http://www.medscidiscovery.com

OPEN ACCESS JOURNAL ISSN: 2148-6832

MSD Medical Science and Discovery
2020; 7(9):625-34

Research Article Doi: 10.36472/msd.v7i9.408

A single center study of oral mucosal lesions in a Turkish population during 12 years period

Ayşegül Göze Saygın[1], Ömer Fahrettin Göze[2], Hatice Reyhan Eğilmez[2]

Abstract

Objective: The prevalence of oral mucosal lesions, together with information on the risk habits associated with oral health, such as tobacco and alcohol use, can help in planning future oral health studies and screening programs.

Material and Methods: This study presents the findings of 805 oral mucosal biopsies from patients, received over twelve years period. The cases represent 0.6 per-cent of the total number of reports examined (130.680). The data were revised and compiled for diagnosis site, age, and sex. The patients were divided into nine age groups according to decades. The classification was modified and divided into eleven main groups

Results: Connective tissue lesions formed the largest group of diagnoses (24.4per cent) followed by white lesions (17.8 %per cent), verrucal-papillary lesions (15.4%per cent), red-blue lesions (14%per cent), ulcerous lesions (12.2%per cent), periodontal diseases (10%per cent), lymphoid tissue lesions (1.3%per cent), other tumors (2%per cent), pigmented lesions (0.6%per cent) only 1 metabolic disease (cherubism) (0.1per cent). Approximately 60 %per cent of the biopsies were from the second group patients with an almost equal distribution among sexes. The predominant site of the biopsies was gingiva (28%per cent) followed by lips (19.2%per cent).

Conclusion: The majority of the lesions were in the category of reactive and inflammatory lesions with most occurring in the thirty age group (31-40 age) that represents permanent dentition. These results suggest that the difficulties in maintaining oral hygiene or the presence of trauma may be the primary factor in mucosal lesions occurring in the permanent dentition period.

Keywords: Oral lesions, Maxillofacial lesions, Retrospective study, Turkish population

Introduction

More than 600 diseases of the oral mucosa are known. Most of these are benign lesions. Some of them are primary or secondary findings of systemic diseases. Malignant tumors are also the most dangerous among these diseases, but not the most common lesions in the oral cavity. Oral mucosal lesions are an important indicator of oral health and quality of life, especially in the elderly. The prevalence of oral mucosal lesions, as well as information on oral health-related risk habits such as tobacco and alcohol use, may help in the planning of future oral health studies and screening programs.

These lesions are classified in a variety of ways. The most common is the WHO Guideline. This study aims to determine the spectrum and the frequency of biopsied oral and maxillofacial mucosal lesions, hospital population, comprising patients of all ages and genders in Sivas / Central Anatolia / Turkey and comparing the results with other studies reported worldwide.

Material And Methods

The Human Research Ethics Committee of Sivas Cumhuriyet Univercity reviewed and approved the project (2018-03/01). Written informed consent was obtained from all participants.

It performed a retrospective, 12-year (2008–2020) descriptive analysis of oral and maxillofacial mucosal biopsies, at the Pathology Department of the University Hospital from the Clinics of Dentistry Faculty of Sivas Cumhuriyet University. This study presents the findings of 805 oral mucosal biopsies from patients, received ten years period. The cases represent 0.6% of the total number of reports examined (130.680). The data were anonymized before analysis information on gender, age, the site of the lesion, clinical diagnosis and the histopathological diagnosis were included in the analysis biopsies of normal tissue; repeated biopsies of lesions already diagnosed (e.g. the excisional removal of a lesion that was previously diagnosed with an incisional biopsy) and cases with unclear

Received 29-07-2020 **Accepted** 04-09-2020 **Available Online** 21-09-2020 **Published** 30-09-2020
1 Sivas Cumhuriyet University, Faculty of Dentistry, Department of Prosthodontics, Sivas, TR
2 Sivas Cumhuriyet university, Faculty of Medicine, Department of Pathology, Sivas, TR
*** Corresponding Author:** Ayşegül Göze Saygın **E-mail:** aysegulgoze@hotmail.com

http://dx.doi.org/10.36472/msd.v7i9.408

or missing data, or with an inconclusive diagnosis were the exclusion criteria.

It has based on the classification in the textbook of Oral Pathology of Regezi-Sciubba-Jordan, which are 1. Vesiculobullous diseases, 2. Ulcerative conditions, 3. White lesions, 4. Red-blue lesions, 5. Pigmented lesions, 6. Verrucal-papillary lesions, 7. Connective tissue lesions, 8. Salivary gland diseases 9. Lymphoid lesions 10. Metabolic and genetic diseases. 11. Cysts of the jaws and neck, 12. Odontogenic tumors, 13. Benign non-odontogenic tumors, 14. Inflammatory jaw lesions, 15. Malignancies of the jaws and 16. Abnormalities of teeth have been excluded (1). Instead of these, it has been included as 11. Other lesions inc. tumors. The study was performed in full accordance with the World Medical Association Declaration of Helsinki. Data regarding histopathological diagnosis and respective clinical information were retrieved from patient hospital records (Table.1)

Statistical analysis

The data obtained in this study were analyzed by SPSS 22.0 (IBM, Armonk, NY, USA). When parametric test assumptions were fulfilled (Kolmogorof-Simirnov), variance analysis was used, when the parametric test assumptions were not be fulfilled, Kruskal-Wallis test was used. The evaluation of the data obtained by counting Chi-square was used, when the assumptions were not fulfilled, Chi-square results were obtained from Monte Carlo model which is a Chi-square exact test. The data were expressed as mean±standard error of mean (SEM). Differences were considered as significant at $p<0.05$, when it was compare the distribution of oral cavity lesions by gender (Table 2) and the number of cases by type (Table 3).

Results

The most common lesions are connective tissue lesions consisting of 206 the all cases. Most of these lesions were traumatic fibroma making up 83 out of 206. The second most common lesions were reparative peripheral giant cell granulomas (epulis gigantocellularis).With 62 instances, the third most frequent lesions were peripheral ossifying fibroma with 33 cases. The rest of consists in 15 gingival fibrous hyperplasia, 4 lymphangioma, 3 neurofibroma (Fig. 1a), 2 granular cell tumors (Fig.1b), 1 fibromatosis, 1 nodular fasciitis, and 1 myxoma. White lesions consisted of 134 in the cases. 88 of these cases consist of oral lichen planus, 29 nodular leukoplakia, and 13 solar (actinic) cheilitis based on the color categorization of the lesions. The rest of the cases were geographic tongue, submucosal fibrosis, most commonly in the 6th decade. There were 124 cases of verrucal-papillary lesions with the distribution of 58 focal epithelial hyperplasias, 44 squamous papilloma/oral verruca vulgaris(Fig.1c), 13 inflammatory papillary hyperplasias, 4 keratoacanthoma (KA), 2 papillary hypertrophy of tongue, 2 verrucous carcinomas (Fig.1d) and 1 verruciform xanthoma. Most of the cases of the lesions in this category of etiology were due to viral infections. There were 108 cases of red-blue lesions with most commonly seen as pyogenic granulomas 74 out of 109 (67.9%.)

The second most common lesions were hemangioma from all subtypes as well as capillary, cavernous and verrucous capillary with 33 cases (30.2%). Ulcerous conditions are the fifth most common lesion type with 98 cases. The percentage of 63.2% (62/98) of these cases were squamous cell carcinoma, which is malignant ulceration. Traumatic granuloma is 10.2% (10/98) as well as ulcer, 9.2% (9/98) aphthous ulcer, 7.1% (7/98) eosinophilic ulcer, 5.1% (5/97) candidiasis. Pemphigus vulgaris were 11 of the 19 vesiculobullous lesions, 7 of those were bullous pemphigoid and one of those was confirmed by DIF (intraepithelial linear staining with IgG, IgA, IgM).

Six of the bullous pemphigoid cases were female and one was male. Female patients with pemphigus vulgaris were in the 4th, 6th, 5th and 7th, male patients in the 4th and 5th decades. Patients with bullous pemphigoid are in the 5th, 6th, 7th, 8th and 9th decades. Lymphoid hyperplasias are 10 and 2 are lymphomas of the 12 lesions in the lymphoid tissue diseases group.

One of the lymphoma cases is the gingiva involvement of Burkitt's lymphoma in the 3rd decade (Fig.1e), and the other is diffuse large B-cell lymphoma in the 8th decade. Both are male patients. There is one case only of cherubism (Fig.1f) is which is diagnosed in an 11-year-old girl in the metabolic diseases group.

In the group of “other lesions incL tumors” consist of 8 fibrolipomatous hamartomas, 3 metastatic tumors and 3 malignant mesenchymal tumors. One of the metastatic tumors is adenocarcinoma of unknown primary in an 83-year-old female patient, the second is a rectum ca metastasis in a 49-year-old male patient, and the third is a renal cell ca metastasis in a 64 years old male patient.

Malignant mesenchymal tumors are composed of 1) "embryonal rhabdomyosarcoma" in a 35-year-old male patient, 2) " adult-type pleomorphic rhabdomyosarcoma" which is seen in a 32-year-old female patient, and a “pleomorphic fusiform cell malignant tumor”, which is unknown primary.

According to its location in the oral cavity, connective tissue lesions, including all of the ossifying fibroma and all of the epulis, were mostly localized in the gingiva, as well as all of the squamous cell carcinomas in the tongue.

http://dx.doi.org/10.36472/msd.v7i9.408

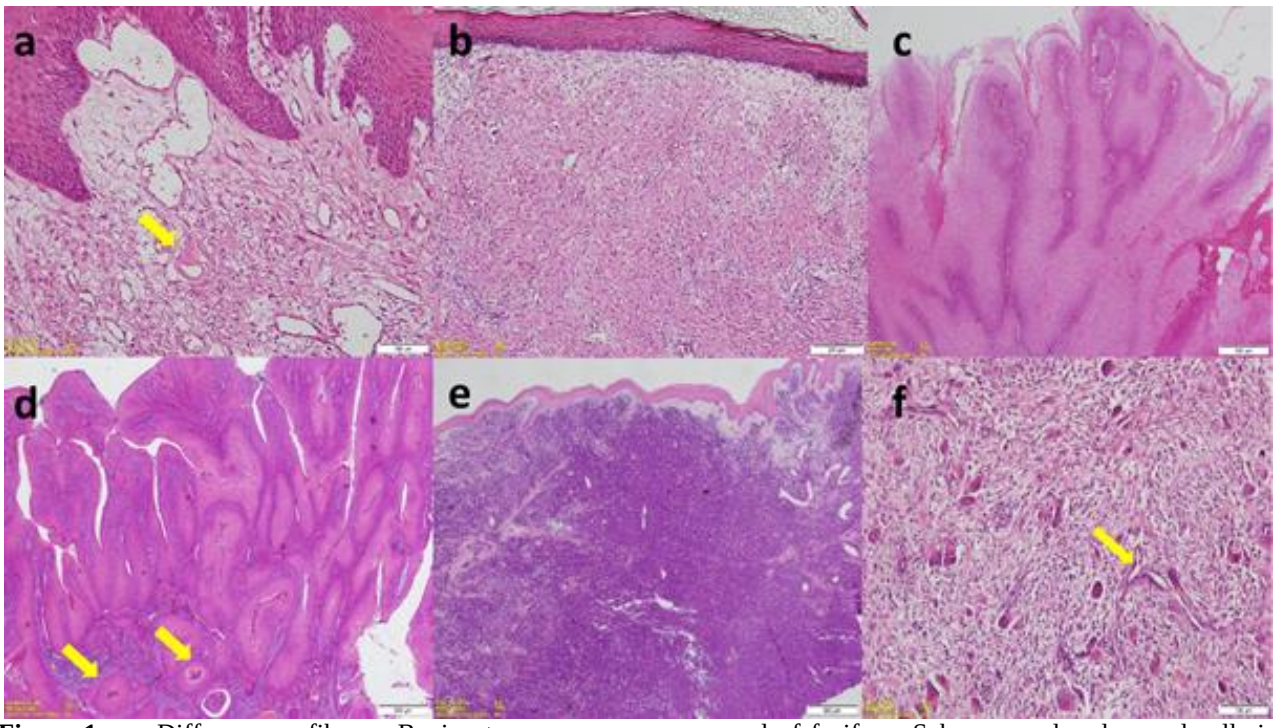

Figure 1. a : Diffuse neurofibrom: Benign tumor are seen composed of fusiform Schwann and endoneural cells in lamina propria. In addition, there are teleangiectasias and hyalinised vessels (marked with a yellow arrowhead) (HEX20). **b:** Granuler cell myoblastoma: Tumoral infiltration are seen beneath the surface epithelium, filling the entire lamina propria (HEX10). **c:** Squamous Papillom / Oral verruca vulgaris: Tumoral growth in the form of papillary-verrucal proliferations composed of cells with large clear cytoplasm so called koilocytes in the surface epithelium (HEX40) **d:** Verrucous carcinoma: Tumor characterized by exophytic-papillary proliferations are seen. There are microabscess in deep tumoral masses (marked with yellow arrowheads) (HEX40). **e:** Burkitt lymphoma: Immediately below the surface epithelium, lymphoid tumor infiltration is observed, characterized by a stary sky appearance that fills the entire stroma (HEX10) **f:** Cherubism: Lesion consisting of osteoclastic giant cells are seen among the fusiform cells. Perivascular hyalinization is also noticeable in this lesion (marked with a yellow arrowhead) (HEX20).

doi http://dx.doi.org/10.36472/msd.v7i9.408

	0-10		11-20		21-30		31-40		41-50		51-60		61-70		71-80		81>		TOTAL of gender		TOTAL of cases
Gender	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	805
I. VESICULOBULLOUS DISEASES																					
Pemphigus vulgaris							1	1	2	1	3		2		1				9	2	11
Bullous pemphigoid									1		1	1	2		1		1		6	1	7
Herpetic gingivostomatitis					1														1		1
Subtotal according to gender					1		1	1	3	1	4	1	4		2		1		16	3	19 (2.36%)
Subtotal according to decades			1	2	4	5	4	2	1			19									
II. ULCEROUS LESIONS																					
Squamous cell carcinoma	4	4	4	7	4	6	6	6	5	13	23	39	62								
Traumatic granulomas								1		4			3	1		1			3	7	10
Aphthous ulcers					1			2	2			2		2					3	6	9
Eosinophilic ulcers									1		2		1		1	1	1		6	1	7
Actinomycosis		1								2						2				5	5
Erythema multiforme													1						1		1
Drug reactions									1				1						2		2
Candidiasis								1							1				1	1	2
Subtotal according to gender		1			1			7	8	10	6	9	10	9	8	10	6	13	39	59	98 (12.2%)
Subtotal according to decades	1		1	7	18	15	19	18	19			98									
III. WHITE LESIONS																					
Lichen planus				1	4	3	7	7	10	5	13	10	11	4	8	5			53	35	88
Leukoplakia					1	1	1	2	2	4	2	4	3	6	1	1	1		11	18	29
Solar cheilitis										1	3			2				7	3	10	13
Geographic tongue			1						1		1								3		3
Submucous fibrosis											1								1		1
Subtotal according to gender			1	1	5	4	8	9	13	10	20	14	14	12	9	6	1	7	71	63	134 (16.6%)
Subtotal according to decades		2	9	17	23	34	26	15	8			134									
IV. RED-BLUE LESIONS																					
Pyogenic granuloma			6	3	8	7	10	6	1	5	7	8	6	3			3	1	41	33	74
Hemangioma	2	3	5	3	2		1	1		3		8	1	1		2		1	11	22	33
Thrombose venectasia/varix										1							1		1	1	2
Subtotal according to gender (FM)	2	3	11	6	10	7	11	7	1	9	7	16	7	4		2	4	2	53	56	109 (13.5%)
Subtotal according to decades	5	17	17	18	10	23	11	2	6			109									

doi http://dx.doi.org/10.36472/msd.v7i9.408

	0-10		11-20		21-30		31-40		41-50		51-60		61-70		71-80		81>		TOTAL of gender		TOTAL of cases
V. PIGMENTED LESIONS																					
Malignant melanoma												2						2		4	4
Compound nevus				1																1	1
Ephelis							1												1		1
Oral melanotic macul														1						1	1
Common Blue Nevus													1						1		1
Subtotal according to gender				1			1					2	1	1				2	2	6	8 (0.99%)
Subtotal according to decades		1		1		2	2		2			8									
VI. VERRUCAL-PAPILLARY LESIONS																					
Squamous papilloma /Oral verruca vulgaris	1		2	2	3	5	3	3	3	5	5	5	2		3	2			22	22	44
Focal epithelial hyperplasia			2		2	5	7	3	5	5	9	4	5	4	3	2	2		35	23	58
Inflammatory papillary hyperplasia				1		1			1	1	3	2	1	1.		2			5	8	13
Keratoacanthoma			1													3			1	3	4
Papillary hypertrophia of tongue									1		1								2		2
Verrucous carcinoma												1		1						2	2
Verruciform xanthoma	1																		1		1
Subtotal according to gender (FM)	2		5	3	5	11	10	6	10	11	18	12	8	6	6	9	2		66	58	124 (15.4%)
Subtotal according to decades	2	8	16	16	21	30	14	15	2			124									
VII. CONNECTIVE TISSUE LESIONS																					
Traumatic fibroma			5	2	2	4	8	9	8	6	12	5	13	5	4				52	31	83
Epulis	1	1	4	3	1	3	3	1	14	6	6	5	1	6	3	2	1	1	34	28	62
Peripheral ossifying fibroma	2		3	3	4	2	6	1	4	2	4		2						25	8	33
Gingival fibrous hyperplasia					1	2	1			3	3	1	2	1	1				8	7	15
Fibromatosis						1														1	1
Myxoma												1								1	1
Haemangioendothelioma									1										1		1
Neurofibroma							1				1	1							2	1	3
Lymphangioma		1				1				1		1								4	4
Granular cell tumor	1											1							1	1	2
Nodular fasciitis													1						1		1
Subtotal according to gender (FM)	4	2	12	8	8	13	19	11	27	18	26	15	19	12	8	2	1	1	124	82	206 (25.6%)
Subtotal according to decades	6	20	21	30	45	41	31	10	2			206									

doi http://dx.doi.org/10.36472/msd.v7i9.408

	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81>	TOTAL of gender		TOTAL of cases
VIII. LYMPHOID TISSUE LESIONS												
Lymphoid hyperplasia					1	2	1	4	1	1	1			7	4	11
Burkitt lymphoma				1											1	1
Diffuse large B-cell lymphoma									1						1	1
Subtotal according to gender (FM)				1	1	2	1	4	1	1	1		1	7	6	13 (1.6%)
Subtotal according to decades		1	1	3	5	2	1			13						
IX. PERIODONTAL DISEASES																
Nonspecific gingivitis		3		3	3	5	1	3	6	7	3	3	4	4	2	1	28	20	48
Inflammatory papillary hyperplasia		1	1		2	2		1	4	2	1		1		2		6	11	17
Amyloidosis								1			3		2	2	1		3	6	9
Subtotal according to gender (FM)		4	1	3	5	7	1	5	10	9	7	3	7	6	5	1	37	37	74 (9.2%)
Subtotal according to decades	5	8	8	15	16	10	11	1			74								
X. METABOLIC DISEASES																			
Cherubism		1															1		1
Subtotal according to gender																	1		1 (0.19%)
XI. OTHER LESIONS inc. TUMORS																			
Fibrolipomatous hamartomas				1	3	2	1					1					4	4	8
Metastatic tumors							1							1		1	2	1	3
Malignant mesenchymal tumors				1	1						1						1	2	3
Uranitis					1													1	1
Uvulitis													2					2	2
Inflammatory pseudocyst												1					1		1
Foreign body granuloma													1					1	1
Subtotal according to gender				2	5	2	2			1	2	3	1		1		8	11	19 (2.36%)
Subtotal according to decades			7	4	1	5	1	1			19								
Total according to decades	14 (1.7%)	54 (6.7%)		74 (9.2%)		107 (13.3%)		143 (17.8%)		169 (21%)		126 (15.7%)		76 (9.4%)		42 (5.2%)			805
Total according to gender																	424	381	805

http://dx.doi.org/10.36472/msd.v7i9.408

Table 2. Distribution of diagnosis types by gender

Types of diagnosis		Gender Female	Male	Total
1,00	S	16	3	19
	%	84,2%	15,8%	100,0%
2,00	S	39	59	98
	%	39.8%	60,2%	100,0%
3,00	S	71	63	134
	%		47,01%	100,0%
4,00	S	53	56	109
	%	48,6%	51,4%	100,0%
5,00	S	2	6	8
	%	25,0%	75,0%	100,0%
6,00	S	66	58	124
	%	53,2%	46,8%	100,0%
7,00	S	124	82	206
	%	60,2%	39,8%	100,0%
8,00	S	7	6	13
	%	53,8%	46,2%	100,0%
9,00	S	37	37	74
	%	50,0%	50,0%	100,0%
10,00	S	1	0	1
	%	100,0%	0%	100,0%
11,00	S	8	11	19
	%	42,1%	57.9%	100,0%
Total	S	424	381	805
	%	52,7%	47,3%	100,0%

X2=31,32 p=0,001 p<0,05 (significant). The difference was significant when the types of diagnosis were compared according to gender, (p<0,05).

Table 3. Distribution of types of diagnosis

Types of diagnosis	N	%
1	19	2,4
2	98	12,2
3	134	16,6
4	109	13,5
5	8	1,0
6	124	15,4
7	206	25,6
8	13	1,6
9	74	9,2
10	1	0,1
11	19	2,4
Total	805	100,0

X2=312,85 p=0,001 p<0,05 (significant). The difference was found significant when the distribution of diagnosis types was compared. (p<0,05).

Discussion

There are more than 600 different known diseases that are manifest in the oral cavity, apart from caries and periodontal disease (2). Oral-maxillofacial lesions (OMFLs) are so many and varied, but mostly from pre-school to young adolescents, such as pediatric (3-10), or geriatric (11-14) specific ages or risk groups (15-16), either pigmented lesions (17-18), or only on an organ base (19) such as the tongue. On the other hand, there are a few studies in the world that have at least some of the oral and maxillofacial lesions that are histologically based and included both oral lesions and patients of all ages in a comprehensive spectrum (20-27). A wide variety of lesions with different origins and heterogeneous features may develop in the oral cavity, including both benign and malignant lesions. The biopsy is one of the most important or may be the first research and diagnostic method of oral medicine and biopsy not only shows the morphological characterization of the tissue; it is also the gold standard for obtaining a definitive diagnosis in many lesions, especially malignant diseases. Everything is an estimate until the histological evaluation of the biopsy performing. Because of this, biopsy should be done in the following conditions:

The following biopsy indications were employed for soft tissue pathologies:

1. Persistent or widespread ulcerations that proved refractory to local therapy after a 3-week period;

2. Persistence of any lip or oral mucosal changes 3 weeks after removal of local irritants (e.g., traumatic or inflammatory);

3. Any new lesion noted on clinical examination;

4. Oral lesions with the recent change in size or symptoms;

5. Oral lesions with induration upon palpation;

6. New or enlarging pigmented lesions, especially those with an irregular border and non-homogenous coloration;

7. Lesions that are clinically suspected as mucocutaneous, immune- mediated or systemic disease or as potentially malignant lesions/disorders (PML/D) or malignancy (28).

The following biopsy indications were employed for hard tissue pathologies which are (i) Any new or rapid bone expansion; (ii) Bone lesions accompanied by pain, changes in sensation, or other symptoms; (iii) Rapid bone loss, spiking root resorption, tooth mobility, and irregular widening of the periodontal ligament, in the absence of trauma or an identifiable source of inflammation; (iv) Radiographic changes that are suspected as intraosseous cysts, tumors, or fibro-osseous lesions (28).

The purpose of the study was to evaluate the prevalence of oral mucosal lesions and conditions in a population in Ljubljana, capital of Slovenia. A total of 1609 subjects represented the study population in the survey about the periodontal treatment needs in a population in Ljubljana, conducted from 1983 to 1987. Ten years later the same 1609 subjects were invited to the second examination. Altogether, 555 (34.5%) of the invited subjects in the age range 25-75 years came for an interview and clinical examination at the Department of Oral Medicine and Periodontology of the Dental Clinic in Ljubljana. Oral mucosal lesions and conditions were evaluated according to the WHO Guide to Epidemiology and Diagnosis of Oral Mucosal Diseases and Conditions. The results showed the presence of one or more mucosal lesions in 61.6% of the population. Fordyce's condition was observed the most frequently (49.7%) followed by: fissured tongue (21.1%), varices (16.2%), history of herpes labialis (16.0%), history of recurrent aphthae (9.7%), denture stomatitis (4.3%), leukoplakia (3.1%), cheek biting (2.7%), lichen planus

http://dx.doi.org/10.36472/msd.v7i9.408

(2.3%), frictional keratosis (2.2%), geographic tongue (2.2%), geographic and fissured tongue together (1.1%), mucocele (0.9%), smoker's palate (0.5%) and angular chelitis (0.4%). In the population examined, no oral malignancies were observed. Mucosal lesions like whitish lesions, denture-related lesions, fissured tongue, varices and mucocele were more prevalent with increasing age. Tobacco-related lesions (leukoplakia and smoker's palate together) were significantly more prevalent among men than among women ($p<0.05$), while lichen planus, denture stomatitis and herpes labialis occurred more frequently in the female population (20).

In an adult patient group of 500 cases, the overall incidence of oral mucosal changes or lesions was 15.5%. The lesions were classified as anatomic changes, ulcerated lesions, tongue lesions, white lesions, benign lesions, color alterations, and malignant lesions. Anatomic changes (7%), ulcerated lesions (6.6%), and tongue lesions (4.6%) were the most common lesions. White lesions were observed in 2.2% of all patients. Among the white lesions, leukoplakia was identified in men 4 times more frequently than it was in women. Benign lesions and color alterations were identified in 1.6% and 1.2% of all patients, respectively. Also, 3 patients (0.06%) were diagnosed as having squamous cell carcinoma, and 1 patient (0.02%) was diagnosed as having adenocarcinoma. There was a statistically significant relation between smoking and the occurrence of mucosal lesions whereas no relation was found between alcohol consumption and mucosal lesion occurrence. Besides, no relation was found between systemic diseases and oral mucosal lesion occurrence (21).

Data from 6,448 adult Swedish patients were collected by general dental practitioners using a standardized registration method. A total of 950 patients (14.7%) presented with some type of oral mucosal lesion and of these, 141 patients (14.8%) reported subjective symptoms. On a visual analogue scale (VAS), 43 patients (4.5%) scored their symptoms <30, 65 patients (6.8%) scored their symptoms ⩾30, and 28 patients (2.6%) scored their symptoms ⩾60. The most debilitating condition was aphthous stomatitis and the most common oral mucosal lesion was snuff dipper's lesion (4.8%), followed by lichenoid lesions (2.4%) and geographic tongue (2.2%). There was an agreement between the oral medicine specialists and the general practitioners over the diagnosis of oral mucosal lesions on the basis of a clinical photograph in 85% of the cases (n=803) (22).

A total of 3551 dentate adult Australians had complete data for this analysis. Over 20% of study participants presented with an OML on the day of examination. The prevalence of suspected malignancy was less than 1% and over 17% for non-ulcerated OMLs. Prevalence of non-ulcerated OMLs was associated with age, gender, residential location, household income, and smoking (23).

Overall 25.2% of the study participants presented with one or more white lesions. The most prevalent lesions were khat-induced white lesion (8.8%), leukoedema (5.1%), and frictional keratosis (3.9%). Potentially malignant lesions, such as lichen planus, leukoplakia, and smokeless tobacco-induced lesions, were seen in 2.4%, 1.2%, and 1.7% of participants, respectively (16).

According to Kilinc et al., under 709 benign tumors and tumor-like lesions supported by pathological diagnosis, in soft tissue related lesions, 220 of peripheral giant cell granulomas (PGCGs) were the most frequent lesions (37.4%), followed by epulis fissuratum (109: 709 = 18.5%), 50 pyogenic granulomas (50: 709 = 8.5%), 19 capillary haemangiomas (19: 709 = 3.9%), 4 cavernous haemangiomas (4: 709 = 3.4%), 3 verruca vulgaris (3: 709 = 0.5%), and 2 fibrolipomas (2: 709 = 0.3%). The ratio of males to females is approximately 3: 4 in all these lesions (24).

The analyses revealed that 1,520 (47.7%) patients were male and 1,666 (52.3%) were female. They had a mean age ± standard deviation of 47.8 ± 18.6 years. The site most frequently biopsied was the labial mucosa (17.5%). A non-neoplastic diagnosis was established in 2,162 (63.3%) cases, potentially malignant disorders in 163 (5.1%) and neoplasms in 886 (27.6%) (403 benign and 483 malignant). The most commonly reported diagnosis was fibroepithelial polyp (n = 186; 15.9%), followed by squamous cell carcinoma (SCC) (n = 158; 13.6%). SCC was the lesion most commonly found in male patients (n = 279; 18.4%) whilst fibroepithelial polyp was the lesion most commonly found in female patients (n = 268; 16.1%). The most common lesion was a follicular cyst (n = 25; 12.8%) in patients 0-17 years of age whereas in patients 18-64 years of age it was a fibroepithelial polyp (n = 299; 13%). SCC was the most common type of lesion found in patients ⩾ 65 years of age (n = 160; 24.6%) (25).

Kansky AA et al. from Slovenia, was conducted a survey upon oral mucosal lesions during the national project for oral cancer screening in spring 2017 in the Slovenia in which more than 50% of dentists participated and 2395 patients (904 men and 1491 women) were included. Results of Clinical examination, which was conducted according to the WHO standards revealed that 645 patients (27%) had oral mucosal lesions. The ten most common oral lesions detected were fibroma, gingivitis, Fordyce spots, white-coated tongue, cheek biting, linea alba, denture stomatitis, geographic tongue, recurrent aphthous ulcerations and lichen planus. Overall, these epidemiological data suggest need for specific health policies for the prevention, diagnosis and treatment of oral mucosal lesions (26).

Da Silva et al., get coverage a total of 29 studies from 1963 to 2018 in the systematic screening they collected all these epidemiological studies in 2019. The 10 of them from Asian countries, 2 of them also were of Turkey. The number of samples in these studies ranges from 255 to 39 206. The rules of the World Health Organization have been followed in terms of design, auditor training and data collection in most of the studies,-

However, approximately 25% of the studies have not determined reliability among observers. Moreover, almost half of the included studies did not report the response rate and presented the results with appropriate confidence intervals. The authors emphasized the importance of the studies, therefore, need to improve some important points

in population-based studies focusing on the prevalence of OMLs, in particular, these studies should be able to adequately report response rates and findings and, to a lesser extent, diagnostic criteria and training of auditors, to facilitate comparison of different findings (27).

Conclusion

In conclusion, the literature on the incidence and prevalence of oral and maxillofacial lesions not only raises awareness of disease patterns in populations, but is also important to emphasize the lesions most likely to be encountered by oral health professionals in their daily practice. However, the classification of oral mucosal lesions in a variety of complex forms leads to conflicts both in practice and in scientific studies, making it difficult to standardize the investigations. Therefore, OMLs should be classified according to their color and origin in terms of oral pathology and lesions of salivary glands and jaw-bones should be excluded.

We would like to emphasize the importance of standardized studies in epidemiological studies focusing on the prevalence of OMFLs and to facilitate the improvement of some key points and to compare different findings in this area.

Acknowledgment: None

Conflict of Interest: The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Author Contributions: AGS, ÖFG, HRE: project design and patient examinations, data collection and analyzes **Writing and Revisions:** AGS

Ethical issues: All authors declare originality and ethical approval of research. Responsibilities of research, responsibilities against local ethics commission are under the authors responsibilities. The study was conducted under defined rules by the local ethics commission guidelines and audits.

References

1. Regezi JA, Sciubba J, Jordan J. Oral pathology. Clinical pathologic correlations. 7th ed. St. Louis: Saunders; 2003.
2. Karcioglu ZA, Someren A. Practical surgical pathology, Massachusetts:Collamore Press, 1985:262.
3. Köse O, Güven G, Özmen I, Akgün ÖM, Altun C. The oral mucosal lesions in pre-shool and shool age Turkish children. JEADV 2013;27:e136-37.
4. Majorana A, Bardellini E, Flocchini P, Amadori F, Conti G. Oral mucosal lesions in children from 0 to 12 years old: ten years' experience. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2010;110:e13-18.
5. Silva LVO, Arruda JAA, Martelli SJ, Kato CNAO, Nunes LFM, Vasconselos ACU et al. A multicenter study of biopsied oral and maxillofacial lesions in a Brazilian pediatric population. Braz Oral Res. 2018; 32.
6. Lima GS, Fontes ST, Araújo LMA, Etges A, Tarquinio SBC, Gomes APN. A survey of oral and maxillofacial biopsies in children. A single-center retrospective study of 20 years in Pelotas-Brazil. J Appl Oral Sci 2008;16:397-402.
7. Parlak AH, Koybasi S, Yavuz T, Yesildal N, Anul H, Aydogan I, et al. Prevalence of oral lesions in 13-to 16-year-old students in Düzce, Turkey. Oral Diseases 2006;12:553-58.
8. Gültekin SE, Tokman B, Türkseven, MR. A review of paediatric oral biopsies in Turkey. Int Dental J 2003;53:26-32.
9. Shulman JD. Prevalence of oral mucosal lesions in children and youths in the USA. Int J Paediatric Dentistry 2005;15:89-97.
10. Almoznino G, Zadik Y, Vered M, Becker T, Yahalom R, Derazne E, et al. Oral and maxillofacial pathologies in young- and middle-aged adults. Oral Diseases 2015;21:493–500.
11. Carvalho M de V, Iglesias DPP, do Nascimento GJF, Sobral APV. Epidemiological study of 534 biopsies of oral mucosal lesions in elderly Brazilian patients. Gerodontology 2011;28:111–15.
12. Espinoza I, Rojas R, Aranda W, Gamonal J. Prevalence of oral mucosal lesions in elderly people in Santiago, Chile. J Oral Pathol Med 2003;32:571-75.
13. Cueto A, Martinez R, Niklander S, Deichler J, Barraza A. Prevalence of oral mucosal lesions in an elderly population in the city Valparaiso, Chile. Gerodontology 2013;30:201-06.
14. Souza S, Alves T, Santos J, Oliveira M. Oral lesions in elderly patients in referral centers for oral lesions of Bahia. Int Arch Otorhinolaryngol 2015;19:279–285.
15. Avcu N, Ozbek M, Kurtoglu D, Kurtoglu E, Kansu O, Kansu H. Oral findings and health status among hospitalized patients with physical disabilities, aged 60 or above. Arch Gerontology Geriatrics 2005;41:69–79.
16. Al-Maweri SA, Al-Jamaei A, Saini R, Laronde DM, Sharhan A. White oral mucosal lesions among the Yemeni population and their relation to local oral habit. J Invest Clin Dent 2018;1-9.
17. De Giorgi V, Sestini S, Bruscino N, Janowska A, Grazzini M, Rossari S, et al. Prevalence and distribution of solitary oral pigmented lesions: a prospective study. JEADV 2009;23:1320-23.
18. Hassona Y, Sawair F, Al-Karadsheh O, Scully C. Prevalence and clinical features of pigmented oral lesions. Int J Dermatol 2016;55:1005-13.
19. Avcu N, Kanli A. The prevalence of tongue lesions in 5150 Turkish dental outpatients. Oral Diseases 2003;9:188-95.
20. Kovač-Kavčič M, Skalerič U. The prevalence of oral mucosal lesions in a population in Ljubljana, Slovenia. J Oral Pathol Med 2000;29:331–35.
21. Cebeci ARI, Gülşahı A, Kamburoğlu K, Orhan BK, Öztaş B. Prevalence and distribution of oral mucosal lesions in an adult Turkish population. Med Oral Path Oral Cir Bucal 2009;14: E272-77.
22. Robledo-Sierra J, Mattson U, Svedensten T, Jontell M. The morbidity of oral mucosal lesions in an adult Swedish population. Med Oral Pathol Oral Cir Bucal 2013;18: E766-72.
23. Do LG AJ Spencer AJ, Dost F, Farah CS. Oral mucosal lesions: findings from the Australian National Survey of Adult Oral Health. Australian Dental J 2014; 59: 114–20.
24. Kilinc A, Saruhan N, Gundogdu B, Yalcin E, Ertas U, Urvasizoglu G. Benign tumors and tumor-like lesions of the oral cavity and jaws: An analysis of 709 cases. Niger J Clin Pract 2017;20:1448-54.

25. Monteiro LS, Albuquerque R, Paiva A, de la Pena-Moral J, Amaral JB, Lopes CA. A comparative analysis of oral and maxillofacial pathology over a 16-year period, in the north of Portugal. International Dental J 2017;67:38–45.

26. Kansky AA, Didanovic V, Dovsak T, Brzak BL, Pelivan I, Terlevic D. Epidemiology of oral mucosal lesions in Slovenia. Radiol Oncol 2018;52:263-66.

27. da Silva KD, Rosa WLO, Sarkis-Onofre R, et al. Prevalence of oral mucosal lesions in population-based studies: A systematic review of the methodological aspects. Community Dent Oral Epidemiol. 2019;47:431-40.

28. Mota-Ramírez A, Silvestre FJ, Simó JM. Oral biopsy in dental practice. Med Oral Pathol Oral Cir Bucal 2007;12:E504-10.