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Passage of Coronavirus Infection in Patients with Diabetes and its Prevention

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ABSTRACT

The article summarizes the medical history and statistics of 58 patients treated in the hospital during the coronavirus pandemic in 2019-2022. Clinical manifestations are discussed depending on the date and diagnostic methods. Post-treatment statistics and results are presented.

Keywords:

diabetes, coronavirus, complications, prevention

Introduction. The most vulnerable categories of people prone to this disease are those with heart and vascular diseases (ischemic heart disease (IHD), heart failure, arterial hypertension, cerebrovascular diseases), chronic obstructive pulmonary disease (COPD), chronic kidney disease, etc. and patients with severe chronic diseases. Of course, they are patients with diabetes. For the organism that has been fighting with chronic disease for years, this disease has led to serious consequences, in addition to the renewal of symptoms of the disease, due to the specific standards of treatment and the effect of the drugs used on the course of the disease. Diabetes mellitus (DM) is one of the important risk factors for the development of negative consequences due to more severe infection and other aggravating factors in the conditions of hyperglycemia in these patients. Factors, for example, old age, obesity, high level of joint diseases (arterial hypertension, cardiovascular diseases) have a significant impact on the course of the disease. COVID-19 is a risk factor for death due to elevated blood sugar levels. Glucose in the secretion of alveoli in these patients, increased viral replication, impaired immunity against the virus, increased

neutrophilia, impaired lung structure and function are associated with a higher death rate. Hypercytokinemia (cytokine storm) caused by viral invasion, coagulation activation associated with persistent inflammatory response, and acute renal failure associated with direct exposure of the virus to the kidneys.

The purpose of the study: to analyze the course of COVID-19 pneumonia in patients with diabetes.

Materials and methods. In order to carry out this research, work was carried out with the medical history of "Fergana branch of the Republican Scientific Center for Emergency Medical Care" hospital between 2019-2022. General blood, urine, biochemical analysis of blood, X-ray and CT results, as well as anamnesis collected from patients were analyzed.

Results. According to the scientists of Dunmo countries: The SARS COV-2 virus must interact with its receptors to invade human target cells (primarily the alveolar cells of the lungs). Angiotensin-converting enzyme type 2 (ACE2)

has been identified as such a receptor for the novel coronavirus. The expression of this enzyme is much higher in the mucous membrane of the oral cavity, the mucous membranes of the nose and lung tissue (type 2 alveolar cells). Therefore, the "gateway" for the virus is the upper respiratory tract, after which the virus easily enters the lungs, affects the alveoli, and causes the rapid development of pneumonia and respiratory failure. ACE2 expression is also affected in colonic enterocyte cells, myocardial cells, proximal renal tubules, liver, and pancreas. This localization of the expression of the novel coronavirus receptor can also cause other manifestations of the disease, such as diarrhea, loss of smell, and transient hyperglycemia for the first time. The virus spike after the member binds to its ACE2 receptor on the surface of cells, the transmembrane serine protease (TMPRSS2) "cuts" the ACE2 receptor, which leads to the activation of the virus, and it enters the cell together with the receptor, where its further replication occurs will be Experimental studies on mice have shown that the amount of ACE2 in a number of organs and tissues (kidneys, liver, pancreas) increases many times under conditions of hyperglycemia. At the same time, in the presence of hyperglycemia in the lung tissue, it has been proven that the glycosylation process (that is, binding of the protein to glucose) of the ACE2 receptor is activated, which increases its affinity for the SARS-CoV-2 virus. Therefore, not only the expression of the receptor (in many tissues), but also its binding to the coronavirus is increased in DM. Both processes increase the susceptibility of diabetic patients to viral attack.

We obtained the following information during the study of the medical history of our patients: the medical histories of 58 patients and the information obtained from them were analyzed. In the obtained data, patients are from 26 to 81 years old. 32 of them are women (60 percent) and 26 are men (45 percent of the study). All patients Divided into 2 groups: Group 1 - patients with diabetes mellitus under constant control and treatment, patients with pneumonia due to infection with COVID- 19

35 patients (60%) and group 2 - non-diabetic patients, 23 (40%) patients with pneumonia due to COVID- 19. All patients received therapy according to the scheme defined in the clinical guidelines (Appendix 7 of practical skills for the treatment of patients infected with COVID-19 issued by SSV 2020). Complications from the respiratory system are observed in patients of group 1: shortness of breath during physical activities and rest (in 80% of patients); oxygen saturation indicators below 90%; development of changes according to X-ray and CT data in the lungs (more than 50% of the volume of changes in the lungs). As a complication of COVID -19 pneumonia in patients with diabetes mellitus accompanied by unstable hemodynamics (systolic blood pressure < 100 mm Hg or diastolic blood pressure < 60) mm. rt. Art.; urine output < 30 mL/hour). It was found that more than 80% of patients with diabetes suffer from excess weight, which, in turn, is an independent risk factor for this patient.

At the same time, in people with an average body weight (65-70 kg) < 35 kg / m², it is necessary to transfer patients to artificial ventilation. Lung damage in these patients increased 1.5 times regardless of the presence of arterial hypertension and diabetes. In the 2nd group of patients, saturation indicators (SpO₂ < 93%) were in the range of 92-98%, shortness of breath occurs during physical exertion. In 20% of cases, he has no shortness of breath at rest. Also, patients in group 2 have blood pressure readings norms (systolic blood pressure > 100-110 mm Hg or diastolic blood pressure > 70-90 mm Hg). The mortality rate of group 1 patients is much higher and accounts for 60% of the total number of patients, the mortality rate of group 2 patients made up 40%.

Conclusion: An analysis of the medical history of patients with diabetes and diagnosed with COVID- 19 pneumonia and without diabetes showed that the severe course of COVID- 19 pneumonia in patients in group 1 was more severe in this group with diabetes. at the same time, aggravating factors such as old age of patients, obesity, high level of joint diseases

(arterial hypertension, cardiovascular diseases, thromboembolism). As a result, death More patients were observed in group 1 . Patients in the 2nd group have a low mortality rate due to the mild course of COVID-pneumonia and the absence of additional diseases .

Our proposals are:

1. Patients with additional somatic diseases should reduce their body weight, i.e. increase their physical activity and reduce their body weight on the basis of a strict diet.
2. If it is necessary to constantly control the amount of sugar in the blood during the treatment of the disease of COVID-19, during the treatment, insulin therapy should be carried out simultaneously.
3. Strict adherence to personal hygiene rules for people with additional somatic diseases.
4. Vitamin E. It has an antioxidant effect, participates in the biosynthesis of heme and proteins, cell proliferation, tissue respiration and other important processes of tissue metabolism, prevents hemolysis of erythrocytes, prevents increased permeability and capillary fragility ; stimulates the synthesis of proteins and collagen. We recommend using it to patients within 1 year after the course of treatment. The main goal is to greatly help the recovery of the lungs after damage.

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