiene, and dentures should be considered [24]. We also found the prevalence of periapical cyst (78.3 vs. 21.7%) and pyogenic granuloma (82.4 vs.17.6%) were significantly higher in women than men which was in line with various studies conducted in this area [23, 28]. For example, the study by Molania et al. (2016) showed that the prevalence of oral lesions in women is significantly higher than men (62.66 vs. 37.34%) [23]. However, in the studes of Delavarian et al.[29] and Jainkittivong et al. [29] did not report a relationship between gender and oral lesions. These studies have a number of strengths and weaknesses. Perhaps the most important strength of this study is the nature of its census and the evaluation of all patients with oral lesions over a period of 7 years. However , the study has limitations; the present study is a cross-sectional study with relatively low sample size , therefore, studies with high and equal sample size are recommended in order to accurate estimate of prevalence and the causal relationships.

Conclusion

This study suggests that the female patients and over 40 years should be more careful to check for periapical cyst. By knowing the types of common lesions and their location, more detailed examinations can be performed and measures to prevent them can be taken to reduce the frequency of lesions in the coming years. However, more detailed studies with higher sample sizes are recommended.

Acknowledgements

Conflict of Interest

There is no conflict of interest to declare.

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