

ANALYSIS OF THE PREVALENCE, STRUCTURE AND
CLINICAL CHARACTERISTICS OF DENTAL DISEASES IN
MILITARY PERSONNEL SERVING IN EXTREME CLIMATIC
CONDITIONS.

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Abstract. Inflammatory periodontal diseases are considered major dental diseases, as they have been the most common among other maxillofacial disorders for many decades. The primary goal of treating inflammatory periodontal diseases is to eliminate pathogens and eliminate the negative consequences of their impact on periodontal tissue, as pathological changes in periodontal tissue occur when microorganisms are activated against the background of decreased body resistance.

Key words. Periodontium, individual oral hygiene, maladaptive processes, adhesion, sensitivity, bioactive substances.

The primary goal of treating inflammatory periodontal diseases is to eliminate pathogens and eliminate the negative consequences of their impact on periodontal tissues, as pathological changes in periodontal tissues occur when microorganisms are activated against a background of decreased resistance [2].

Eliminating periodontopathogenic factors and stopping the inflammatory process is a primary goal. Once achieved, it is possible to proceed to the next

stages of treatment, namely, eliminating periodontal pockets, stabilizing dental arches, normalizing trophism and homeostasis, and restoring the protective functions of periodontal tissues and hemomicrocirculation [1].

With timely treatment of periodontal diseases, it is possible to achieve stable remission, which can be maintained for a considerable period of time, with the correct treatment and rehabilitation approach. Thorough removal of dental plaque is the key to effective periodontal treatment [11].

Professional scaling, which plays a key role in the treatment of periodontal disease, involves preliminary irrigation of the oral cavity with antiseptics, local application or injection anesthesia, direct scaling with antiseptic irrigation, grinding, preliminary and final polishing of tooth surfaces, and final irrigation with antiseptics [4].

Local treatment is given considerable importance, as is the individual selection of hygiene products, such as therapeutic and prophylactic toothpastes, elixirs, or rinses. To achieve positive results, therapeutic and prophylactic procedures performed by the dentist must be combined with the active cooperation of the patient [6].

If such cooperation is not achieved and the patient does not follow oral hygiene recommendations, the treatment will not yield favorable results. Such a medical approach, combined with improved oral hygiene, can lead to long-term remission of the pathological process [7].

Numerous studies emphasize that the prognosis and course of dental diseases depend on the quality of individual oral hygiene, and for patients with chronic periodontopathies, improved oral hygiene becomes a key task for preventing their complications [1,6].

The effectiveness of healthcare directly depends on prevention, as minor expenditures of labor and resources used for prevention can yield significant results, and preventive measures must be made an informed choice by patients. Measures to prevent periodontal inflammation are part of general

medical interventions aimed at increasing the body's overall resistance and the resistance of periodontal tissues to pathological factors, which are based on the removal of microbial biofilm [9,4].

The primary goals of prevention are the elimination of pathological factors that lead to the development of the pathological process. As is well known, the oral cavity is an ecological niche for a community of microorganisms, providing an ideal environment for their vital functions. It contains a nutrient substrate, maintains moisture, maintains the necessary pH level, and maintains the required temperature, creating an ideal environment for both non-pathogenic and pathogenic microflora. Thus, individual oral hygiene is a fundamental and relatively simple means of preventing dental diseases, provided it is performed regularly and with appropriately selected products [13].

The goal of oral hygiene is to prevent the development of diseases of the teeth, mucous membranes, and periodontal tissues, as well as to reduce the risk of possible complications of dental diseases and create conditions for optimal repair and restoration during various pathological processes [9].

Since microbial biofilm has been proven to be the cause of inflammatory periodontal diseases, its mechanical removal is undoubtedly the primary means of addressing this etiological factor, leading to the use of essential hygiene products and items. Toothpastes are used both to clean accessible tooth surfaces and to deliver active ingredients to their surfaces, as well as to periodontal tissues and mucous membranes [2].

Regular and effective toothbrushing significantly reduces the amount of plaque, the direct cause of inflammatory periodontal diseases, which accumulates both on the surface of hard dental tissues and on composite restorations [10].

Importantly, preventive measures reduce the number of treatment procedures, and therefore material costs. According to E.M. Kuzmina (2016),

the cost of preventive measures is 20 times lower than the cost of treating established diseases [4].

The development of new hygiene products and aids optimizes oral care and is of undeniable interest in modern dentistry. Toothpastes are the primary means of oral hygiene. Their complex composition helps prevent the development of major oral diseases and improves existing inflammatory processes in periodontal tissues. Experimental and clinical studies have found compelling evidence of the pronounced preventive effect of regular toothbrushing, especially when using therapeutic and prophylactic toothpastes [12].

Therapeutic and prophylactic toothpastes are used to clean accessible tooth surfaces and interdental spaces from soft plaque, prevent tartar formation, remove plaque, and inhibit microflora colonization. They also deliver active ingredients to tooth surfaces and surrounding tissues. The properties, purpose, and mechanism of action of a toothpaste are determined by the ratio of its components. Thus, the problem of hyperesthesia of hard dental tissues has led to the emergence of toothpastes and other oral hygiene products that contain components that eliminate or reduce hyperesthesia [6].

Modern toothpastes contain potent ingredients that can be considered therapeutic and prophylactic agents capable of eliminating the causes of dental diseases or reducing their negative effects. The use of such toothpastes leads to the normalization of free radical levels in oral fluid, which enhances the effectiveness of disease prevention measures. Biologically active components of toothpastes, such as trace elements, phosphates, calcium, and plant extracts, penetrate the hard tissues of the teeth and the oral mucosa, increasing their resistance to pathological external influences. They stimulate the synthesis of sulfated mucopolysaccharides in the periodontium, activate reparative processes, and enhance the therapeutic effect of other factors [5].

Long-term experimental research and clinical observations explain the preventive value of oral hygiene by factors such as regular plaque removal, the positive effects of active toothpaste components, and improved blood circulation due to gum massage [15].

The use of drugs with pronounced antimicrobial activity, such as chlorhexidine bigluconate, triclosan, hexetidine, biosol, and metronidazole in toothpastes, not only increases anti-inflammatory effectiveness but also affects saprophytic microorganisms in the mouth, leading to the development of dysbiosis and provoking the development of resistance of pathogenic microflora to these components. Ultimately, this will negatively affect both the tissues and organs of the mouth, as well as the overall health of the individual [10].

Long-term use of oral hygiene products containing chlorhexidine bigluconate leads to discoloration of teeth and dryness of the mucous membrane. Therefore, it is advisable to recommend limiting the use of toothpastes or rinses containing strong antiseptics to the period of active treatment of inflammatory periodontal diseases, followed by their replacement with products that do not contain such drugs [5]. The natural ingredients found in oral hygiene products, even when absorbed into bloodstreams through the mucous membrane, do not cause adverse effects, as confirmed by numerous studies. These personal hygiene products appeal to many patients due to their naturalness. They are recommended for use in inflammatory periodontal diseases [5].

Laboratory studies have shown that aspen bark extract activates reparative and metabolic processes, improves periodontal tissue trophism, normalizes platelet aggregation and disaggregation, and increases oral tissue resistance. Moreover, the use of products containing aqueous aspen bark extract has yielded significant positive results, with the complex of amino

acids, vitamins, and macro- and microelements found in aspen bark playing a significant role in these processes, rather than antioxidants [2].

Aspen bark extract is composed primarily of unsaturated fatty acid lipids, chlorophyll, carotene, vitamin E, phosphates, salicylic acid, amino acids, and tannins, making it a bioactive ingredient [7]. Aspen bark also contains macro- and microelements involved in oxidation-reduction processes, and biologically active substances contained in aspen leaves suppress free radical oxidation, while entering the human body with plant foods, they do not cause harmful effects [5].

It has been established that the lipophilic and alcohol-soluble substances contained in aspen bark exhibit strong antibacterial activity. Diethyl ether extracts exhibit the most pronounced bactericidal activity, comparable to that of antibiotics, while flavonoids and phenolic glycosides exert an antiulcer effect, potentially useful in the development of medications for gastrointestinal diseases. The water-soluble portion of aspen bark alcohol extracts contains salicin and brown and coniferyl alcohol glycosides, which exhibit strong stimulating activity. Therefore, the use of toothpastes for maintaining dental health is essential.

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