

A LITERATURE REVIEW ON THE INTERPLAY OF GENERAL AND DENTAL DISEASES

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Abstract

The mucous membrane (MM) of the oral cavity and the dentoalveolar apparatus, along with the skin and eyes, can be involved in the pathological process in various somatic diseases. Changes in the mucous membranes of the oral cavity, periodontium and teeth may be a manifestation of the activity of a single systemic process, a consequence of the side effects of drug therapy, or may be due to a decrease in the quality of oral hygiene due to the patient's serious condition. Awareness of therapists and dentists, correct and timely assessment of such changes and effective interdisciplinary interaction can help improve the success of diagnosis and treatment of both local manifestations and the underlying disease, as well as avoid a number of complications when performing dental procedures.

Keywords: Mucous membrane, periodontitis, chronic periodontal diseases, chronic kidney disease, oral hygiene, odontogenic infection, dental caries, somatic pathologies.

Introduction

Almost all diseases of internal organs are reflected to a greater or lesser extent in the oral cavity [1, 3, 5, 15]. For example, long-term treatment with bronchial asthma and corticosteroids is accompanied by a decrease in the rate of salivation, reduces the pH of dental plaque and increases bleeding gums, the risk and intensity of dental caries [10]. The prevalence of pathologies of the oral mucosa is increasing in people with chronic kidney disease and inflammatory periodontal diseases [18]. In diseases of the central nervous system (epilepsy, cerebral palsy), already in childhood the prevalence and intensity of caries increases and oral hygiene and the condition of the marginal periodontal tissue worsen [2, 17]. Patients suffering from phobias, depression, attention deficit hyperactivity disorder lead to a deterioration in the dental condition of the oral cavity [27].

There are many aspects to the relationship between physical and dental diseases. On the one hand, the development and progression of diseases of the organs and tissues of the oral cavity depend on the severity of common diseases. On the other hand, there is a convincing scientific basis confirming the negative impact of dental diseases on the course of somatic pathology, as well as on the formation of focal diseases of the body, such as bacterial endocarditis, rheumatism and others.

Periodontal diseases, insufficient oral hygiene, and lack of sanitation can lead to an increase in mortality from cancer [29]. There is an observation that periodontal disease is a risk factor for the onset and worsening of Alzheimer's disease. The mechanisms of this interaction highlight the importance of peripheral inflammation of periodontal tissues in increasing the content of pro-inflammatory mediators in the blood (for example, interleukins 1, 6, tumor necrosis factor), which contributes to increased inflammatory processes in brain structures [16].



In adolescents with sickle cell disease (SCA) compared with healthy peers [21]. It is believed that SCD is also a factor that increases the risk of developing pulp necrosis of intact permanent molars, which is 8 times higher in people over 16 years of age [13]. On the other hand, chronic periodontal diseases are considered a factor contributing to the development of anemia, and therefore treatment of inflammatory periodontal diseases is necessary to improve blood counts [26].

Dentistry and digestive pathologies are closely related. Impaired chewing function can be the result of carious destruction of teeth, abnormalities of the dentofacial apparatus or various genetic adentia, which leads to the entry of uncrushed and unprocessed food into the stomach, which plays an important role in the development of diseases of the digestive system in children and adults. However, chronic diseases of the digestive system, such as gastritis, gastric and duodenal ulcers, hepatitis, pancreatitis and others, are associated with a lack of vitamins, minerals, proteins and carbohydrates in the body and impaired immune regulation. All this leads to inflammatory and dystrophic changes, functional and organic disorders, as well as chronic diseases of the oral mucosa, such as recurrent aphthous stomatitis and angular cheilitis [8, 14].

There is also, without a doubt, the fact that cardiovascular pathology (atherosclerosis, coronary heart disease, arterial hypertension, acute rheumatic fever and others) is combined with dental problems. In all age groups, patients with pathologies of the circulatory system experience significant tooth loss and high intensity of caries damage. Thinning of the endothelial lining of blood vessels, indicating the development of atherosclerosis, occurs more often in people with signs of periodontal inflammation than in patients without periodontal tissue damage. Pathogenic microflora of the oral cavity is of particular importance in the development of combined pathology, since it affects the development of endothelial dysfunction through bacteremia and toxemia. This dysfunction is the main mechanism for the development of pathological changes in the periodontium, brain and coronary vascular bed.

In this case, factors that cause long-term systemic inflammation, as well as the development of the phenomenon of molecular mimicry, play an important role. Individuals with periodontal disease have a significantly increased risk of developing cardiovascular disease, myocardial infarction, and stroke. There is a significant connection between the intensity of inflammatory diseases of the oral cavity, the state of the microbial flora of the oral cavity and the risk of coronary heart disease and myocardial infarction. It was found that there is a correlation between the course of acute cerebrovascular accident and the degree of periodontal damage. Sanitation of the oral cavity is necessary to prevent the development of atherosclerotic vascular diseases, since it is known that the quality of oral hygiene, the condition of the teeth and periodontium affects the development of atherosclerotic lesions in the carotid artery and the consequences of inflammatory periodontal diseases [6, 9, 12, 19].

Odontogenic infection plays an important role in the development of somatic pathology. Inflammatory mediators produced in periodontal tissue and periodontal pathogens can enter the bloodstream, causing systemic consequences and/or leading to the development of systemic diseases. As a result of this mechanism, chronic periodontitis has been proposed as a risk factor for cardiovascular disease associated with atherosclerosis, as well as bacterial endocarditis, rheumatoid arthritis, respiratory disease, preterm birth, miscarriage, and low birth weight [20, 22, 24]. Diabetes mellitus (DM) demonstrates the bidirectional, mutually aggravating nature of the relationship between somatic and dental pathologies. Numerous studies show that uncontrolled



diabetes increases the risk of developing periodontitis, damage to the salivary glands, caries and tooth loss [4, 10, 23].

Odontogenic infection, like any other chronic infection, affects the glycemic control of patients with diabetes. Consequences caused by chronic periodontal inflammation of cell-mediated immunity, excess production of interleukins 10 and 2, transforming growth factor, which leads to impaired insulin production and problems with glycemic control. It has been proven that the achievement of glycemic control of diabetes in patients with severe forms of periodontitis is significantly worse [25, 28].

Thus, the relationship and interdependence of dental and somatic pathologies demonstrate their comorbidity. As a result, interdisciplinary interaction between dentists and internists becomes an urgent problem of modern medicine. The purpose of this interaction is to develop unified approaches to the treatment and management of patients with somatic and dental diseases [1, 3, 4].

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