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THE IMPORTANCE OF BUCCAL EPITHELIAL CELLS IN THE PATHOGENESIS OF PERIODONTITIS IN LICHENA PLANUS

Dildora Saidmuratovna Kushaeva
Associate Professor, Department of Histology and Medical Biology No. 2.
DSc
E-mail: dildora7519@mail.ru

Kamolakhon Abrorovna Takhirova
Doctor of Medical Sciences (DSc), Associate Professor
Department of Hospital Therapeutic Dentistry.
E-mail: kamolaxon.abrorovna@gmail.com

Mumtoza Odilovna Karimjonova
Master's Degree Student (1st Year)
Department of Hospital Therapeutic Dentistry.
E-mail: karimjonova.mumtoza@icloud.com

Nozima Sobirovna Nurmukhamedova
Assistant, Department of Internal Diseases and Endocrinology.E-mail:
nurmuhamedovanzima@gmail.com

Abstract

Lichen planus (LP) of the oral mucosa is a chronic inflammatory disease of autoimmune origin, characterized by damage to the stratified squamous epithelium and the development of immune-inflammatory reactions. In recent years, particular attention has been paid to the role of buccal epithelial cells, not only as structural elements of the mucosa but also as active participants in local immunity. Changes in the morphofunctional state of buccal epithelial cells in LP contribute to the disruption of the mucosal barrier function, increased inflammatory response, and the progression of periodontal disease. This article examines the role of buccal epithelial cells in the mechanisms of periodontitis development in patients with lichen planus.

Keywords: lichen planus, periodontitis, buccal epithelial cells, inflammation, cytology, oral mucosa.

Introduction

Lichen planus of the oral mucosa is a chronic inflammatory disease characterized by impaired epithelial cell differentiation and the development of immune responses against the body's own tissues. The disease is often associated with periodontal pathology and can contribute to a more severe course of periodontitis.

Modern research shows that buccal epithelial cells are an important indicator of the condition of the oral mucosa and can reflect the severity of pathological processes in the oral cavity. Studying their morphological and functional changes allows us to better understand the mechanisms of periodontitis development in lichen planus.

Structure and Function of Buccal Epithelial Cells

Buccal epithelial cells are cells of the stratified squamous nonkeratinizing epithelium of the buccal mucosa. The main functions of these cells are

Formation of a mechanical barrier;
Protection of tissues from microorganisms;
Participation in regenerative processes;
Regulation of the local immune response;
Synthesis of cytokines and inflammatory mediators;
Maintaining mucosal homeostasis.

Normally, buccal epithelial cells provide oral tissue resistance to pathogenic factors. Their structure and function change significantly in various diseases.

Pathogenesis of Lichen Planus

The development of lichen planus is underpinned by impaired cellular immunity. Activated T lymphocytes migrate to the basal layer of the epithelium and cause damage to keratinocytes through the production of proinflammatory cytokines:

Tumor necrosis factor-α (TNF-α);
Interleukin-1β;
Interleukin-6;
Interferon-γ.

As a result, chronic inflammation develops, epithelial cell apoptosis intensifies, and the integrity of the epithelial barrier is compromised.

Damaged buccal epithelial cells become a source of additional inflammatory mediators, perpetuating the pathological process.

The Role of Buccal Epithelial Cells in the Development of Periodontitis in Lichen Planus

Pronounced cytomorphological changes in buccal epithelial cells are observed in lichen planus:

cytoplasmic vacuolization;
cell membrane deformation;
karyopyknosis;
karyorrhexis;
micronuclear abnormalities;
signs of apoptosis.

These changes lead to a decrease in the protective function of the mucosa and facilitate the penetration of pathogenic microflora into periodontal tissue.

Buccal epithelial cells actively participate in the production of proinflammatory cytokines, which contribute to:

increased inflammatory infiltration of the gingiva;
osteoclast activation;
destruction of connective tissue attachment;
alveolar bone resorption.

Thus, epithelial cell changes become one of the key factors in the progression of periodontitis in patients with Lichen Planus.

Cytological examination of buccal epithelial cells

Buccal cytological examination is a simple and non-invasive method for assessing the condition of the oral mucosa.

Patients with LP and concomitant periodontitis often exhibit the following:

an increased number of degeneratively altered cells; an increased number of cells with micronuclei;

signs of genotoxic damage;

a decreased cell viability index;

an increased level of cellular destruction.

The severity of these changes correlates with the severity of the inflammatory process in periodontal tissues.

Clinical Significance

Studying buccal epithelial cells is of great practical importance because it allows:

Assess the activity of the inflammatory process;

Early diagnosis of LP complications;

Predict the risk of periodontitis;

Monitor the effectiveness of treatment;

Determine the extent of damage to the oral mucosa.

The use of cytological methods can become an additional diagnostic tool in the comprehensive examination of patients with periodontal diseases.

Conclusion

Buccal epithelial cells play a key role in the pathogenesis of periodontitis in oral lichen planus. Disruption of their morphofunctional state leads to a decrease in the epithelial barrier function, increased inflammatory responses, and the progression of destructive processes in periodontal tissues. Cytological examination of buccal epithelial cells allows for the detection of early signs of pathological changes and can be used for diagnosis, monitoring, and prognosis of the disease. Further study of this problem is of significant interest to modern periodontology and dentistry in general.

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