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Grading of Oral Epithelial Dysplasia - A Review

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ABSTRACT

Pathologist assess oral precancerous lesions with their dysplastic features by grading of oral epithelial dysplasia (OED) .Evaluating of precancerous lesion arises from two factors (1) lack of knowledge in predicting future development of cancer. (2) Lack of evaluating the criteria which is already established. This article provide a detail review of all the grading systems.

Key words: Oral epithelial dysplasia, knowledge, cancer.

INTRODUCTION

Oral squamous cell carcinoma is a most common changes in the oral mucosa[1]. leukoplakia is one of the most common potentially malignant disorders[2]. Dysplasia is reversible. When the stimulus is removed , the dysplastic changes will revert back to normal. When the irritant is removed , epithelium shows cellular atrophy[3]. It manifest as a cell death or neoplastic transformation. In epithelial dysplasia malignant development is more important than the clinical characteristics[2,4.]

Grading in dysplasia

Many combinations of dysplastic features are used in grading system and there is difficulty in assessing the various degrees of epithelial dysplasia . To assess the severity of the dysplastic features many grading systems have been proposed . There are various grading systems given by many authors , following are the most commonly used grading systems

1. Smith and Pindborg's classification[5]
2. 1978 WHO classification [6]
3. Ljubljana classification squamous intraepithelial lesions (SIL)[7,8]
4. 2005 WHO classification[9]
5. New Binary system [10]

Smith and Pindborg Classification[5]

In the year 1969 Smith and Pindborg were first to standardize the grading for epithelial dysplasia . This system was based on the means of the different histological changes and photographic method. In this method standardized photographs are being compared with histologic sections and given 13 histologic features. Now they graded the epithelial dysplasia as absent , marked or slightly and also the score is given. For absent the score was given as zero and for marked or slightly the score was between 1 and 10

1978 WHO Classifi cation[6]

The "histopathological typing of cancer and precancer lesions " was given by WHO in the year 1997 . They have given 12 characteristics of the epithelial dysplasia which was graded as mild , moderate and severe according to the characters which are present.

List of Characteristic features are

1. Loss of polarity of basal cells
2. An increased nuclear-cytoplasmic ratio
3. Drop shaped rete pegs
4. The presence of more than one layer of cells having the basaloid appearance
5. Increased number of mitotic figures

6. Irregular epithelial stratification
7. The presence of mitotic figures in the superficial half of the epithelium
8. Nuclear hyperchromatism
9. Cellular polymorphism
10. Reduction of cellular cohesion
11. Enlarged nucleoli
12. Keratinization of single cells or cell groups in the prickle cell layer

They graded epithelial dysplasia as

1) Mild
2) Moderate
3) Severe

Mild dysplasia

Nuclear abnormality is slight in the basal third of epithelium and it was minimal in the upper layer with cell maturation. Few abnormal mitosis maybe seen accompanied by chronic inflammation.

Moderate dysplasia

Basal 2/3rd of the epithelium shows nuclear abnormalities persisting up to the surface. Cell maturation and stratification are seen in the upper layer. Mitosis occurs in the Parabasal and intermediate layer.

Severe dysplasia

More than 2/3rd of the epithelium shows nuclear abnormalities and cell maturation is lost. stratification and abnormal mitosis is seen in the superficial layers. Carcinoma in situ was merged into severe dysplasia.

Ljubljana Classifi cation SIL

In the year 2003 zeodner proposed criteria for grading hyperplastic epithelial lesions of the oral cavity as simple , atypical and abnormal hyperplasia

Simple hyperplasia

Basal and parabasal layer remains intact without any cellular atypia and thickening of the prickle cell layer is seen .

Abnormal hyperplasia

It shows increase in size from basal layer up to half of the epithelial thickness. Stratification remains unchanged with moderately enlarged nuclei. Basal cell layer shows mitosis and dyskeratosis is seen less than 5% of the epithelial cells

Atypical hyperplasia (risky epithelium)

Cells of the epithelium are altered showing malignant changes but it is not to form carcinomatous cells . Epithelial stratification remains unchanged and nuclei is enlarged with irregular contour. Mitotic figures is increased upto to the 2/3rd of the epithelium with increased nuclear-cytoplasmic ratio. Civatte bodies and Dyskeratotic cells may be present.

Carcinoma in situ

Stratification is completely lost and mitotic figures are seen all over the epithelium[7]

2005 WHO Classifi cation[9]

In the year 2003 WHO classified the oral epithelial dysplasia as Mild, moderate, severe, carcinoma in situ or hyperplasia based on the architectural changes and the presence or severity of cellular atypia according to the presence and severity of cellular atypia and the architectural features. It was issued by WHO in the new book "classification of tumors of the head and neck."[9]

Architectural characteristics

1) Abnormally superficial mitoses
2) Irregular epithelial stratification
3) Drop-shaped rete ridges
4) Keratin pearls within rete pegs
5) Loss of polarity of basal cells
6) Increased number of mitotic figures

Cellular characteristics

1) Anisonucleosis and Anisocytosis
2) Nuclear and Cellular pleomorphism
3) Dyskeratosis
4) Increased number and size of nucleoli
5) Increased nuclear-cytoplasmic ratio
6) Atypical mitotic figures

Grading systems of oral epithelial dysplasia

1. Mild dysplasia: Architectural changes limited only to the lower third of the epithelium along with the cytological atypia
2. Moderate dysplasia: Architectural changes is seen extending to the middle third of the

epithelium. Degree of cytologic atypia requires upgradation

3. Severe dysplasia: Architectural disturbances is seen Greater than 2/3rd of the epithelium and the increased number of the cytologic atypia
4. Carcinoma in situ: Architectural disturbances are seen throughout the full thickness of the epithelium. Abnormal mitosis is seen on the superficial layer with atypical figures

CONCLUSION

Histopathological assessed severity of oral epithelial dysplasia remains the gold standard for the prediction of malignant transformation of precancerous lesions

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