Principles of providing dental care to patients with pulmonary tuberculosis

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Abstract: The presence of odontogenic foci in patients with pulmonary tuberculosis is characterized by characteristic signs of intoxication of the disease process, changes in the blood, pulmonary erosion, changes in immunoglobulins and immune components. The purpose of the work was to increase the effectiveness of the prevention and treatment of dental caries in patients with tuberculosis. The provision of dental care in the treatment of patients with pulmonary tuberculosis has its own characteristics, which depend on the course of the disease and the degree of its spread. It was found that patients treated at the anti-tuberculosis dispensary should receive not only anti-tuberculosis chemotherapy, but also undergo a dental examination and receive dental care. The attending physicians, in collaboration with dentists, should treat the whole body of patients with pulmonary tuberculosis.

Keywords: pulmonary tuberculosis, dental care, oral cavity, caries, tooth, treatment

Introduction. The World Health Organization (WHO) has published a new report on tuberculosis, which shows that approximately 8.2 million new cases of TB will be diagnosed in 2023, the highest number since WHO began global TB monitoring in 1995. A marked increase from 7.5 million new cases in 2022, TB has once again become the leading infectious cause of death in 2023, displacing COVID-19.

The WHO Global TB Report 2024 presents both successes and failures in the global TB response, including persistent challenges, many of which are caused by severe underinvestment in TB. While the total number of TB-related deaths decreased from 1.32 million in 2022 to 1.25 million in 2023, the total number of new cases of TB increased slightly to an estimated 10.8 million in 2023. The disease disproportionately affects the 30 countries with the highest TB burden, with 56% of the global TB burden occurring in India (26%), Indonesia (10%), China (6.8%), the

Philippines (6.8%) and Pakistan (6.3%). The report notes that 55% of those infected with tuberculosis were men, 33% were women, and 12% were children and young adolescents [14]. All patients with tuberculosis, regardless of the form of the disease, usually have an unsanitized oral cavity and lack proper hygienic care. The development of the pathological process is due to a decrease in local immunity of the oral mucosa under the influence of processes occurring in the body [19].

The presence of an odontogenic focus in patients with pulmonary tuberculosis is characterized by characteristic signs of intoxication, changes in the blood, pulmonary erosion, changes in immunoglobulins and components of immunity. When the odontogenic focus is eliminated, an improvement in the indicators of the immune system and the clinical course of the disease is observed [3, 10]. At the same time, the importance of pathogenetic methods of treatment, including the correction of dental pathology, increases. One of the factors contributing to the effectiveness of tuberculosis treatment is good nutrition, which depends not only on the composition of food, but also on the quality of its processing in the oral cavity [7,8,13]. Unfavorable changes in the socio-economic situation and the deterioration of public health in the last decade have led to an increase in the prevalence of dental diseases in children, especially dental caries and its complications [5, 9, 13].

The deterioration of the epidemiological situation among the adult population has been manifested by an increase in the number of newly infected children with tuberculosis. The peak incidence of the disease occurs in the period from 3 to 6 years of age, which is 150% compared to the general incidence of children: 27.0 and 17.9 per 100,000 children [1, 11]. Thus, based on the generally accepted principles of dental care, the dentist must have a deep understanding of the nature of the underlying disease and the general condition of the patient. It is very important to address the issues of providing dental care to patients with pulmonary diseases, since the oral cavity becomes the gateway for infection. Medical workers, including dentists, are increasingly aware of the need to take measures to prevent the transmission of the disease from patients to staff, as well as to prevent the spread of infection in a medical institution. The number of immunocompromised patients (those with general somatic diseases; those undergoing radiation and chemotherapy; those registered in drug, oncological, and tuberculosis dispensaries) undergoing dental examinations is increasing. However, such patients are at risk of contracting and being susceptible to infection. Therefore, the doctor should consider each patient as a carrier of the infection and take all measures to prevent its spread [12,17].

Purpose: The goal was to improve the effectiveness of preventing and treating dental caries in patients with tuberculosis.

Materials and research methods. A comprehensive clinical, radiological, morphological, immunological and bacterioscopic examination of the oral and

maxillofacial system was performed in 150 patients aged 18-55 years and older with long-term disease. Among the examined patients, 83 (55.3%) were men and 67 (44.7%) were women.

When developing a treatment regimen, information about the duration of the disease is taken into account together with the symptoms of the disease, namely, bad breath, difficulty swallowing, changes in the color of the tongue, as well as a number of other local factors that give an irritating, damaging effect on the background of oral pathology (sharp edges of decayed teeth, poor-quality orthopedic structures of dentures, the presence of numerous tartar, incorrect positioning of teeth, harmful habits (alcohol, smoking, etc.) that aggravate the patient's condition and lead to a different approach to dental treatment.

Complex treatment includes specific general and local measures, including oral hygiene, psychotherapy, multivitamins with microelements, anti-inflammatory and analgesic solutions that affect the epithelialization of the oral mucosa. The results of a survey of patients conducted by general practitioners were also taken into account, since most cases of tuberculosis are detected when the patient consults a general practitioner. When collecting survey data from patients in need of dental care, attention was paid to the presence of respiratory diseases (acute respiratory tract infections, bronchitis, pneumonia, pleurisy). The unsatisfactory hygienic condition of the oral cavity was eliminated, it was recommended to brush the teeth with non-abrasive toothpastes, rinse the mouth with medicinal infusions.

Dental care is based on the generally accepted principles of an individual approach, taking into account the complaints of patients and the specific characteristics of tuberculosis. Dental treatment began with the removal of plaque and rinsing the oral cavity with medicinal decoctions, and then antibacterial drugs were recommended for anti-inflammatory purposes. The most effective medicinal plants for rinsing the oral cavity are: calendula, calendula, and kalanchoe. Of the drugs, chlorhexidine, anesthesin solutions and glycerin, vitamin A oil concentrate were recommended for local application and rinsing.

After the antiseptic stages of treatment, in the presence of ulcerated areas on the gums and the entire oral surface, agents that accelerate epithelialization were used, including vitamins A, D, the drug Aevit, Solcoseryl, vegetable oils, and Kuriozan-gel ointment.

Research results and their discussion. According to clinical, laboratory and X-ray data, the following forms of tuberculosis were observed in the patients who participated in the study (Table №1):

Table №1

Distribution of patients according to the form of pulmonary tuberculosis

Pulmonary tuberculosis form	Number of patients	
	Abs	%
Focal tuberculosis	13	8,7
Disseminated tuberculosis	85	56,7
Infiltrative tuberculosis	44	29,3
Fibrous-cavernous tuberculosis	8	5,3

In patients with pulmonary tuberculosis, the clinical course of the disease was studied based on the nature and extent of the disease from a radiological point of view, the presence of signs of tuberculosis intoxication, laboratory data, and the detection of tuberculosis mycobacteria in sputum during bacterioscopy. To characterize the condition of the teeth, the value of the index (KPU), consisting of the sum of caries, filled and extracted teeth, as well as separate cases of complicated and uncomplicated caries, was determined. These data are presented in Table №2.

Table №2

Dental caries rates in patients with pulmonary tuberculosis

Pulmonary tuberculosis form	Number of patients	KPU	Caries complications
Focal tuberculosis	13	7,57±0,53	18,66±1,5
Disseminated tuberculosis	85	49,38±0,34	47,27±3,1
Infiltrative tuberculosis	44	30,84±1,25	59,16±6,9
Fibrous-cavernous tuberculosis	8	2,45±0,57	24,89±6,5

Taking into account that tuberculosis is the main disease, when assessing the results of dental treatment, we can evaluate the effectiveness of the developed principles and the proposed treatment principles, but it should be remembered that, along with the elimination of local negative factors and the treatment of tuberculosis, it is necessary to monitor these patients in dynamics.

Along with the positive effect of complex treatment, one should not forget about the social impact. It should be aimed at improving the psycho-emotional and general condition of patients, eliminating pain, and most importantly, improving the quality of life of patients along with complex and targeted treatment of the main diseases based on the use of modern approaches and treatment methods.

If problems are observed in the oral cavity in patients with pulmonary tuberculosis, the general treatment of patients should be supplemented with local dental treatment, including oral hygiene.

It should also be noted that in patients with pulmonary tuberculosis, symptoms of mental depression arising from the general condition of the body, as well as the side effects of antibacterial drugs, are often combined with a psychotic state, the treating physician, in collaboration with a neurologist, should also recommend sedatives to the patient.

Improving the composition and regimen of nutrition, emotional state, work and quality of life of patients with pulmonary tuberculosis helps to increase the effectiveness of treatment.

The results of the study showed that tuberculosis of the oral cavity and the entire maxillofacial system is considered a manifestation of tuberculosis infection of the entire body, therefore, treatment should be carried out comprehensively, taking into account the general condition of the patient, continuing with hygienic, therapeutic and other measures. Thus, based on our studies, we were convinced that the maxillofacial system is not an exception among the organs affected by tuberculosis.

Conclusion. The provision of dental care in the treatment of patients with pulmonary tuberculosis has its own characteristics, which depend on the course of the disease and the degree of its spread. It was determined that patients treated at the anti-tuberculosis dispensary should receive dental care not only after undergoing anti-tuberculosis chemotherapy, but also after undergoing a dental examination.

The attending physicians, in collaboration with dentists, should treat the whole organism of patients with pulmonary tuberculosis. The dentist, in turn, should be engaged in the tactics of treating the oral cavity, that is, eliminating foci of odontogenic infection, using anti-inflammatory therapy in pathology, treating damaged surfaces of various parts of the tissues surrounding the teeth, the mucous membrane of the oral cavity and lips, and restoring defects in dentures.

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