

## Characterization of patients with epithelial dysplasia and carcinoma *in situ* in the oral cavity, 2000 to 2014.

Caracterización de pacientes con displasia epitelial y carcinoma *in situ* en cavidad oral, entre 2000 y 2014.

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**Abstract: Objective:** To characterize patients diagnosed with oral epithelial dysplasia and carcinoma *in situ*, according to their severity, location, age, sex and smoking habits. **Materials and Methods:** A descriptive study, based on 126 histopathological reports of biopsies diagnosed with mild, moderate, severe epithelial dysplasia and carcinoma *in situ*, with information regarding anatomical location, age and gender of the patient, recorded in the biopsy reports of the histopathology services of the Faculty of Dentistry of Andrés Bello University and Major University, between the years 2000 and 2014. The dichotomous qualitative variables were described based on percentage and age using the Shapiro-Wilk test, presenting as average and standard deviation, in the STATA 12® program (StataCorpLP, Texas, USA). **Result:** A similar frequency was found for men and women diagnosed with OED, 53.17% and 46.83% respectively. A mild degree of OED was the most diagnosed in both sexes. The group most affected by OED was between 50 and 69 years old (57.94%) and the most frequent anatomic location was the lateral border of the tongue (34.13%). **Conclusion:** Most of the analyzed cases corresponded to mild degrees of dysplasia; however, it is important to always carry out a histopathological diagnosis of the lesion, patient follow-up and education regarding risk habits.

**Keywords:** Carcinoma *in situ*; precancerous conditions; biopsy; middle-aged; smoking.

**Resumen: Objetivo:** Caracterizar a pacientes con diagnóstico de displasia epitelial oral (DEO) y carcinoma *in situ* (CIS) según su severidad, localización, edad, género y hábito tabáquico. **Materiales and Métodos:** Se realizó un estudio descriptivo, en base a 126 informes histopatológicos de biopsias diagnosticadas con displasia epitelial leve, moderada, severa y carcinoma *in situ*, que contaban con información relativa a localización del diagnóstico, edad y género del paciente, registrados en los informes de biopsias de los servicios de histopatología de la Facultad de Odontología de la Universidad Andrés Bello y Universidad Mayor, entre los años 2000 y 2014. Las variables cualitativas dicotómicas se describieron en base a porcentaje y la edad mediante el test de Shapiro-Wilk, presentándose como media y desviación estándar, en el programa STATA 12® (StataCorpLP, Texas, USA). **Resultados:** Se encontró una frecuencia levemente aumentada de mujeres y hombres con diagnóstico de DEO, 67 (53,17%) y 59 (46,83%), respectivamente. El grado leve de DEO fue el más diagnosticado en ambos sexos. El grupo más afectado por DEO fue entre los 50 a 69 años

(57,94%) y la localización anatómica más frecuente fue el borde lateral de la lengua (34,13%). **Conclusión:** La mayoría de los casos analizados correspondieron a grados leve de displasia; no obstante, es importante realizar siempre un

diagnóstico histopatológico de la lesión, seguimiento al paciente y educación en cuanto a hábitos de riesgo.

**Palabra Clave:** Carcinoma in situ; lesiones precancerosas; biopsia; persona de mediana edad; fumar

## INTRODUCTION.

The term dysplasia comes from the Greek dys- “bad” and plasis “formation”. Epithelial dysplasia includes alterations at the cellular level and in the architecture of the epithelium, with loss of uniformity, which translates into a series of changes in histological normality, in addition to presenting a tendency to malignant transformation.<sup>1</sup>

It is important to diagnose the presence of oral epithelial dysplasia (OED) in a timely manner due to its potential progression to cancer, especially in smoking patients and in dysplasia located on the border and ventral tongue, and floor of the mouth.

However, it is possible that dysplastic lesions become normal epithelium again, mainly after breaking habits such as tobacco and alcohol consumption.<sup>2</sup>

Because there are few *in situ* studies on the characterization of OED and carcinoma in Chile, the aim of the present study was to characterize patients with a diagnosis of oral epithelial dysplasia and carcinoma in situ according to their severity, location, age, sex, and smoking habits, between the years 2000 and 2014, from two histopathological oral care services.

## MATERIALS AND METHODS.

A descriptive study approved by the Ethics Committee of Universidad Andrés Bello was carried out. According to the WHO, dysplasia is classified as mild, moderate and severe, depending on the extent of epithelium that is affected by cellular atypia and changes in epithelial architecture.

Mild dysplasia corresponds to cytological abnormalities and atypia located in the lower third of the epithelium. Moderate dysplasia corresponds to abnormalities and cytological atypia located in the lower and middle thirds of the epithelium. Severe dysplasia corresponds to alterations and cytological atypia located in the middle third of the epithelium.

The term carcinoma *in situ* (CIS) is reserved for those lesions that involve the entire thickness of the epithelium, accompanied by marked atypia, without crossing the basement membrane, that is, without invasion of the underlying connective tissue.<sup>1</sup> (Table 1)

## Data source

A total of 126 biopsy records with diagnosis of mild, moderate and severe OED and CIS, from the histopathology services of the School of Dentistry of Universidad Andrés Bello and Universidad Mayor, between the years 2000 and 2014, were analyzed.

## Inclusion and exclusion criteria for the selection of biopsy reports

Inclusion criteria corresponded to all cases with histological diagnosis of mild, moderate and severe OED and CIS, stained with hematoxylin eosin and with availability of data regarding anatomical location of lesion, age, and sex of the patient, recorded in the biopsy reports of the histopathology services at the School of Dentistry of Universidad Andrés Bello and Universidad Mayor, between 2000 and 2014.

All age ranges, both sexes and location of the lesion in the oral mucosa were considered. Exclusion criteria consisted of biopsy reports with a diagnosis of recurrence of OED.

## Variables

The variables under study were histological diagnosis (mild, moderate, severe OED and CIS), location in the oral mucosa (hard palate, soft palate, gums, floor of the mouth, lingual ventral, lingual dorsum, lateral edge of the tongue, retromolar zone, jugal mucosa and labial mucosa), age (in years), sex (female, male), and smoking habit (yes, no).

## Statistical analysis

A descriptive analysis was carried out. Dichotomous qualitative variables were described based on percentage, and for the quantitative variable age, the normality of the data was assessed using the Shapiro-Wilk test, presented as mean and standard deviation in the STATA 12® software (StataCorpLP, Texas, USA).

## RESULTS.

A total of 126 cases with a histopathological diagnosis of OED or CIS were found in the biopsy records of the oral histopathology services at Universidad Andrés Bello and Universidad Mayor between 2000 and 2014.

Of the 126 cases, 67 (53.17%) and 59 (46.83%) cases corresponded to females and males, respectively, with a

female to male ratio of 1.14:1. Of the females affected, 48 presented mild OED (71.64%), 16 moderate OED (23.88%), 2 severe OED (2.99%) and 1 CIS (1.49%).

Of the affected men, 42 presented mild OED (71.19%), 14 moderate OED (23.73%), 2 severe OED (3.39%), and 1 CIS (1.69%).

The mean age of affected subjects was 58.17 years, standard deviation of 12.81; the minimum and maximum ages were 30 and 85 years, respectively. 78.57% of all

cases were aged 50 or older, with a higher frequency between 50 and 69 years old (57.94%).

The most frequent anatomical locations were the lateral border of the tongue (34.13%), followed by the jugal mucosa and gingiva (18.25% each), and the floor of the mouth (6.35%) (Table 2).

Of the 126 cases, only 57 were found to have a history of smoking, of them 39 (68.42%) still had the habit, and 18 (31.58%) did not.

**Table 1.** Cellular atypia and Architectural changes..

CELLULAR ATYPIAS	ARCHITECTURAL CHANGES
Abnormal variation in nuclear shape and size (nuclear pleomorphism)	Irregular stratification of the epithelium
Abnormal variation in cell shape and size (cell pleomorphism)	Loss of basal cell polarity
Increased nucleus-cytoplasm ratio	Drop-shaped epithelial ridges
Atypical mitotic figures	Increased number of normal mitoses
Increase in nuclear size	Abnormal superficial mitoses
Increased number and size of nucleoli	Early keratinization of individual cells
Hyperchromatism	Keratin pearls within rete ridges
	Loss of cohesion of epithelial cells

**Table 2.** Reported characteristics of patients with histopathological diagnosis of OED and CIS.

		No. of cases	Frequency (%)
Sex	Female	67	53.17
	Male	59	46.83
OED	Mild OED	90	71.43
	Moderate OED	30	23.81
	Severe OED	4	3.17
	Carcinoma <i>in situ</i>	2	1.59
Age range (years)	30-39	9	7.14
	40-49	18	14.29
	50-59	35	27.78
	60-69	38	30.16
	70-79	20	15.87
	> 80	6	4.76
Anatomical location	Lateral border of the tongue	43	34.13
	Jugal mucosa	23	18.25
	Gum	23	18.25
	Floor of the mouth	8	6.35
	Retromolar zone	2	1.59
	Lingual ventrum	8	6.35
	Palatal mucosa	5	3.97
	Soft palate	6	4.76
	Labial mucosa	6	4.76
Lingual dorsum	2	1.59	

## DISCUSSION.

The present study shows that the diagnosis of OED was more frequent in women than in men, in agreement with data reported in the literature.<sup>3</sup> This could be attributed to the fact that women consult more and/or earlier than men,<sup>4</sup> and that women have increased the consumption of tobacco and alcohol.<sup>5</sup>

Taking into account both sexes, subjects were in general more affected by mild dysplasia, in agreement with what was reported by Li *et al.*,<sup>6</sup> and Pereira *et al.*<sup>5</sup> This result can be explained because only a low percentage of mild dysplasia cases undergo malignant transformation and progress to more severe degrees of OED and squamous cell carcinoma; most remain a very long time as mild OED. On the contrary, in severe OED and carcinoma in situ the rate of malignant transformation is higher.

In this regard, Sperandio *et al.*,<sup>7</sup> found that 39% of severe OED underwent malignant transformation, 18% moderate OED, and only 6% mild OED.

It should also be noted that even lesions without dysplasia could progress to squamous cell carcinoma; consequently, the importance of regular monitoring of these patients is evident.<sup>2</sup>

Regarding the age of diagnosis of OED and CIS, the highest number of cases occurs over the age of 50, especially between the ages of 50 and 69, in agreement with the documented data.<sup>3</sup> This is due to the cumulative damage associated with etiological agents, such as tobacco and alcohol, which results in clinically visible manifestations.<sup>8</sup>

In this regard, the American Cancer Society recommends that oral mucosa examinations be performed once a year in those over 40 years of age.<sup>9</sup>

Regarding the anatomical distribution, most of the lesions were located on the lateral edge of the tongue, followed by the jugal and gingival mucosa, then the floor of the mouth and the ventral side of the tongue.

These findings are supported by studies carried out by Edwards *et al.*,<sup>10</sup> who point out that the places where OED lesions are most commonly diagnosed correspond to the lateral edge of the tongue,<sup>6</sup> the floor of the mouth, the gums and the border.

These locations are considered to be at a higher risk of malignant transformation, since they are covered by an epithelium with fewer layers, not keratinized on the floor of the mouth and ventral side of the tongue, and because carcinogenic agents accumulate due to the action of saliva.<sup>9</sup>

The present results suggest that it is possible to diagnose potentially malignant lesions when they present histopathological characteristics of mild OED, which reduces the risk of malignant transformation.

A limitation of the study was that not all the records included in the study registered the presence or absence of smoking, a recognized etiological factor in oral cancer; however, most of the OED patients were smokers.<sup>8</sup>

## CONCLUSION.

Most of the cases studied correspond to females, with ages ranging between 50 and 69 years, diagnosed with mild dysplasia located on the lateral edge of the tongue.

It is important to always establish a histopathological diagnosis of the lesion, since a potentially malignant lesion could even correspond to squamous cell carcinoma.

It is also important to monitor the patient, due to the risk of malignant transformation; as well as providing education regarding risky habits, such as tobacco consumption.

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## REFERENCES.

1. Krishnan L, Karpagaselvi K, Kumarswamy J, Sudheendra US, Santosh KV, Patil A. Inter- and intra-observer variability in three grading systems for oral epithelial dysplasia. *J Oral Maxillofac Pathol.* 2016;20(2):261-8.
2. Narayan TV, Shilpashree S. Meta-analysis on clinico-pathologic risk factors of leukoplakias undergoing malignant transformation. *J Oral Maxillofac Pathol.* 2016; 20(3):354–61.
3. Saleh SM, Idris AM, Vani NV, Tubaigy FM, Alharbi FA, Sharwani AA, Mikhail NT, Warnakulasuriya S. Retrospective analysis of biopsied oral and maxillofacial lesions in South-Western Saudi Arabia. *Saudi Med J.* 2017;38(4):405-12.
4. Smadi L, Sumadi AA. Women's oral and dental health aspects in humanitarian missions and disasters: Jordanian experience. *Am J Disaster Med.* 2016 Winter;11(1):43-8.
5. Kerr D, Ding K, Burke A, Ott-Walter K. An alcohol, tobacco, and other drug use comparison of lesbian, bisexual, and heterosexual undergraduate women. *Subst Use Misuse.* 2015;50(3):340-9.
6. Li B, Gu ZY, Yan KX, Wen ZN, Zhao ZH, Li LJ, Li Y. Evaluating oral epithelial dysplasia classification system by near-infrared Raman spectroscopy. *Oncotarget.* 2017;8(44):76257-76265.
7. Sperandio M, Brown AL, Lock C, Morgan PR, Coupland VH, Madden PB, Warnakulasuriya S, Møller H, Odell EW. Predictive value of dysplasia grading and DNA ploidy in malignant transformation of oral potentially malignant disorders. *Cancer Prev Res (Phila).* 2013; 6(8):822-31.
8. Nayak S, Chandra S, Mehrotra D, Kumar S, Agrawal SP, Kumar S, Goel MM. Effect of tobacco, alcohol, and smoking habits in oral precancer with histological proven epithelial dysplasia. *J Oral Biol Craniofac Res.* 2012;2(3):159-62.
9. Neville BW, Day TA. Oral cancer and precancerous lesions. *CA Cancer J Clin.* 2002;52(4):195-215.
10. Edwards PC. The natural history of oral epithelial dysplasia: perspective on Dost et al. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2014;117(3):263-6.