

**MANIFESTATIONS OF INFLAMMATION OF THE PARODENTIUM WITH  
DIFFERENT SOMATIC DISEASES****<sup>1</sup>Khasanova L.E., <sup>2</sup>Rizayev J.A., <sup>3</sup>Yunuskhodjayeva M.K., <sup>4</sup>Avazova Sh.N.**<sup>1,2,3,4</sup>Tashkent State Dental Institute<https://doi.org/10.5281/zenodo.8368135>

**Abstract.** *The article tells about parodontal inflammation. With the help of scientific literature, the article tells about structure and function of parodontium. It also gives the statistics of the prevalence of parodontal diseases and narrates the etiology and pathogenesis. It gives the information about immune reactions of an organism that protect the parodontium from pathogen factors. The objections of the article are the distinctive signs of parodontium disease with somatic diseases of different organ systems. The level of dental treatment of patients with such diseases is also described there.*

**Keywords:** *parodont, dental plaque, pathogen microorganism, atrophy, infiltration, gingivitis.*

**Аннотация.** *В статье приведена информация на тему воспаления такой структуры зубочелюстной системы, как пародонт. С помощью специализированной научной литературы рассказывается о строении пародонта, его функциях, приведена статистика распространенности заболеваний пародонта. Подробно повествуется этиология и патогенез. Также речь идет об иммунных реакциях организма, благодаря которым происходит защита пародонта от воздействия пародонтопатогенных факторов. Основой статьи являются отличительные признаки заболеваний пародонта при соматических заболеваниях различных систем органов. Описывается уровень стоматологического лечения пациентов с такими заболеваниями.*

**Ключевые слова:** *пародонт, зубная бляшка, пародонтопатогенные микроорганизмы, атрофия, инфильтрация, гингивит.*

The prevalence of parodontal diseases is growing more and more every day. Parodontal is a complex of tissues surrounding the tooth and interacting with each other. Parodontal combines the gum, the cement of the tooth root, parodontal (ligamentous apparatus of the tooth), bone tissue of the alveolar process of the jaw.

There are many reasons for the development of this pathological process. First of all, this is a dental plaque, its formation is due to various factors. The growth of plaque is mainly due to the activity of streptococci, which synthesize homopolysaccharide, which contributes to the accumulation of bacteria on the teeth. The vital products of bacteria - acids, which are limited from the oral fluid by the membrane, have a significant effect. Subsequently, the plaque can be impregnated with calcium salts, resulting in the formation of tartar, which, in addition to the harmful effects of microorganisms, provides a traumatic effect on the gum [4,5].

The formation of dental plaque is promoted by improper nutrition with a predominance of carbohydrates, which serve as food for microorganisms, smoking, which causes the development of parodontopathogenic (*Porphyromonas gingivalis*, *Threponema denticola*, *T.Vincenti*, *Treponema socranskii*, *Bacteroides forsithus*, *Prevotella intermedia*, *Actinomices viscosus*, *A.naeslundii*, *Fusobacterium nucleatum*, *F.Fusifforme*, *F.Necroforum*) microflora and enhancement of education dental plaque, non-compliance with oral hygiene, the consistency of food (fibrous and raw food contributes to the development of pathogenic microflora, and food

that does not require grinding it with teeth causes slight cleansing), also affects the absence of contact points, etc.

The aim of the work is to clarify with the help of domestic and foreign literature the mechanisms of protection of the body from parodontopathogenic microflora and methods of treatment of parodontal diseases in various ways for people with various somatic diseases.

According to research, the prevalence of parodontal diseases in Uzbekistan averages 80%. According to the World Health Organization data for 2000, severe parodontitis occurs in 5-20% of people, moderate parodontitis – in 25-45% of people, and intact parodontitis - in 2-10% of people. Thus, the worldwide prevalence of parodontal diseases is approximately 94.3% [10].

According to the research conducted by Professor G.M.Barer, the signs of parodontal lesions depend on the prevalence of the dental system and on the intensity of caries development. As for people with dental anomalies, such as anomalies of the position of teeth (crowding, dystopia), which prevent the maximum cleaning of all surfaces of teeth during daily oral care, the prevalence of parodontal diseases is equal to 40% among the population of Uzbekistan. The dependence of the frequency of the spread of parodontal diseases on the intensity of caries is that in one region in children aged 12 years, the index of caries experience based upon the number of decayed, extracted, and filled permanent teeth is less than 4.5, and in people aged 35-44 years, the index caries of experience based upon the number of decayed, extracted, and filled permanent teeth is lower than 12.8. The prevalence of parodontal diseases is lower than 25% in children and 8% in adults [1].

Among the various studies of the pathogenesis of parodontal diseases, inflammation, dystrophy, functional trauma, and functional insufficiency are distinguished.

The authors of the textbook “Pathological Anatomy” A.I.Strukov and V.V.Serov present inflammation as a complex vascular-mesenchymal reaction to an irritant. This process allows you to destroy the damage agent and restore the tissue. In this case, the damaging agent are enzymes (collagenase, hyaluronidase, etc.), leading to dystrophy of the connective tissue of the parodontal, and endotoxins, which disrupt the processes of cellular metabolism: mitosis, lysis, sensitization, etc. With dystrophy, the process of biological oxidation changes towards inhibition in epithelial and connective tissue, glycogen accumulation occurs, glycosaminoglycans accumulate in the bone tissue area. The next stage is the development of functional parodontal trauma, where there is a compensation phase (mechanisms aimed at preserving parodontal tissues), a subcompensation phase (formation of micro-destruction of parodontal tissues), a decompensation phase (large foci of destruction of parodontal tissues that contribute to the formation of tooth mobility and circulatory disorders). The stage of functional parodontal insufficiency is divided into degrees:

1 the degree of insufficiency occurs with normal parodontal loads;

2 degree does not allow to fully provide parodontal loads;

The 3rd degree requires the use of additional means, with the help of which a sufficient load on the parodontal will be provided, that is, there is a need for orthopedic treatment [16].

Despite the harmful influence of parodontopathogenic microorganisms, systemic and local protection processes are present in the body. Systemic regulation is a neuroendocrine process that functions due to a cytokine reaction. Cytokines are protein compounds involved in the regulation of vital cell functions such as differentiation, reproduction, functional activity and apoptosis. An important role in parodontal protection is played by the dentoalveolar furrow,

which serves as a barrier to pathogenic microorganisms, but is a very weak structure, susceptible to damage by various factors. Oral fluid also participates in the protection of oral tissues, which prevents the colonization of bacteria on the mucous membrane, as it prevents the adhesion of bacteria with the help of agglutinins and immunoglobulin A. Also, the content of lysozyme, which destroys the walls of bacteria, and lactoferrin, which prevents the production of respiratory enzymes, binding iron, is high in the oral fluid. Also, complement and antibodies A, G, M take part in immune reactions, which prevent invasion and destroy exotoxins of pathogenic microorganisms. Phagocytosis, in which polymorphonuclear leukocytes and monocytes participate, cannot be dispensed with in protecting the tissues of the oral cavity. First, phagocytes secrete lysosomal enzymes, thanks to which the chemotaxis of microorganisms occurs, then they attach to the bacterium, absorb it, the next stage is the inclusion of the bacterium in the phagosome and lysis, as a result of which active oxygen radicals are formed, which, when released from the leukocyte, themselves take part in the destruction of bacteria [8].

As stated earlier, parodontal tissue diseases are caused by rather complex pathogenetic reactions and immune processes, but all these phenomena are aggravated when the cause of inflammation is diseases of other organ systems. With various diseases of the gastrointestinal tract such as gastritis, gastric ulcer and duodenal ulcer, enterocolitis, etc., parodontal diseases occur in 71,5-98% of cases. Gastritis is an inflammation of the gastric mucosa. Peptic ulcer is an inflammation of the mucous membrane with the formation of a local defect that can affect all layers of the stomach or duodenum. Enterocolitis is a disease in which inflammation affects the mucous membrane of the small and large intestine. Such diseases lead to a lack of vitamins and minerals. Consequently, there is a very high probability of the development of dystrophic processes in the oral cavity, especially in the chronic course of the disease. For example, with chronic gastritis, the marginal gum is infiltrated, hyperemic, can bleed, and a soft plaque also appears, contributing to the reproduction of parodontal pathogenic microorganisms, which, as mentioned earlier, cause inflammation of the parodontal, bone, and cement of the tooth. In peptic ulcer disease, the gum, on the contrary, is cyanotic, of a dense consistency, even areas of atrophy may be present. Based on the above, it can be concluded that in case of inflammation of the gastrointestinal tract, due attention should also be paid to the oral cavity, since currently the human body is not considered as a single complex, and often when examining patients in gastroenterological departments, treatment of parodontal diseases is carried out only in 0.2% of patients [12].

With liver disease, in particular hepatitis, changes also occur in the oral cavity. Hepatitis is a viral disease in which necrosis and atrophy of liver cells occur. As is known, the oral cavity and the liver are closely related, starting with embryogenesis, since their development begins from the ectoderm of the primary intestinal tube. With viral hepatitis, the first sign, of course, is jaundice staining of the oral cavity. Cyanosis is observed in the gum area, small few erosions, fibrinous plaque may be observed. A common symptom is foci of catarrhal gingivitis. Numerous foci of hemorrhage, swelling, and hyperemia may be present on the gum. Subsequently, ulcers and necrosis zones appear. The consequence of all this is a violation of the barrier function of the gum and the presence of free passage of pathogenic flora to the rest of the parodontal structures [2].

A common liver disease is cirrhosis of the liver, in which the oral cavity is also exposed to inflammation. Cirrhosis of the liver is a chronic disease in which liver failure increases due to

structural changes in the liver parenchyma. With this disease, the mucous membrane of the gum becomes dry, pale pink, the marginal edge undergoes atrophy, candidiasis appears. Again, protective functions decrease, there is a high probability of developing parodontal inflammation.

Over the past decade, interest in the relationship between parodontal disease and atherosclerosis, and as a consequence of the development of this pathology - cardiovascular disease, has grown significantly. According to modern concepts, the mechanism of the influence of inflammatory diseases on atherogenesis is considered as follows: parodontal pockets, being a reservoir of pathogenic microorganisms, release bacterial components (endotoxins) into the bloodstream, which indirectly, with the help of anti-inflammatory cytokines and other inflammatory mediators that are produced by responder cells, cause alteration vessels, hyperlipidemia and lipid infiltration of the vascular wall, and also stimulate and maintain the inflammatory response. Thus, the atherogenic process is launched and maintained. [3,6,15].

In parodontal diseases against the background of coronary heart disease, there is a higher level of disturbances in regional hemodynamics, microcirculation, activation of free radical oxidation with a decrease in the antioxidant activity of the blood and disorders in the hemostasis system. The clinical course of inflammatory and dystrophic-inflammatory diseases of the parodontium is significantly affected by microcirculatory disorders in its tissues, often predetermined by cardiovascular pathology and traumatic lesions of the spinal cord. Arterial hypertension causes lymphostasis and an increase in the permeability of the capillary wall, which are accompanied by a pronounced edematous syndrome and bleeding gums [14,9].

An important effect on the oral cavity is provided by such a disease of the pancreas as diabetes mellitus, which is a relative or absolute lack of insulin. With this disease, numerous erosions and ulcers are observed in the oral cavity. The mucous membrane of the gums becomes dry, as the process of salivation, edematous, infiltrated by macrophages is disturbed, the marginal gum undergoes atrophy. Foci of candidiasis may also appear. The immunological activity of the body also changes, the processes of lipid peroxidation increase, the activity of the enzyme system of the antioxidant series decreases.

In patients with chronic renal failure (CRF), parodontal lesions are associated with an increase in the concentration of creatinine in the blood. In addition, an increase in the level of IgG in the blood, which is observed in generalized parodontitis in patients who are on dialysis therapy, causes an increase in the synthesis of C-reactive protein (CRP). In patients with generalized parodontium and chronic renal failure, violations of calcium phosphorus metabolism were revealed and, as a result, a decrease in bone density, the development of osteoporosis, the effect on tooth mobility, gum recession and the presence of parodontal pockets [18,19].

Of interest are the literature data on the relationship and influence of urolithiasis on the state of parodontal tissues [7,17,20]. Among patients with urolithiasis, the highest prevalence of parodontal diseases was found – 94,59%, and in people without background pathology – 79,85%. Most often, people with urolithiasis were diagnosed with generalized parodontitis (62,14%) and chronic catarrhal gingivitis (16,60%). Against the background of urolithiasis, parodontal disease is noted, occurring mainly in the form of gingivitis or marginal parodontitis. There is hyperemia and swelling of the gums, its bleeding. A significant amount of deposits on the surface of the teeth attracts attention. It is also associated with poor oral hygiene. With unsatisfactory hygiene, in all cases there is a significant deposition of tartar of light yellow and

white color, medium-density or loose consistency. Even with careful oral care, tartar is yellow in color and has a very dense consistency [11,13].

With such a dangerous and currently widespread disease as the human immunodeficiency virus, characteristic signs appear in the oral cavity. Usually the mucous membrane is covered with a thin transparent film, which is easy to remove, the tissue under it is quite hyperemic, vascularized, there are foci of ulcers, erosions and hemorrhages. Various forms of gingivitis are often found. Also, with HIV, parodontal inflammatory processes go much faster than in healthy people. There is also a high probability of developing osteomyelitis, in which the destruction of bone tissue is rapid and quite extensive. First of all, this is, of course, due to a decrease in the activity of the body's immune system. Thus, with various diseases of the organ systems of the human body, various structures of the oral cavity suffer. There is a gradual destruction of the parodontal. As mentioned earlier, in the treatment of various diseases of the gastrointestinal tract, liver, pancreas, immune system, due attention is not paid to dental treatment. Therefore, as statistics show, it is necessary to consider the human body as a complex, as a single system where everything is interconnected, therefore it is necessary to pay due attention to the treatment of the oral cavity.

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