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Prevalence of Oral Lesions Biopsies Among Different Laboratories

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ABSTRACT

Back ground: The oral cavity and jaws can be a host of multiple pathological lesions, which could be tumors, reactionary lesions, or cystic lesions**.**

Aims and Objectives: To evaluate the age and gender distribution of the oral lesions, as well as their types and relative frequencies.

Method: The data were collected from the private laboratories in Erbil city during a period from January 2018 to January 2023**.** Data related to the patient's age and gender, as well as the type, site, and histopathology diagnosis of the lesions, were evaluated.

Results: Oral lesions were more common in females (57.3%), malignant lesions represented 89 (30.4%) cases, and benign lesions prevalence was 28.7%. (84 cases), reactionary lesions were 59 (20. %) cases, cystic lesions were 49 (16.7%) cases, and immunologically mediated lesions were only 3.8%.

Conclusions: The results showed a high frequency of malignant tumors, which need more evaluation of etiological factors.

Key words: radicular cyst, malignant lesions, oral lesions, capillary hemangioma**.**

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INTRODUCTION

The oral mucosa is constantly under the influence of various internal and external stimuli ,so it exhibits a range of developmental disorders, irritation, inflammation ,and neoplastic conditions.[1] The oral cavity is the most common site for various tumors and tumor like lesions.[2] Tumors may be benign or malignant. Various studies have been done for malignant lesions whereas very few studies have been done on benign lesions and reactionary lesions of the oral cavity.[3] Benign lesions include fibroma, lipoma, hemangioma, pleomorphic adenoma and leiomyoma.

Oral lesions are encountered by ENT surgeons and dentists hence knowledge of incidence, presentation and histopathological features of oral lesions are beneficial for better diagnosis and treatment.[4] Different lesions affect the oral cavity and jaws. They include tumors of odontogenic origin as well as non-odontogenic tumors. The frequency or ratio of these lesions differs depending on the population and geographical location.[5] Other factors, such as age, gender, and localization, also define lesions.[6] Environmental factors such as viral infection, chronic malnutrition, trauma, and alcohol and tobacco intake have been fingered in the etiopathogenesis of these lesions.[7] Autoimmune diseases mean the targeting of self-antigens by the host immune system; the body's defense mechanism fails to distinguish between self' and non-self' antigens with the production of autoantibodies.[8] Autoimmune diseases affecting the orofacial region include connective tissue disorders like lichen planus, which is a common chronic autoimmune disease associated with immunological dysfunction, and vesiculobullous lesions like Pemphigus vulgaris, which appear orally either as superficial ulcers, small vesicles, or blisters.[9] Reactive hyperplastic lesions of the oral cavity may develop due to mild chronic irritation that stimulates a tissue repair response, which may represent an enlargement with a variation of normal anatomic structures. Reactive hyperplastic lesions include fibroepithelial polyp, oral pyogenic granuloma, giant cell granuloma, peripheral ossifying fibroma, and peripheral giant cell lesions. [10]

PATIENTS AND METHODS

The sample used in this study was a review of data of (293) patients of both genders with an age range of (1–93) years. The data were collected from the files of four private laboratories in Erbil city, in a period between January/ 2018 and January/ 2023**.**Data including (age, sex, and lesion site and type) were obtained from laboratory records derived from information provided in histopathology request forms. The lesions were divided into malignant, benign, reactionary, cystic lesions and immunologically mediated lesions. Incomplete clinical data reports with a doubtful lesion were excluded from the study. Lesion sites were divided into six anatomic regions, maxilla (gingiva/ alveolus), mandible (gingiva/alveolus), palate (soft and hard), buccal mucosa, tongue, and lip (upper and lower).The maxilla and mandible were subdivided into two regions, anterior, and posterior. The study was carried out with the approval of the Human Research Ethics Committee of the private laboratories. Results were tabulated and subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant**.**

RESULTS

Out of the 293 cases included in this study 125 were male (42.7%) and 168 were female (57.3%).Most of the patients were within the age rang (31 -45) years. (Table1).

Table1: Distribution of the lesions according to gender and age

Gender	Frequency	Percent
Male	125	42.7
Female	168	57.3
Total	293	100.0
Age group	Frequency	Percent
≤ 15	21	7.2
16 -30	57	19.5
31 -45	80	27.3
46 -60	74	25.3
61 -75	45	15.4
76 - 93	16	5.5
Total	293	100.0

*Malignant lesions represented 89 (30.4%) cases, while benign lesions prevalence was 29.7%. (87 cases), reactionary lesions represented 20.1% (50 cases), cystic lesions were 17% (50 cases), and immunologically mediated lesions represented 3.8% (11 cases). (Table 2)

Table2: Frequency of the lesions

Lesions	Frequency	Percent
Malignant lesions	89	30.4
Benign lesions	84	28.7
Reactionary lesions	59	20.1
Cystic lesions	50	17.0
Immunologically mediated lesions	11	3.8
Total	293	100.0

The most common type of malignant lesion was squamous cell carcinoma, which represented 21.5% of the total number of cases. (Table3).

Table 3: Frequency of malignant tumors

Malignant lesions	Frequency	Percent
Squamous cell carcinoma	63	70.8
Adenoid cystic carcinoma	10	11.2
Non-Hodgkin's lymphoma	6	6.7
Fibrosarcoma	3	3.4
Mucoepidermoid carcinoma	2	2.3
Ewing's sarcoma	2	2.3
Burkitt's lymphoma	1	1.1
Osteosarcoma	1	1.1
Angiosarcoma	1	1.1
Total	89	100.0

*Malignant lesions were more common in females, and the most widely recognized was squamous cell carcinoma. The prevalence of squamous cell carcinoma in females was 75-5% (37cases), and the relation of malignant lesions to patient gender was non-significant.

*Benign lesions were more common among females, squamous cell papilloma was the most common type (28.5%., 24 cases), it was more common among females (16 cases) than in males (8 cases).The association of benign lesions with patient gender was non-significant (Table 4**).**

Table 4: Frequency and gender distribution of malignant and benign lesions.

		Gender				Total		
		Male	%	Female	%		P-Value	Decision
Malignant lesions	Squamous cell carcinoma	26	65	37	75.5	63	0.592	Non-Significant
	Adenocystic carcinoma	5	12.5	5	10.3	10		
	Non-Hodgkin's lymphoma	4	10	2	4.1	6		
	Fibrosarcoma	2	5	1	2	3		
	Ewing's sarcoma	0	0	2	4.1	2		
	Mucoepidermoid carcinoma	1	2.5	1	2	2		
	Osteosarcoma	1	2.5	0	0	1		
	Burkitt's lymphoma	1	2.5	0	0	1		
	Angiosarcoma	0	0	1	2	1		
Total		40	100	49	100	89		
Benign lesions							0.204	Non-Significant
	Squamous cell papilloma	8	25.8	16	30.1	24		
	Hemangioma	12	38.7	10	18.9	22		
	Pleomorphic Adenoma	4	12.9	13	24.5	17		
	Fibroma	3	9.7	5	9.5	8		
	Lipoma	0	0	4	7.5	4		
	Myxoma	1	3.2	2	3.8	3		
	Ameloblastoma	2	6.5	0	0	2		
	Cavernous hemangioma	0	0	1	1.9	1		
	Angiolipoma	0	0	1	1.9	1		
	Schwannoma	0	0	1	1.9	1		
	Fibrous histiocytoma	1	3.2	0	0	1		
Total		31	100	53	100	84		

*Reactionary lesions accounted for 59 (20.1%) cases; pyogenic granuloma (45.8%, 27 cases) was the most common finding; and females (50%, 20 cases) were more affected than males. The relationship between reactionary lesions and patients' gender was non-significant.

*Cystic lesions prevalence was 17% (50 cases), radicular cyst was the most common type (19 cases), and males were mostly affected (38.7%, 12 cases), and there was a significant association between cystic lesions and patient gender.

*Immunologically mediated lesions were only 11 (3.8%) cases, of which 8 (2.7%) cases were lichen planus, and mostly females were affected (71.4%, 5 cases). Also, there were 3 cases of Pemphigus vulgaris, of which two cases were seen among females. The relation between immunologically mediated lesions and patients' gender was non-significant. (Table 5)

Table 5: Reactionary and cystic lesions frequency with gender distribution

		Gender				Total		
		Male	%	Female	%		P-Value	
Reactionary lesions	Pyogenic granuloma	7	36.9	20	50	27	0.416	Non-Significant
	Fibroepithelial polyp	3	15.8	6	15	9		
	Fibrous epulis	3	15.8	6	15	9		
	Giant cell granuloma	2	10.5	5	12.5	7		
	Fibro-osseous	2	10.5	1	2.5	3		
	Cement ossifying dysplasia	2	10.5	1	2.5	3		
	Juvenile papillomatosis	0	0	1	2.5	1		
Total		19	100	40	100	59		
Cystic lesions							0.024	Significant
	Radicular cyst	12	38.7	7	36.8	19		
	Mucocele	8	25.8	4	21.1	12		
	Dentigerous cyst	6	19.3	2	10.5	8		
	Keratocyst	2	6.5	4	21.1	6		
	Thyroglossal cyst	2	6.5	0	0	2		
	Nasolabial cyst	0	0	2	10.5	2		
	Residual cyst	1	3.2	0	0	1		
Total		31	100	19	100	50		
Immunologically mediated lesions							0.904	Non-Significant
	Lichen planus	3	75	5	71.4	8		
	Pemphigus Vulgaris	1	25	2	28.6	3		
Total		4	100	7	100	11		

*According to the patients' age groups, malignant lesions were more common among (46-60) and (61 -75) years equally, squamous cell carcinoma was the most common type (70.8% ,63cases), and the peak incidence for it was within the age group (61 –75) years. The relationship of malignant tumors with the age of the patient was very highly significant. (Table 6)

Table 6: Frequency of malignant lesion with age distribution

		Age Classes						To-tal	P-Value	
		≤ 15	16 -30	31 -45	46 -60	61 -75	76 - 93			
Malig-nant le-sions	Squamous cell carcinoma	0	3	11	17	20	12	63	0.000	*Very highly significant*
	Adenoid cystic carcinoma	0	0	5	3	1	1	10		
	Non-Hodgkin's lymphoma	0	1	0	2	3	0	6		
	Fibrosarcoma	0	2	1	0	0	0	3		
	Mucoepidermoid carcino-ma	0	0	1	1	0	0	2		
	Ewing's sarcoma	1	1	0	0	0	0	2		
	Burkitt's lymphoma	0	1	0	0	0	0	1		
	Osteosarcoma	0	0	1	0	0	0	1		
	Angiosarcoma	0	0	0	1	0	0	1		
Total		1	8	19	24	24	13	89		

*Regarding benign lesions, squamous cell papilloma was the most common type (28.5%., 24 cases), and it was more common (11 cases) in the age group (31–45). The age of the patients had no significant correlation with benign lesions. (Table 7)

Table 7: Frequency of benign lesions and age distribution

		Age Classes						Total	P-Value	
		≤ 15	16 -30	31 -45	46 -60	61 -75	76 - 93			
Benign lesions	Squamous papilloma	0	1	11	8	4	0	24	0.104	Non-Significant
	Capillary hemangioma	5	6	3	6	2	0	22		
	Pleomorphic Adenoma	0	7	6	3	0	1	17		
	Fibroma	0	1	3	3	1	0	8		
	Lipoma	1	0	2	0	0	1	4		
	Myxoma	1	0	1	0	1	0	3		
	Ameloblastoma	0	2	0	0	0	0	2		
	Cavernous hemangioma	0	1	0	0	0	0	1		
	Angiolipoma	0	0	1	0	0	0	1		
	Schwannoma	0	1	0	0	0	0	1		
	Fibrous histiocytoma	0	0	1	0	0	0	1		
Total		7	19	28	20	8	2	84		

*Radicular cyst was the most common cystic lesion, which was mostly (6 cases) seen among the age group (31–45) years. There was no significant association between cystic lesions and the age of the patient. The most frequent finding of reactionary lesions was pyrogenic granuloma (45.8%, 27 cases), of which 9 cases were observed in the age range of 31 to 45 years. There was no significant correlation between reactionary lesions and patient age.

*Immunologically mediated lesions were present in eleven cases, of which three cases had Pemphigus vulgaris and eight cases had Lichen planus, with the majority of cases occurring in the age range of 31 to 45 years. There was no statistically significant correlation found between the age of the patients and the immunologically mediated lesions. (Table 8)

Table 8: Frequency of cystic, reactionary and immunologically mediated lesions with age distribution

		Age Classes						Total	P-Value	
		≤ 15	16 - 30	31 - 45	46 -60	61 - 75	76 - 93		0.589	
Cystic lesions	Radicular cyst	2	5	6	5	1	0	19		
	Mucoccle	0	2	6	3	1	0	12		Non-Significant
	Dentigerous cyst	2	2	1	2	0	0	7		
	Keratocyst	1	2	1	2	0	0	6		
	Thyroglossal cyst	1	2	0	0	0	0	3		
	Nasolabial cyst	0	0	1	1	0	0	2	0.218	
	Residual cyst	0	1	0	0	0	0	1		
Total		6	14	15	13	2	0	50		
Reactionary lesions	Pyogenic granuloma	3	5	9	6	4	0	27		
	Fibroepithelial polyp	0	2	2	3	2	0	9		
	Fibrous epulis	0	4	1	2	2	0	9		Non-Significant
	Giant cell granuloma	2	1	2	1	1	0	7		
	Fibro-osseous	1	0	0	2	0	0	3		
	Cementossifying dysplasia	0	2	0	1	0	0	3		
	Juvenile papillomatosis	1	0	0	0	0	0	1		
Total		21	57	80	74	45	16	293		
Immunologically mediated lesions	Lichen planus	0	0	4	3	1	0	8	0.420	
	Pemphigus Vulgaris	0	1	1	0	1	0	3		Non-Significant
Total		0	1	5	3	2	0	11		

*Regarding the distribution of the lesions in the oral cavity, the majority of lesions were observed on the tongue, particularly on its lateral sides (20.1%, 59 instances), as this region is more vulnerable to trauma from teeth or prosthetics (Table 9).

Table 9: Distributions of the oral lesions according to the site

	site														Total	Chi-Square P-Value	
Lesions	Buccal mucosa	Upper Lip	Lower Lip	Maxilla/ anterior	Maxilla/ posteroir	Mandible/ anterior	Mandible/ posterior	Tongue/ Ventral	Tongue/ dorsm	Tongue/ lateral	Tongue/ anterior	Hard Palate	Soft palat	Floor of mouth			
Maliganat lesions	5	0	5	3	3	2	15	5	4	30	2	7	4	4	89	0.103	NS
Benign lesions	16	2	6	0	2	2	5	3	2	23	2	9	7	5	84	0.000	VHS
Reactionary lesions	15	1	1	6	5	5	11	0	3	6	3	2	1	0	59	0.078	NS
Cystic lesions	1	1	8	6	9	2	17	4	0	0	0	0	1	1	50	0.000	VHS
Immunologically mediated lesions	4	0	0	0	1	1	1	1	2	0	0	1	0	0	11	0.500	NS
Total	41	4	20	15	20	12	49	13	11	59	7	19	13	10	293		

NS=Non significant, VHS=Very highly significant

Table 10: Frequency of the oral lesions according to site

Site	Frequency	Percent
Tongue/lateral surface	59	20.1
Mandible/posterior part	49	16.7
Buccal mucosa	41	14.0
Maxilla/posterior part	20	6.8
Lower Lip	20	6.8
Hard palate	19	6.5
Maxilla/anterior part	15	5.1
Soft palate	13	4.4
Tongue/Ventral surface	13	4.4
Mandible/anterior part	12	4.1
Tongue/dorsum	11	3.8
Floor of mouth	10	3.4
Tongue/anterior portion	7	2.4
Upper Lip	4	1.4
Total	293	100.0

DISCUSSION

Various pathological lesions often affect the maxillofacial region and oral cavity. A wide range of lesions, including neoplastic, cystic, keratotic, and reactionary lesions, can be caused by changes in the tissues of the oral cavity. The tongue, salivary glands, gingiva, buccal mucosa, and jaws may all be affected by these lesions.[11]

The sample used in this study consisted of 293 cases, of which 125 were males (42.7%) and 168 were females (57.3%). Males experience fewer cases than females, which is in line with research findings in Saudi Arabia,[12] Iran,[13] Brazil,[14] and Iraq/Sulaimani.[15] In Iraq/Basrah,[16] India[17] and Pakistan[11] studies, the incidence was higher in males than in females. The age range in our study was

between 1 and 93 years; most of the cases were found in the age group (31–45 years), in Brazil,[18] and Basrah/Iraq [19] studies most of the cases were found in the age group under 20 years and in the second decay of life. These discrepancies can result from a differing sample size, racial variables, or regional considerations.

Malignant lesions represented 89 (30.4 %) cases in this study, Since most surgeons only send highly possibly malignant tumors for histological interpretation and diagnose the majority of nonmalignant lesions based only on clinical and radiographic inspection, the prevalence of nonmalignant lesions is scientifically far greater than that of malignant lesions. The fact that the biopsies were only performed when malignancy was suspected probably explains this discrepancy. Malignant tumors had a lower percentage in Iraq/Mosul (12.8%) and Alhindi et al. (5.8%) studies,[20, 12] Saleh et al,[21] from Saudi Arabia reported a higher prevalence of malignant cases (38.8%). Cigarette smoking and alcohol consumption are considered risk factors for oral cancer. In Basrah/Iraq,[19] Baghdad/Iraq,[22] Sudan,[23] and Saudi Arabia[24] studies, malignant lesions were secondary to reactionary lesions, which disagree with our results. Zaib,[11] study reported that malignant lesions were the most common types, and among them, squamous cell carcinoma was the most common. Risk factors include immunodeficiency, HPV infection, and maybe genetic alterations. Regarding gender, in Zaib[11] study, squamous cell carcinoma was more common in males, while in this study, squamous cell carcinoma was more common in females. This may be related to malnutrition or iron deficiency, which is more common among females in Iraq.

Regarding age, squamous cell carcinoma shows a peak incidence in group (61-75) years in this study, while in Iraq/Sulaimani,[15] the age distribution ranges between 50 and70 years,our body frequently fixes damaged cells, but occasionally damage accumulates in a cell and the cell begins to behave differently when it grows out of control and becomes cancerous. Cancer is more likely to occur as we age because our body cells have more time to accumulate damage.

Our findings showed that benign lesions were the second most common lesions, with a peak incidence in the age group of (31-45) years. In contrast, benign lesions were the third most common lesions in the Basrah/Iraq[19] study, more frequently occurring in the third and fourth decade of life, with fibroma being the most common type and more common in females.

In the findings of Cebeci et al[25] and Espinoza et al [26] studies, fibroma was the most common benign lesion, but it was more prevalent in males than in females. In this study the most well-known benign lesion was squamous cell papilloma (28.7%) which was more common in females than in males.

Chronic irritation or trauma can cause reactive hyperplastic lesions ,in agreement with our study pyogenic granuloma (47.38%) was the commonest reactionary lesion in Surendra et al[1] and Basrah/Iraq[20] studies, however In Brazil[14] study, pyogenic granuloma was secondary to inflammatory fibrous hyperplasia .

In this study, pyogenic granuloma was mostly seen in the age group (31-45) years, and females were more affected, while in the Basrah/Iraq[20] study, more cases were reported in females, and the age group under 20 years had the highest prevalence. Due to the fact that these lesions grow and recur more quickly during pregnancy and the postpartum period, hormonal influences may be involved in their development.[26]

Radicular cysts were the most common cystic lesions in this study. This comes in agreement with Zaib[11] and Acikgoz[27] studies. Consistent with this results, in studies by Zaib[11] and Saleh et al,[21] cystic lesions were more common among males. Jones et al.'s[26] study, reported an equal gender distribution. In the da Silva et al[28] study, the incidence of cysts was determined to be higher in females. Cystic lesions develop after pulp necrosis. These cysts remain and will continue to develop if surgery is not performed.

Immunologically mediated lesions represented 11 (3.8%) cases in this study, while in the Saleh et al [21] study, they accounted for 8.1%. of the cases, in agreement with this study, Saleh et al, [21] and Iraq/Basrah[16] studies reported that lichen planus was the most common type, females were more affected, and buccal mucosa was the most affected site in the oral cavity.

The tongue was the most affected site (30.1%), in Saleh et al[20] study, mostly on the lateral borders. This is in agreement with this study; according to our findings, the mandible was the second most involved site, while in Moridani's[13] study, most of

the lesions were located in the mandible. On the other hand, Pour et al.[29] reported the gingiva as the most common site.These conflicting findings are most likely the result of many research using different classification schemes and histological standards.

CONCLUSION

The frequency of oral lesions identified in our oral pathology laboratories was generally comparable to that of previous investigations. Nonetheless, a significant frequency of malignant lesions necessitates additional analysis and etiological factor assessment**.**

Malignant lesions are often most commonly identified in young patients; this suggests that increasing oral health education is essential because these individuals did not seek treatment in primary dental care.

RECOMMENDATION

Policies that promote regular oral exams should be developed in order to enhance the dental and oral health of the populace**.** For the early detection of any pathological changes, it is crucial to combine oral biopsy with the routine oral examination for suspicious changes.

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