Original Article

# A 30-Year Retrospective Epidemiological Study of Oral Dysplastic Lesions in an Iranian Population

**L. Maleki [1] , S. Khalesi [2] , S. Zahedi [3]**

[1] Assistant Professor, Dental Research Center, Dental School, Isfahan University of Medical Sciences, Isfahan, Iran
[2] Assistant Professor, Dental Material Research Center, Dental School, Isfahan University of Medical Sciences, Isfahan, Iran
[3] Graduate, Dental Students' Research Committee, Dental School, Isfahan University of Medical Sciences, Isfahan, Iran

**Abstract**

**Background and Aim:** Dysplastic lesions are characterized by replacement of parts or all of the epithelium thickness with cells with variable degrees of atypia and abnormal maturation. The aim of this study was to clinicopathologically evaluate oral dysplastic lesions recorded in the Oral Pathology Department of Isfahan Dental School during a 30-year period.

**Materials and Methods:** This cross-sectional study was performed on 130 records of patients diagnosed with dysplastic lesions at the Oral Pathology Department of Isfahan Dental School from 1989 to 2018. The patients' data were entered into SPSS version 23 and analyzed by the Kruskal-Wallis test, Mann-Whitney test, and Spearman's correlation test. P values < 0.05 were considered statistically significant.

**Results:** From 11,964 recorded cases during the abovementioned 30-year period, 130 cases were oral dysplastic lesions. Most of the patients were in their fifth and sixth decades of life (24.6% and 23.3%, respectively). There was no significant correlation between the severity of dysplasia and gender (p=0.45). Sixty-two cases (47.7%) had white and red lesions in clinical examination. Buccal mucosa was the most common site of involvement. The most commonly recorded clinical differential diagnoses included lichen planus, leukoplakia, and squamous cell carcinoma, in decreasing order of frequency.

**Conclusion:** Considering the importance of early diagnosis and treatment of oral dysplastic lesions, having comprehensive and up-to-date information about their clinicopathological characteristics is necessary. Since most of such lesions have mild dysplastic changes, their aggravation and malignant transformation can be prevented by early diagnosis.

**Key Words:** Pathology, Oral; Neoplasms; Epidemiologic Studies

Corresponding author:
S. Khalesi , Assistant professor, Dental Material Research Center, Dental School, Isfahan University of Medical Sciences, Isfahan, Iran

s_khalesi@dnt.mui.ac.ir

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## Introduction

Epithelial dysplasia is a microscopic diagnosis based on unusual cellular characteristics and different structures. Therefore, the term epithelial dysplasia refers to a lesion in which part or all of the epithelial thickness has cells with varying degrees of abnormality (1). Increased mitotic activity is commonly seen in dysplastic epithelium, although this increase is also seen in many reactive lesions (2-4). Evidence shows that oral premalignant lesions with epithelial dysplasia in their

histopathological features are more likely to undergo malignant transformation than those without dysplasia (5).

It has been generally confirmed that the diagnosis of dysplasia by using light microscopy is the best and most efficient way to predict malignant changes in oral precancerous lesions. The percentage of malignant changes in precancerous lesions varies from 0.1% to 40%. The risk of malignancy in precancerous lesions depends on the degree of dysplasia. Symptoms of oral epithelial dysplasia include cellular abnormalities, loss of normal cell maturity, and lack of normal keratinization (6-8). Oral epithelial dysplasia is not associated with any specific clinical presentation, but is characterized by histopathological changes that are associated with an increased risk of malignant changes (9,10). According to the literature, oral dysplastic lesions usually appear in the buccal mucosa, tongue, gingiva, palate, and lips. These lesions affect between 0.1% to 4% of the population. Furthermore, lesions with an ulcerative appearance and lesions in the floor of the mouth show higher degrees of dysplasia (11,12). Due to the increasing prevalence of oral pre-malignant and malignant lesions in the Iranian population (5-7), the aim of this study was to evaluate the clinicopathological features of oral dysplastic lesions recorded in the Oral Pathology Department of Isfahan Dental School during a 30-year period.

## Materials and Methods

This study was approved by the ethics committee of Isfahan University of Medical Sciences (ethical code IR.MUI.RESEARCH.REC.1398.567). In this cross-sectional study, all samples registered in the Oral Pathology Department of Isfahan Dental School with definitive histopathological diagnosis of oral dysplastic lesions from 1989 to 2016 were reviewed. All information of patients such as age, gender, location of lesion, differential diagnosis, and histopathological diagnosis was collected. The patients with incomplete data in their pathology report were excluded from the study. The clinical manifestations of lesions were classified into four categories: ulcerative and vesiculobullous lesions, white and red lesions, and tumor-like and pigmented lesions. According to the histopathological features, the lesions were classified into mild, moderate and severe oral epithelial dysplasia. All lesions were diagnosed by oral pathologists and classified according to the following classification.

Mild dysplasia associated with cellular changes is limited to the basal and parabasal layers. Moderate dysplasia refers to involvement of the basal layer to the middle of the spinous layer. Severe dysplasia shows cellular changes from the basal layer to one step above the middle of the epithelium (1).

The obtained data were analyzed by SPSS version 24 (SPSS Inc., Chicago. IL, USA) using the Kruskal-Wallis, Mann-Whitney, and Spearman's correlation tests. P values <0.05 were considered statistically significant.

## Results

The highest frequency of oral dysplastic lesions was in patients aged between 51 to 60 years. Furthermore, 27 patients (84.4%) had mild dysplastic lesions. The Spearman correlation coefficient showed that there was no significant relationship between the severity of dysplasia and patients' age (P=0.783, r=0.025).

Of all, 66 (50.8%) patients were females and 64 (49.2%) were males. Of all, 55 cases (52.4%) of mild dysplastic lesions were in females. There were 3 cases (60%) of mild to moderate, 10 cases (55.5%) of moderate, and 1 case (100%) of severe dysplastic lesions in males. The Mann-Whitney test showed that there was no significant correlation between the severity of dysplasia and gender (P=0.33).

Of all, 62 patients (47.7%) with oral dysplastic lesions and 52 (49.5%) with mild dysplastic lesions had a white and red clinical appearance. The Kruskal-Wallis test showed that there was no significant correlation between the severity of dysplasia and clinical manifestations (P=0.812).

The location of 44 (33.8%) dysplastic lesions and 37 (35.2%) mild dysplastic lesions was in the buccal mucosa. The Kruskal-Wallis test showed that there was no significant correlation between the severity of dysplasia and the location of lesions (P = 0.614, Table 1).

Lichen planus was the first condition in the list of clinical differential diagnosis of 32 samples (24.6%) of all lesions and 26 samples (24.8%) of mild dysplastic lesions. The most commonly recorded clinical differential diagnoses included lichen planus (n=32, 24.6%), leukoplakia (n=28,

**Table 1.** Frequency of oral dysplastic lesions based on clinicopathological characteristics

| Variable | Severity of dysplasia | | | | | Total | P value |
|---|---|---|---|---|---|---|---|
| | Mild | Mild to Moderate | Moderate | Severe | Unknown | | |
| **Age** | | | | | | | |
| 1-10 | 2(%100) | 0(%0) | 0(%0) | 0(%0) | 0(%0) | 2(%1.5) | |
| 11-20 | 1(%100) | 0(%0) | 0(%0) | 0(%0) | 0(%0) | 1(%0.8) | |
| 21-30 | 8(%66.7) | 2(%16.7) | 2(%16.7) | 0(%0) | 0(%0) | 12(%9.2) | |
| 31-40 | 11(%84.6) | 0(%0) | 2(%15.4) | 0(%0) | 0(%0) | 13(%10) | |
| 41-50 | 24(%77.4) | 0(%0) | 6(%19.4) | 0(%0) | 1(%3.2) | 31(%23.8) | |
| 51-60 | 27(%84.4) | 1(%3.1) | 4(%12.5) | 0(%0) | 0(%0) | 32(%24.6) | |
| 61-70 | 17(%85) | 1(%5) | 2(%10) | 0(%0) | 0(%0) | 20(%15.4) | 0/783 |
| 71-80 | 11(%78.6) | 0(%0) | 2(%14.3) | 1(%7.1) | 0(%0) | 14(%10.8) | |
| Unknown | 4(%80) | 1(%20) | 0(%0) | 0(%0) | 0(%0) | 5(%3.8) | |
| **Gender** | | | | | | | |
| Male | 50(%78.1) | 3(%4.7) | 10(%15.6) | 1(%1.6) | 0(%0) | 64(%49.2) | 0.33 |
| Female | 55(%83.3) | 2(%3) | 8(%12.1) | 0(%0) | 1(%0.8) | 66(%50.8) | |
| **Clinical feature** | | | | | | | |
| Ulcerative and vesiculobullous | 17(%73.9) | 1(%4.3) | 5(%21.7) | 0(%0) | 0(%0) | 23(%17.7) | |
| Red and white | 52(%83.9) | 3(%4.8) | 6(%9.7) | 0(%0) | 1(%1.6) | 62(%47.7) | |
| Tumor-like | 9(%81.8) | 1(%9.1) | 9(%9.1) | 0(%0) | 0(%0) | 11(%8.5) | 0.812 |
| Pigmented | 1(%100) | 0(%0) | 0(%0) | 0(%0) | 0(%0) | 1(%0.8) | |
| Unknown | 26(%78.8) | 0(%0) | 0(%0) | 1(%3) | 0(%0) | 33(%25.4) | |
| **Location** | | | | | | | |
| Maxillary gingiva | 8(%72.7) | 1(%9.1) | 0(%0) | 1(%9.1) | 1(%9.1) | 11(%8.5) | |
| Mandibular gingiva | 5(%55.6) | 1(%11.1) | 3(%33.3) | 0(%0) | 0(%0) | 9(%6.9) | |
| Tongue | 24(%82.8) | 1(%3.4) | 4(%13.8) | 0(%0) | 0(%0) | 29(%22.3) | |
| Buccal mucosa | 37(%84.1) | 1(%2.3) | 6(%13.6) | 0(%0) | 0(%0) | 44(%33.8) | |
| Palate | 8(%80) | 0(%0) | 2(%20) | 0(%0) | 0(%0) | 10(%7.7) | |
| Upper lip | 11(%91.7) | 0(%0) | 1(%8.3) | 0(%0) | 0(%0) | 12(%9.2) | |
| Lower lip | 6(%85.7) | 1(%14.3) | 0(%0) | 0(%0) | 0(%0) | 7(%5.4) | 0.614 |
| Floor of the mouth | 6(%75) | 0(%0) | 2(%25) | 0(%0) | 0(%0) | 8(%6.2) | |
| Unknown | 0(%0) | 0(%0) | 0(%0) | 0(%0) | 0(%0) | 0(%0) | |
| Total | 105(%80.8) | 5(%3.8) | 18(%13.8) | 1(%0.8) | 1(%0.8) | 130(%100) | |

21.5%), and squamous cell carcinoma (n=12, 9.2%), in decreasing order of frequency.

## Discussion

According to the results of the present study, most patients with oral dysplastic lesions were in their fifth and sixth decades of life. But there was no significant correlation between the severity of dysplasia and age. These findings were similar to the results of studies by Jaber (10) Pereira et al, (11) and Hu et al, (12) reporting that those between 55 to 64 years, fifth and sixth decades of life, and sixth decade of life, respectively had high frequency of such lesions. However, in a study by Arduino et al, (13) in Italy, most patients with such lesions were in seventh and eighth decades of life. This difference may be due to the relatively old population of Italy compared with other countries.

In the present study, there was no statistically significant correlation between the severity of dysplasia and gender of patients. This result was similar to the findings of Jaber (10) in 2010 and Jaber et al, (14) in 2003, Hu et al, (12), Arduino et al, (13), and Pereira et al (11).

The most common locations of involvement in the present study were the buccal mucosa and tongue. But, there was no significant correlation between the severity of dysplasia and the location of lesion. In the study by Jaber et al, (14) the buccal mucosa was the most common site of lesions, which was consistent with the results of the present study. However, in studies by Jaber (10) in 2010, Arduino et al, (13), Hu et al, (12) and Pereira et al, (11) the tongue, floor of the mouth, and gingiva were the most commonly involved sites, respectively. In a study by Irani et al, (15) there was no significant correlation between dysplastic changes in lichen planus and the location of lesions.

In the present study, the most common clinical manifestations were white and red, ulcerative and vesiculobullous, and tumor-like and pigmented lesions, respectively. One of the limitations of this study was lack of accurate recording of the clinical features of the lesions by the clinicians. Of all, 49.5% of mild dysplastic lesions had a white and red clinical appearance. However, according to the statistical tests, there was no significant correlation between the severity of dysplasia and clinical features. The results of the present study were similar to those of Jaber et al, in 2003 (14) and Jaber (10) in 2010, Arduino et al, (13) and Pereira et al (11).

In the present study, 32 (24.6%) samples had a clinical differential diagnosis of lichen planus and 21.5% had a clinical differential diagnosis of leukoplakia. This result was different from the findings of studies by Jaber et al, (14) in 2003 and Jaber (10) in 2010 who showed that leukoplakia was the most common clinical diagnosis followed by lichen planus. In a study by Hosagadde et al, (17) which was performed on precancerous lesions, the highest probability of dysplastic changes was related to leukoplakia and then lichen planus. One reason for the difference in the results was the smaller sample size in the present study.

Most of the patients were in their fifth and sixth decades of life, and 47.7% of the lesions had white and red clinical appearance in the present study. Early detection of dysplastic lesions can help prevent their malignant transformation.

One limitation of the present study was incomplete patient records. Adequate information should be provided to clinicians to increase the quality of registration of symptoms. Also, strategies for early detection of these lesions should be implemented considering the reported prevalence of dysplastic lesions.

## Conclusion

Considering the importance of early diagnosis and treatment of oral dysplastic lesions, having comprehensive and up-to-date information about their clinicopathological characteristics is necessary. Since most of the lesions have mild dysplastic changes, their malignant transformation may be prevented by early diagnosis.

## Conflict of interest

The authors have no conflict of interests.

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