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INFLUENCE OF DIABETES MELLITUS COURSE AND RESULTS OF TUBERCULOSIS TREATMENT

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ABSTRACT

The WHO estimates that TB has claimed the lives of over 1.4 million people in 2019 alone Pulmonary tuberculosis develops in patients with type 2 diabetes mellitus, with moderate to severe severity, subcompensated form and with a complicated course, with more than 9 years of experience of the disease. Patients with diabetes mellitus were characterized by widespreadinfiltrative tuberculosis with bacterial excretion, in every fifth patient with drug-resistant pathogen. The clinical picture of tuberculosis in patients with diabetes mellitus was characterized by severe intoxication and bronchopulmonary syndromes, moderately pronounced changes in the clinical blood test, a pronounced reaction to tuberculin. Pathological reactivity was noted in 2/3 of patients with combined pathology, most of the patients had a low level of adaptation. Despite this, ineffective tuberculosis therapy was noted only in every 4 patients with diabetes mellitus.

Intraduction. Special attention will be needed to ensure continued TB prevention, diagnosis, treatment and care throughout the world. Like tuberculosis, the new coronavirus infection affects the lungs and its symptoms - cough and fever - can resemble tuberculosis.The combination of tuberculosis and diabetes mellitus remains one of the mostpressing problems of modern phthisiology. The importance of this problem is due to a number of objective circumstances. In the first place among themis the steady increase in the prevalence of carbohydratemetabolism disorders among the population (for example,more than 45 thousand patients with diabetes mellitus have been registered in the Omsk region today, and their number increases by 50-70% every 10 years) [4, 5] and the persistence of a tensesituation with tuberculosis the tuberculosis process may be asymptomatic, and therefore, in half of cases, it is detected during preventive examinations [6]. The epidemiological situation is of strategic importance for the phthisiological service, since a further increase in the number of tuberculosis patients with a combined

disease should be expected [3,2, 5]. Objective: to assess the impact of diabetes mellitus on the clinical manifestations, course and outcome of tuberculosis in their combination.

Materials and methods.A cross-sectional retrospective study was conducted among 60 patients older than 18 years (49.1±2.2 years), patients with tuberculosis and diabetes mellitus who were on inpatient treatment at the Omsk Region Public Health Institution "Clinical Tuberculosis Dispensary No. 4" (BUZOO KPTD No. 4) for the period from 2019 to 2021.

The data of the hospital patient's medical histories were used, taking into account anamnesis data, including epidemiological, results of clinical examination, tuberculin diagnostics, X-ray tomography, bacteriological examination, laboratory data (general blood test, determination of blood sugar level), leukocyte intoxication index (LII), leukocyte shift index were calculated (ISLC) [1, 2]. Statistical data processing was carried out using the Biostat program for personal computers.

Results and their discussion

Among the patients included in the study, there were slightly more32 (53%) women, the majority of patients – 48 people (80%) lived in the city. Tuberculosis was first detected in 54 patients (90%), and a recurrenceof the tuberculosis process was in 6 patients. At the same time, lung tuberculosis was detected in most patients during a preventive examination – 47 people. (79.7%), when seeking medical help – in 13 patients (20.3%). When detected, infiltrative pulmonary tuberculosis was more often registered in 49 cases (81.7%), less often fibrous-cavernous – 6 people (10%), tuberculosis of 4 people (6.7%) and disseminated tuberculosis of 1 person (1.7%), in 2 (3.3%) cases the process was combined with pleural tuberculosis and in 4 cases (6.7%) with extrapulmonary lesions – generalized tuberculosis. Basically, a common process was registered – 36 people (60%). In the main part of patients the tuberculosis process was accompanied by bacterial excretion – 37 people (60.3%). Drug resistance was observed in 13 (21.7%) patients, of which multidrug resistance was observed in 12 people (92.3%).In the patients included in the study, diabetes mellitus was detected in 20 cases (33.3%) simultaneously with pulmonary tuberculosis, in 40 cases (66.7%) diabetes mellitus developed earlier than tuberculosis, while the average duration of the disease was 7.8± 1.5 years.

The majority of patients had type 2 diabetes mellitus – 35 (67.3%). According to the severity of diabetes mellitus, patients were distributed as follows: with an average severity – 43 people (89.6%) and with a severe degree – 5 people. (10,4%). Depending on the form of diabetes mellitus compensation, the distribution was as follows: compensated – 2 people (3.5%),subcompensated – 39 people (65%) and decompensated diabetes mellitus– 19 people (32.8%). It was also found that 26 (43.3%) patients had complications of diabetes mellitus. According to the anamnesis, additional risk factors for the development of tuberculosis in patients with diabetes mellitus were clarified. Assessing social factors, it was found that the majority of patients belonged to the category of unemployed – 46 people (77%), while 21 (41.2%) people had secondary education, secondary specialized - 21 (41.2%) and higher – 9

(17.6%). Most of the patients assessed their living conditions as satisfactory – 56 people (93%), while in 4 patients (7%) they were unsatisfactory. 26 (43.3%) people had bad habits, of which 10 patients (38.5%)regularly consumed alcohol, 23 patients (88.5%) smoked, 1 patient (3.9%) was a drug addict. 4 (6.7%) patients with combined pathology were previously in places of detention. Assessing medical risk factors, it was found that 31 patients (51.7%) simultaneously with diabetes mellitus and tuberculosis, chronic obstructive pulmonary disease (COPD) occurred, in 15 – coronary heart disease and arterial hypertension (25%), in 24 - myocarditis (40%), in 11 patients – chronic hepatitis (18.3%), 5 – cholecystitis (8.3%), 8 – pancreatitis (13.3%), 7 – gastritis (11.7%), 5 – pyelonephritis (8.3%), 2 – hypothyroidism (3.3%), 2 – oncopathology (3.3%), in 7 – atherosclerosis of the vessels of the lower extremities (11.7%), in 4 – widespread osteochondrosisspine (6,7%), 6 – alcoholism (10%), 5 – encephalopathy of mixed genesis (8,3%). Clarifying the epidemiological history, it was found that only every 4 the patient had contact with a tuberculosis patient (25%), in other cases either the patients denied the presence of contact (17 - 28.3%), or did not know about it When the tuberculosis process was detected, most of the patients had clinical symptoms due to the manifestation of the inflammatory process: intoxication syndrome was noted in 10 (16.7%) patients, bronchopulmonary syndrome – in 5 (8.3%), a combination of these syndromes – in 37 patients(61.7%) and only 8 (13.3%) patients did not suffer from well-being. The degree of intoxication was calculated by the leukocyte intoxication index, while the average level of the indicator was 2.01 ± 0.2 units, with a norm of 0.5-1.5 units. According to the results of a clinical blood test , more often registered acceleration of ESR – in 39 cases (65%), anemia – in 20 (33.3%), lymphopenia – in 19 cases (31.7%), there were no changes in 8 cases (13.3%). Upon admission , the average blood sugar was 11.8±1.1 mmol/l. The Mantoux test was performed on admission to 35 patients, it was negative in 1 patient (2.9%), positive normergic – in most patients – 31 (88.5%), positive hyperergic – in 3 patients (8.6%). The average size of the infiltrate during the Mantoux test was 14.1±0.7 mm, which indicated a pronounced response to tuberculin. Assessing the reactivity of the body of patients with tuberculosis and diabetes mellitus, it was taken into account that in healthy individuals the adaptive activity of the body is manifested by two types of adaptive reactions – the "training" reaction and the "activation" reaction [1]. In patients with tuberculosis and diabetes mellitus , "training" reactions were noted in 22 cases (36.7%), "activation" – in 17 cases (28.3%). The patients included in the study also developed other types of adaptive reactions – reactions of "stress" (in 20 cases – 33.3% and "reactivation" (in the 1st case - 1.7%). Assessing the type of reactivity of the organism, we proceeded from the position that the adequate type reflects normal physiological reactivity, and other types of pathological reactivity: hyperreactive, hyporeactive, paradoxical and areactive [1,2]. The following types of body reactivity were established in patients: adequate type only in 17 cases (28.3%), in other cases hyporeactive – 22 people (36.7%), paradoxical – 1 (1.7%) and areactive type – 20 people (33.3%).

Thus, in most cases, reactions were noted that characterize pathological reactivity in this category of patients. As an indicator characterizing the degree of impaired reactivity of the body in patients with tuberculosis and diabetes mellitus, the leukocyte shift index (ISL) was determined, the average size of which was 3.05 ± 0.3 units, with a norm of 1.52-2.40 units. At the same time, an increase in the ICL characterizes an unfavorable value and a low level of adaptation in terms of the forecast. All patients in the hospital received anti-tuberculosis therapy in the amount recommended by the Order of the Ministry of Health of the Russian Federation No. 109 of 21.03.2003.Treatment was carried out according to mode I in 23 cases (38.3%), according to IIb – in 16 (26.6%), according to III – 4 (6.7%) and according to mode IV – in 12 cases (20%). During the treatment, positive X-ray dynamics was observed in 39 (65%) patients, of which 32 (82.1%) in the second month and 7 (17.9%) in the fifth month of chemotherapy. There were 14 (23.3%) people without dynamics from the therapy, 7 (11.7%) patients with the progression of the process.

Taking into account the effectiveness of anti–tuberculosis therapy, the following tuberculosis outcomes were recorded: with deterioration in 9 cases (15%), unchanged in 6 (10%), with improvement in most cases - 43 (71.7%), of

which surgical treatment was performed in 8 cases (18.6%) and significant improvement in 2 cases (3.3%). Thus, despite the low level of reactivity of the body in patients with tuberculosis and diabetes mellitus, high efficiency of anti-tuberculosis therapy was observed.

Conclusion

Pulmonary tuberculosis developed more often in middle-aged patients (after 45 years), having type 2 diabetes mellitus with moderate and severe severity, with a subcompensating form, with a complicated course. Most of the patients with diabetes mellitus at the time of detection of tuberculosis had the experience of the disease is more than 7 years. In patients with diabetes mellitus, an infiltrative widespread process with bacterial excretion was more often recorded, drug-resistant

tuberculosis was detected in every fifth. Additional risk factors for the development of tuberculosis in the majority of patients with diabetes mellitus were social factors (unemployment,low professional level, the presence of bad habits),medical (COPD, cardiovascular pathology, chronic diseases of the gastrointestinal tract) and epidemiological (contact with a patient with tuberculosis).In the clinical picture of tuberculosis in most patients with diabetes mellitus, the manifestation of pronounced intoxication and bronchopulmonary syndromes, moderately pronounced changes in

clinical blood analysis (acceleration of ESR, anemia, lymphopenia), a pronounced reaction to tuberculin and high blood sugar.Pathological reactivity was noted in 2/3 of patients with tuberculosis in combination with diabetes mellitus and a low level of adaptation in most patients.

Considering that the majority of patients had a specific process detected for the first time, ineffective tuberculosis therapy was noted only in every 4 patients with diabetes mellitus, despite the high level of intoxication and low level of adaptation in the detection of tuberculosis.

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