

CHANGES IN THE ORAL MUCOSA DUE TO GASTROINTESTINAL TRACT DISEASE

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Abstract. *The article provides an overview of the interconnections between the gastrointestinal tract (GIT) and the oral cavity, emphasizing the priority of the GIT. Special attention is given to the complex pathophysiological relationships within the structural and functional elements of the digestive system. The authors discuss the relevance of studying combined pathologies, highlighting the role of the oral cavity in processes of damage and compensation in various GIT disorders. Analysis of recent scientific research underscores the significance of the oral cavity in pathological processes at different levels of the organism. Such a review may contribute to a deeper understanding of the mechanisms involved in the development and treatment of GIT disorders and serve as a basis for developing effective diagnostic and preventive strategies.*

Keywords: *gastritis and gastric ulcers, esophagitis, candidiasis (cracks in the corners of the mouth), malabsorption conditions, celiac disease, irritable bowel syndrome (IBS).*

Introduction. Despite the fact that products are in the oral cavity for a short time, this part of the digestive system significantly influences the entire digestion process. This effect largely depends on the amount and composition of saliva. Saliva transmits information to the underlying parts of the system about the chemical composition of food, promotes the secretion of gastric juice, participates in the formation of the food bolus and promotes partial hydrolysis of carbohydrates. The salivary glands are an integral part of the digestive system, actively participate in the processes of digestion and absorption of nutrients, and also have a close embryogenetic connection with the organs of the gastrointestinal tract.

In medical practice, the opinion about dry mouth in patients with diabetes mellitus, pancreatitis, cholecystitis and other diseases is considered an axiom. However, the literature lacks data on the differential diagnosis and objectification of xerostomia (dry mouth) in such patients. In recent years, the problem of diseases of the gastrointestinal tract has become increasingly urgent, due to the widespread prevalence of this pathology and the numerous difficulties associated with it. According to the World Health Organization (WHO), every second inhabitant of our planet faces various diseases associated with disorders of the gastrointestinal tract. This significantly worsens the quality of life of patients and limits their social and work activity. [2]

Patients often complain of distorted taste sensations, mainly a metallic taste in the mouth, especially in the morning. The mucous membrane in the area of the vestibular surface of the lips becomes thinner, whitish dry scales and superficial cracks appear on the red border of the lips. Diseases of the oral mucosa are caused by various etiological factors, and the structural and functional characteristics of the oral cavity create conditions for exposure to traumatic factors, pathogens or viruses. Pathology of the gastrointestinal tract is a risk factor and negative impact in chronic inflammatory periodontal diseases.

Materials and methods. Studies devoted to the analysis of periodontal pathology in patients with gastroduodenal diseases have used a variety of methods and materials. Methods

included clinical, laboratory, instrumental and histological approaches. Clinical data included information on the condition of teeth, gums, and patient complaints. Biopsies of periodontal tissues were used for histological studies. X-ray results were also reviewed. The research findings reflect the various forms of periodontal damage in this category of patients. The observations highlight the importance of the relationship between periodontal health and gastroduodenal diseases, especially in the context of the severity and duration of gastrointestinal disease.

The body's adaptive systems are a set of biochemical and physiological mechanisms aimed at protecting the body from harmful influences. These systems include immune defense, a system of tissue protease inhibitors, glutathione antioxidant defense, as well as a complex of inhibitors of free radical lipid oxidation processes and others. When there are disturbances in the functioning of these adaptive systems, as well as under the influence of various etiological factors, conditions arise for undesirable processes.

Free radical oxidation is a universal mechanism accompanying the first stage of the pathological process. At this stage, the strength and duration of exposure to etiological factors, as well as the capacity of the adaptive system, determine the development of free radical oxidation. If the influence of factors exceeds the capacity of the adaptive system, the floodgates open for the development of the pathological process.

One of the significant consequences of this process is an outbreak of free radical oxidation, which leads to the destruction of the lipid bilayer of membranes and disruption of membrane permeability. The intensity of damage to bio membranes depends on the amount of free radical agents, the state of biological membranes, their packaging and the balance of the anti-radical defense system.

Damage to bio membranes leads to an unregulated transition of metabolites between cell compartments and even beyond its boundaries. This causes metabolic disorganization and a transition to the fourth stage - the clinically manifested phase of inflammation. At this stage, swelling and hyperemia of the oral mucosa is observed, which leads to the formation of primary and secondary lesions.

Treatment and prevention of diseases of the oral mucosa pose a challenge, especially when taking into account their multifaceted nature and impact on the general condition of the body. Prevention of disease relapse is also becoming an important aspect, requiring pathogenetic approaches at various stages of the development of the pathological process.

With a gastric ulcer, changes occur in the oral cavity, expressed in increased temperature and tactile sensitivity. The minor salivary glands undergo changes leading to increased secretion of saliva, often followed by dryness of the mucous membrane. Characteristic clinical manifestations include excessive coating, redness, and swelling of the tongue. There are yellow-brown deposits, hypertrophy of the mushroom-shaped and filiform papillae of the tongue, with areas of their desquamation. Patients often experience catarrhal stomatitis, which is manifested by hyperemia and swelling of the mucous membrane, causing pain and discomfort when talking and eating. A distinctive feature is the absence of ulcers, rashes and other defects on the affected area. With a peptic ulcer, gingivitis may develop, manifested by swelling and redness of the gums, bleeding when eating and minimal contact, as well as bad breath and the appearance of erosions. The periodontium can also suffer significant damage.

Peptic ulcer disease creates conditions for periodontal inflammation due to various factors, including immune and endocrine imbalance, microcirculation disorders, neurohumoral regulation,

psychosomatic relationships, changes in connective tissue metabolism and mineral metabolism, as well as vitamin deficiency. Failure to comply with the rules of oral hygiene also plays a significant role. In patients with mild chronic generalized periodontitis against the background of peptic ulcer disease, an increase in the population of mast cells in the oral mucosa is observed, which may reduce antimicrobial resistance.

Pancreatitis, inflammation of the pancreas, is accompanied by a sharp change in the acid-base balance in the oral cavity, shifting it to the acidic side due to reflux. This creates a favorable environment for the development of pathogenic flora, which can lead to the development of multiple dental caries. A common symptom is excessive salivation in the mouth.

Dyspeptic disorders, such as nausea and vomiting, negatively affect the condition of the mucous membrane, which can lead to the development of aphthous stomatitis. This type of stomatitis is characterized by painful round-shaped erosions with a hyperemic rim, covered with fibrinous plaque. It is also possible to develop stomatitis of a fungal nature, like thrush, with the appearance of a white coating.

This disease can cause serious pathological changes in the oral mucosa, tongue and gums. As a result, aphthous stomatitis develops, which is manifested by redness and swelling of the mucous membrane, the formation of aphthae. The gums increase in size and become hyperemic. There is a proliferation of gingival papillae, which can cover part of the tooth crown. The tongue becomes covered with a coating of various shades of yellow-brown and increases in size. Atrophy of filiform papillae and desquamation of the epithelium are observed.

The development of gastrointestinal candidiasis is predisposed by oncological and hematological diseases, diabetes mellitus, HIV infection, transplantation operations, stay in intensive care units, allergic reactions, long-term use of antibiotics, cytostatic, hormones and other chemotherapy drugs, eating disorders, chronic alcohol intoxication, smoking, drug addiction.

The pathogenesis of gastrointestinal candidiasis is determined by the ratio of pathogenicity factors of the microorganism and a decrease in the resistance of the microorganism. Factors that determine the pathogenicity of *C. albicans* are identified, such as variability due to genetic and regulatory mechanisms (polymorphism, “switching phenomenon”) and the ability for fungal adhesion to fibrinogen, laminin, fibronectin, and the complement system. Fungal invasion is facilitated by active proteinases, phospholipase, hyaluronidase, and hemolytic factor, which allow fungi to penetrate the protective glycoprotein layer of the gastrointestinal mucosa. In terms of the presence of pathogenicity factors, *C. albicans* is superior to all other *Candida* species. Analysis of the genetic determinants of some strains of *C. albicans* revealed a wide prevalence of resistance genes to antifungal drugs (FLU1, CDR1, MDR1). The existence of 10 genes secreting aspartate proteinases (SAP1–4, SAP6–7, SAP9–10, etc.) has also been established, the action of which largely shapes the scenario of disease progression.

Results. It was found that the weakening of the protective functions of the immune system in patients with peptic ulcer disease contributes to the development of dysbiosis in the digestive tract and complicates the course of the underlying disease. Bacteriological studies carried out by T.P. Shamshonkova et al (1989) showed that in 45% of cases, patients with peptic ulcers experience significant dysbiotic disorders in the oral cavity, occurring due to an increase in the number of representatives of opportunistic microflora, with a predominance of yeast-like fungi of the genus *Candida*, *Escherichia coli* and pathogenic staphylococcus. In 60% of cases,

dysbacteriosis is observed in the gastric contents due to an increase in the number of antibiotic-resistant microorganisms and intensive reproduction of oral and fecal microflora.

Scientific research data indicate the presence of complex relationships between the organs of the oral cavity and the gastroduodenal zone. The presented materials indicate complex pathophysiological relationships between the structural and functional elements of the digestive system. Interest in the study of the problem of combined pathology in recent years is explained by the accumulation of new facts, the emergence of new information about interorgan, intertissue, intercellular levels of interaction in the system of the whole organism.

Methodologically, pathology can be considered as a violation of structural connections between any system levels of the body, forming an integral system. Ultimately, a pathological process at any level of the body is a consequence of altered interactions between the system at the corresponding level and the environment, which trigger the mechanisms of adaptive-compensatory reactions. In this regard, it is relevant to rethink the role of the oral cavity in the processes of damage and compensation in various types of combined pathology.

In developed countries, chronic pancreatitis has become noticeably “younger”: the average age of patients diagnosed with this disease has decreased from 50 to 39 years, and the proportion of women among patients has increased by 30%. [2]

In the 80s, the incidence of chronic pancreatitis was 3.5-4.0 cases per 100,000 population per year. In the last decade, there has been a steady increase in this frequency, reaching 8.2-10 cases per 100,000 population of the Earth. In Russia, the prevalence of chronic pancreatitis in children varies from 9 to 25 cases, and among adults - from 27 to 50 cases per 100,000 population. Changes that occur in the oral mucosa during chronic pancreatitis are associated with secondary hypovitaminosis and the involvement of other organs of the digestive system in the pathological process. Clinical symptoms include atrophic changes in the dorsal surface of the tongue, glossitis, pre-icteric discoloration of the distal parts of the tongue, yellow-white coating of the tongue, dryness, impaired taste sensitivity, as well as the possible development of candidiasis of the oral mucosa. There is also a thinning of the red border of the lips and the appearance of chronic cracks in the corners of the mouth.

1. The state of the gastrointestinal tract and the functioning of its parts are reflected in the oral mucosa.

2. Diagnosis and treatment of diseases of the oral mucosa remain an important problem in therapeutic dentistry.

3. The wide prevalence of pancreatic diseases and their connection with lesions of the oral mucosa emphasize the relevance of the problem of studying the characteristics of the occurrence, course, diagnosis, treatment and prevention of relapses of diseases of the oral mucosa in patients with chronic pancreatitis.

Discussion. The oral mucosa can undergo changes due to various diseases of the gastrointestinal tract. Some of them can have a direct effect on the condition of the oral mucosa. For example, with gastritis and gastric ulcers, changes in the oral mucosa may be caused by acidic effects on it. If there is vomiting, mouth ulcers may occur. Esophagitis, characterized by inflammation of the lining of the esophagus, can cause pain and discomfort when swallowing, affecting the condition of the oral mucosa.

A fungal infection, such as candidiasis in the corners of the mouth, can occur when the immune system is weakened, causing white plaque and cracks to appear. Malabsorptive

conditions, such as celiac disease, can lead to inflammation and damage to the mucous membrane due to improper absorption of nutrients.

Irritable bowel syndrome (IBS) can affect various changes in the gastrointestinal tract, affecting the condition of the oral mucosa.

It is important to emphasize that any changes in the condition of the oral mucosa require the attention of a doctor. If you have such symptoms, it is recommended to immediately consult a doctor for diagnosis and appropriate treatment.

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