



Modern Aspects of Diagnostics and Treatment of Oral Leukoplakia

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ABSTRACT

The article presents an overview of modern views on the risk factors for malignancy of oral leukoplakia and the latest methods of diagnosis and treatment of this disease. The modern methods of treatment of leukoplakia indicated in this literature review allow us to conclude that when choosing a treatment method, the clinical form of oral leukoplakia should be taken into account, and an integrated approach is the key to effective therapy of this disease.

Keywords:

oral leukoplakia, malignancy risk, CO₂ - laser, photodynamic therapy, cryosurgery.

Leukoplakia is a chronic disease of the oral mucosa (OM) and the red border of the lips, characterized by pathological keratinization of the epithelium, which occurs, as a rule, in response to chronic exogenous irritation [1].

It is known that leukoplakia refers to facultative precancerous diseases, the frequency of malignancy of which is not clearly defined and, according to different researchers, varies from 15 to 70% [3-5], which makes dentists to be oncologically alert [8].

The main task is the timely identification of risk factors, namely, the early diagnosis of oral leukoplakia. Despite modern instrumental methods, diagnosis through history taking and visual inspection remains the main method [10,12]. These methods include immunohistochemical and cytological analyses. In the pathogenesis of OM, dysfunction of the cytokine status is of decisive importance. Cytokines are biologically active substances that are produced by the cells of the body and are regulators of intercellular and intersystem interactions. The dynamics of the disease itself, prognosis, and outcome are largely related to the level of pro- and anti-inflammatory cytokines [8].

There is literature data on a study evaluating the effectiveness of the tumor necrosis factor factor (TNF- α) biomarker and tumor-associated macrophage (TAM) as biomarkers of oral leukoplakia and other precancerous lesions. It has been substantiated that TNF- α and TAM can be used to diagnose oral leukoplakia and monitor its transformation into a malignant neoplasm [19,21,27]. Currently, studies have determined that there is more information for cytological analysis in the oral fluid than information in scraping smears [20,23,28,29]. These two diagnostic tests for the diagnosis of leukoplakia are modern and in demand in recent years.

Since leukoplakia of the oral mucosa is a polyetiological disease, the treatment of patients should be comprehensive, affecting all known pathogenetic links. Patients with an established diagnosis of mucosal leukoplakia are examined to identify comorbidities [7,9]. Timely treatment of concomitant diseases significantly increases the effectiveness of complex therapy for this pathology [7]. The main methods of treatment are: professional oral hygiene, sanitation and elimination of exposure to various chemical and physical

irritants [11].

In connection with metabolic disorders, vitamin therapy is indicated for patients with leukoplakia. Local and general application of vitamins A, E and some B vitamins is the standard treatment for various forms of leukoplakia [6].

Traditional is local application therapy using a 3.44% solution of retinol acetate, and 30% solution of tocopherol, which leads to thinning of the lesions affected by hyperkeratosis, normalization of the metabolic processes of the epithelium and the functioning of cell membranes of the affected areas. As a complex vitamin therapy, it is also recommended to use 3.44% retinol acetate, orally 6-8 drops 2 times a day and 30% tocopherol 3-5 drops a day for a month [2].

A.S. Ribeiro et al studied the efficacy of topical beta-carotene, which is a precursor to vitamin A and a powerful antioxidant. Beta-carotene, being a natural immunostimulant, acting non-specifically and increasing the body's immune potential, proved to be quite effective [25].

Verrucous or erosive-ulcerative form of leukoplakia OOM requires radical treatment using modern surgical approaches.

The laser method for the treatment of oral leukoplakia has gained popularity due to the fact that it allows you to remove the lesion accurately, without bleeding and does not require preliminary preparation. Studies have shown that the carbon dioxide laser is quite effective in the treatment of oral leukoplakia and gives a clear positive result in the treatment of verrucous leukoplakia localized to the gums and tongue. [13,16,17,18].

It has been proven that, unlike the traditional surgical removal of verrucous leukoplakia lesions, laser removal takes place without the use of sutures, the formation of postoperative edema and bleeding, which makes the laser method common among patients. Therefore, traditional surgery is gradually fading into the background due to the rather high efficiency of laser methods and cryosurgery.

P. Carvalho Nogueira and co-authors concluded that cryosurgery has shown itself to

be a worthy alternative treatment for leukoplakia, because is painless and provides a low level of post-surgical infection [15]. On the contrary, M. Natekar noted the high efficiency of the diode laser in comparison with cryosurgery [22]. Despite the difference in opinions, laser methods and cryosurgery today are almost on the same level, thanks to the positive properties that have become their advantages over traditional surgery.

In recent years, there has been an increase in interest in photodynamic therapy (PDT). This method is based on the use of photosensitive substances - photosensitizers, which are administered intravenously, orally and by application, and exposure to the affected areas of visible light of a certain wavelength [14,30]. PDT is an innovative method and has the best efficacy in the treatment of verrucous leukoplakia of the oral mucosa [24,26,31]. PDT is ineffective when used in the treatment of extensive and keratinized forms of leukoplakia. Therefore, some authors recommend using PDT in combination with a carbon dioxide laser to improve the results of treatment of extensive and keratinized forms of leukoplakia [32,33].

As mentioned above, leukoplakia is an optional precancerous disease that requires special attention and vigilance, as well as knowledge of modern diagnostic methods. The modern methods of treatment of leukoplakia listed above in the literature review allow us to conclude that when choosing a method of treatment, the clinical form of mucosal leukoplakia should be taken into account, and complex prevention and treatment is the main link in achieving good results.

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