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Ulcerative-Necrotic Lesions of the Oral Mucosa with the Appearance of Trophic Ulcers; A Research Article

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Abstract Oral ulcers are usually painful lesions that are associated with various conditions developing in the oral cavity. The differential diagnosis can range from a classic infectious disease on the background of nutritional deficiencies, gastrointestinal disorders, and inflammation to side effects of medications or chronic dysentery diseases. A correct differential diagnosis is necessary to prescribe appropriate treatment, taking into account all possible causes of ulcers in the oral cavity. Therefore, patients with trophic ulcers of the oral cavity are treated by many different specialists, such as dentists, family doctors, pediatricians, rheumatologists, hematologists, gastroenterologists, and otorhinolaryngologists. A systematic literature search and a descriptive review of the literature on potential diseases associated with trophic ulcers of the oral cavity were conducted.

Keywords Ulcerative-necrotic lesions, Trophic ulcers, Oral mucosa, Systemic diseases, Review

1. Relevance

The existing relationships between lesions of the mucous membrane of the mouth, lips, and tongue and systemic pathology should alert both patients and doctors of dental and somatic profiles [1,8,17,23].

Changes in the state of the mucous membrane of the mouth and tongue can occur and be detected as before other clinical manifestations of systemic diseases. In many systemic (somatic, general) diseases of the oral mucosa, it reacts with the appearance of various kinds of disorders: disorders of the trophic tissues, bleeding, swelling, and dyskeratosis [26,30,34]. Some manifestations of pathology on the mucous membrane of the mouth and tongue indicate one or another type of organ or systemic disorder and are of great diagnostic importance [3,9,16]. However, in most cases, despite the different etiology and pathogenesis, the manifestations of systemic diseases on the oral mucosa are not specific and are characterized by similar, sometimes outwardly identical clinical signs, which creates difficulties in their recognition [7,13,25,29].

Frequent lesions of the oral mucosa in diseases of the gastrointestinal tract, cardiovascular system, endocrine pathology, vitamin deficiency (especially group B), and macro- and microelements can attract the attention of specialists of various profiles [1,10,19]. Since changes in the mucous membrane of the mouth and tongue can occur and be detected earlier than other clinical manifestations of systemic diseases or simultaneously with them, patients themselves often turn to a dentist [5,6,27,32]. In turn, gastroenterologists, endocrinologists, cardiologists, and hematologists can involve a dentist for consultation and joint supervision of patients with lesions of the oral mucosa [4,20,24,28].

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2. Purpose of the Study

To analyze the problems of diagnosis and treatment of trophic ulcers of the oral cavity that occur with a non-specific symptom of several diseases, and to determine ways to solve them.

3. Material and Methods

The modern scientific literature on the problem of ulcerative-necrotic lesions of the oral mucosa with the formation of trophic ulcers in disorders of the cardiovascular system has been studied. The search was carried out in Pubmed, e-library, and other systems by keywords: organization of dental care, oral ulcers, epithelization of erosions and ulcers, prevalence and need for treatment, treatment, and prevention. In total, 114 papers published on the research topic in Russian and English in the period from 2012 to 2022 were critically analyzed.

4. Obtained Results

The analysis of modern literature allowed us to identify the main obstacles to the problem of ulcerative-necrotic lesions of the oral mucosa with the formation of trophic ulcers and suggest ways to overcome them.

Changes in the oral mucosa in disorders of the cardiovascular system are caused by the degree of circulatory disorders and vascular wall damage [1,2]. Compensated forms of cardiovascular insufficiency, as a rule, are not accompanied by any significant changes in the oral cavity. Pathogenesis (what's going on?) during changes in the oral mucosa in cardiovascular diseases: Swelling and cyanosis of the oral mucosa, cyanosis of the lips are usually observed in decompensated forms of cardiovascular insufficiency: hypertension, rheumatic heart disease, or other diseases [1,2]. Teeth prints appear on the side surfaces of the tongue, and cheeks. This condition is often combined with cyanosis of the red border of the lips [1,2]. The swelling of the tongue can be expressed to a large extent, as a result of which it increases in size; speech becomes difficult. In myocardial infarction, swelling of the tongue can be combined with a change in its color, and the appearance of cracks, erosions, and ulcers. The severity of these changes is determined by the severity of the course of the underlying disease. With a large-focal infarction, lesions of the oral mucosa are more pronounced.

As the patient's condition improves after general treatment, the situation in the oral cavity improves - swelling of the tongue decreases, and epithelialization of erosions and ulcers occurs. Swelling and ulceration of the oral mucosa appear more often in areas adjacent to dentures (marginal edge of the gum adjacent to metal crowns; mucous membrane under the intermediate part of the bridge prosthesis; under the prosthetic bed of removable plates, etc.). Despite significant changes in the mucous membrane, most patients do not experience subjective sensations, but the doctor, when detecting swelling, must determine the cause of its occurrence. It is necessary to carry out a differential diagnosis with similar changes in the mucous membrane in gastrointestinal pathology, infectious and other diseases.

Vesicovascular syndrome in the oral cavity is characterized by the appearance of dense bubbles of different sizes with transparent or hemorrhagic contents. The authors explain the mechanism of the appearance of blisters in patients with cardiovascular pathology by rupture of small vessels of the oral mucosa as a result of increased permeability and fragility of the vascular wall. Along with this, a weakening of the connection between the epithelium and the connective tissue layer of the oral mucosa was revealed, which is obviously due to the destruction of the basement membrane. Vesicovascular syndrome occurs more often in women aged 40-75 years. Bubbles appear suddenly, often during meals. The appearance of blisters is usually associated with an increase in blood pressure, which patients often do not suspect. A favorite localization is on the mucous membrane of the soft palate, the lateral surfaces of the tongue, and cheeks.

Bubbles can be unchanged from several hours to several days. Sometimes they disappear without opening, but more often they open with the formation of erosion, and epithelize within 3-7 days, depending on the size. Ulcerative-necrotic lesions of the oral mucosa Ulcerative-necrotic lesions of the oral mucosa with the formation of trophic ulcers develop in several cases in patients with circulatory disorders of II-III degree. Against the background of the deterioration of the general condition of patients (weakness, shortness of breath, swelling of the extremities), soreness appears in the oral cavity, it is difficult to eat. One, rarely several ulcers appear on the mucous membrane of the mouth. The development of trophic ulcers, as a rule, is promoted by trauma with sharp edges of destroyed teeth, poor-quality prostheses, or other traumatic factors. Most often ulcers are formed on the lateral surfaces of the tongue, the mucous membrane of the cheeks, the bottom of the mouth, palate, etc. The edges of the ulcers are uneven, the bottom is covered with a grayish-white necrotic plaque.

If necrotic tissues are not rejected for a long time, they acquire a dark color. A characteristic feature of a trophic ulcer is the absence of a pronounced inflammatory reaction in the surrounding tissue. The necrotic process can spread to neighboring areas of the face, nasopharynx. There is an unpleasant smell from the mouth, and saliva becomes viscous. Cases of ulcerative-necrotic lesions of the oral mucosa against the background of circulatory disorders with necrosis and sequestration of jaw bone tissue, and the formation of cheek tissue defects are described. Necrotic tissue breakdown can lead to severe bleeding. The long-term existence of trophic ulcers can lead to their malignancy. Ulcerative-necrotic lesions of the oral mucosa. Cytological examination of scraping from the surface of a trophic ulcer determines a small number of epithelial cells with signs of degeneration, which is expressed in a decrease in cell size, and the absence of clear contours in some cells. Neutrophils are diagnosed in varying degrees of decay.

Pathohistological in the area of trophic ulcers determine a chronic inflammatory process with extensive necrosis and proliferation of interstitial tissue, sclerotic vascular changes, and damage to nerve fibers. Differential diagnosis. Trophic ulcer is differentiated from traumatic ulcer; ulceration of malignant neoplasm; tuberculous ulcer; ulcerative-necrotic stomatitis of Vincent; and ulcerative-necrotic lesions of the oral mucosa in blood diseases.

With relapses of the disease, along with atrophic changes, papillary hyperplasia develops at the root of the tongue (hypertrophic papillitis). At the same time, leukocytosis of the tongue and lip mucosa can be observed.

Lesions of the oral mucosa in diseases of the cardiovascular system are noted in more than half of patients with this pathology, which reveals: swelling and cyanosis of the mucous membrane of the mouth and lips; with myocardial infarction, swelling of the tongue may be accompanied by the appearance of erosions, ulcers and "cracks"; vesicovascular syndrome - the appearance (usually in older women age, suffering from arterial hypertension) dense blisters (after

opening of which erosions are formed) with hemorrhagic contents on the mucous membrane of the soft palate, the lateral surfaces of the tongue, cheeks.

It is necessary to differentiate this syndrome with pemphigus and multiform exudative erythema; ulcerative-necrotic lesions of the oral mucosa with the formation of trophic ulcers in the absence of a pronounced inflammatory reaction in the surrounding tissues. We observed a patient with necrosis and sequestration of the body and branches of the mandible. These lesions must be differentiated from traumatic ulcer, malignant tumor, ulcerative-necrotic stomatitis of Vincent, and necrotic lesions of the oral mucosa in blood diseases.

The most common endocrine pathology in the practice of a dentist is diabetes mellitus. There is a direct dependence of the severity of inflammatory changes in the oral mucosa on the course of the disease, its duration, and the age of the patient. With a short duration of diabetes, the oral mucosa is hyperemic, edematous, and bleeding. With an increase in the duration of the disease, hyperkeratosis of the filamentous and hyperplasia of the fungal papillae most often develops. The tongue is overlaid with plaque, hyperemic mushroom-shaped papillae in the form of reddish dots rising along its entire back.

The dentist is responsible for diagnosing the early manifestations of "common" diseases, and conducting a thorough examination of the patient by the efforts of somatic doctors. There is often a folding and an increase in the size of the tongue; it is possible to combine the folding of the tongue with hyperkeratosis of the filamentous papillae or, conversely, with desquamation (diffuse or focal) of them, dryness of the mucous membrane of the tongue. There is a "geographical" language. Toothprints are detected on the lateral surface of the tongue. With decompensation of diabetes, decubital ulcers are possible and almost all patients have lip changes: dryness of the mucous membrane of the mouth and the red border of the lips in combination with cracks, jams, crusts, bright hyperemia, especially pronounced in the Klein zone, angular cheilitis. In the phase of diabetes compensation, dryness of the oral mucosa and angular cheilitis disappear.

Diagnostics. Cytological examination of scraping from the surface of a trophic ulcer determines a small number of epithelial cells with signs of degeneration, which is expressed in a decrease in cell size; absence of clear contours in some cells, pyknosis. Neutrophils are detected in varying degrees of decay. There is a significant decrease in histiocytic cells, which characterizes the reactive nature of the course of the inflammatory process. Pathohistological in the area of trophic ulcers, a chronic inflammatory process with extensive necrosis and proliferation of interstitial tissue is determined; sclerotic vascular changes and damage to nerve fibers.

Treatment. It is carried out in contact with a therapist. General treatment should be aimed at eliminating cardiovascular insufficiency. In some cases, it is advisable to conduct general treatment in a hospital setting. Symptomatic therapy is performed locally according to indications. First of all, all local traumatic factors are eliminated. Necrotic tissues are removed using proteolytic enzymes. The oral mucosa is treated with antiseptic and stimulating epithelization preparations (an oil solution of vitamins A, and E, sea buckthorn oil, rosehip, propolis, cyherol, etc.). A gentle, high-calorie, vitamin-rich diet is prescribed.

There are known methods of treating diseases of the oral mucosa with the implementation of certain stages: I - antiseptic treatment, II - the use of proteolytic enzymes or ointments containing them, III - anti-inflammatory treatment at the stage of alteration and exudation of the wound process, IV - regenerating agents at the stage of proliferation (sea buckthorn oil, rosehip oil, vitamins A, E, juice kalanchoe, kaolin, "Solcoseryl" ointment or jelly, "Actovegin") [1,2].

The disadvantages of the known methods are the multi-stage treatment, the need to use a regenerating drug 3-5-6 times a day, long periods of epithelialization of erosions and ulcers, and low treatment effectiveness. A method for the treatment of erosive and ulcerative diseases of the oral mucosa with the use of the regenerating drug closest in composition and essence - sea buckthorn oil [3] was chosen as a prototype.

In models of ulcers of various etiologies, sea buckthorn oil is applied to the affected areas 1 time a day daily in doses corresponding to the area and depth of the ulcer. Epithelization of ulcers of chemical etiology with the use of sea buckthorn oil occurs on 12.8 ± 0.3 days, decubital ulcers - on 13.0 ± 0.2 days, trophic ulcers epithelize on 18.0 ± 0.2 days.

The disadvantage of the known method is the duration of the regeneration process, the low anti-ulcer activity of sea buckthorn oil, which is explained by the low (no more than 20%) content of a complex of polyunsaturated fatty acids, and the absence of the most biologically active arachidonic acid, a precursor of prostaglandins, thromboxanes, and other mediators of cellular response in the human body.

Fundamentals of medical tactics for lesions of the mucous membrane of the mouth, lips, and tongue: for the rational treatment of diseases of the mucous membrane of the oral cavity, lips, and tongue, a thorough examination of the patient and contact of the dentist with other specialists, primarily with a therapist, as well as narrow specialists - gastroenterologist, endocrinologist, hematologist, the cardiologist is required. The axiom for the dentist should be the elimination of all unfavorable irritating factors in the oral cavity in the patient, which can support and provoke the development of the pathological process. It is unacceptable to use so-called cauterizing agents and prolonged use of the same means for mouthwashes. Treatment of diseases of the oral mucosa must be carried out in compliance with the principles of bioethics, to consider these diseases from the standpoint of the state of the whole organism, therefore, in most cases, it is impossible to limit only local effects on the lesions of the mucous membrane carried out by a dentist.

Treatment should begin only after at least a preliminary diagnosis has been established and meet the following requirements: to be comprehensive; to provide a pathogenetic

approach; not to violate the anatomical and physiological properties of the oral mucosa; to eliminate the pain factor; to promote the optimization of epithelialization of lesions; to provide for the active involvement of the patient in performing therapeutic procedures at home.

5. Conclusions

The occurrence of trophic ulcers, as a rule, is facilitated by trauma with sharp edges of destroyed teeth, poor-quality prostheses, or other traumatic factors. Most often ulcers are formed on the lateral surfaces of the tongue, the mucous membrane of the cheeks, the bottom of the mouth, palate, etc. The edges of the ulcers are uneven, the bottom is covered with a grayish-white necrotic plaque. If necrotic tissues are not rejected for a long time, they acquire a dark color. A characteristic feature of a trophic ulcer is the absence of a pronounced inflammatory reaction in the surrounding tissue. The necrotic process can spread to neighboring areas of the face, nasopharynx. There is an unpleasant smell from the mouth, and saliva becomes viscous. Cases of ulcerative necrotic lesions of the oral mucosa against the background of circulatory disorders with necrosis and sequestration of jaw bone tissue, and the formation of cheek tissue defects are described. Necrotic tissue breakdown can lead to severe bleeding. In some diseases, changes in the color and general appearance of the oral mucosa, and the surface of the tongue do not have an independent diagnostic value. However, in combination with other symptoms, the appearance of the lips, tongue, and oral mucosa can help in clarifying the diagnosis. The prognostic value of changes in the organs and tissues of the oral cavity is great. The dentist is responsible for recognizing and diagnosing the early manifestations of "common" diseases, and conducting a thorough examination of the patient by the efforts of somatic doctors. We are sure that a timely and correct assessment of the described conditions in the practice of doctors of other specialties is very necessary and expedient.

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