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FEATURES AND TREATMENT OF RECURRENT PNEUMONIA COVID 19 IN PATIENTS WITH DIABETES MELLITUS

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Abstract:

Type 2 diabetes mellitus belongs to the risk factors for the development of cardiovascular diseases, which are currently the main cause of early disability and mortality in the working-age population. According to Panzram G., diabetes mellitus increases mortality 2-3 times, the risk of coronary heart disease and myocardial infarction - 2 times, kidney pathology - 17 times, gangrene of the lower extremities - 20 times, arterial hypertension - more than three times.

Keywords

diabetes mellitus, microangiopathy, myocardial infarction, glucose, cardiovascular disease, ischemic organ, hyperglycemia, hyperinsulinemia, diabetic macroangiopathy, arterial system.

Introduction

Diabetes mellitus (DM) is a serious, socially significant disease characterized by higher mortality rates among patients compared to those with normoglycemia.1 Acute and chronic infectious diseases make a certain contribution to the mortality of patients with DM. It is well known that chronic hyperglycemia contributes to the development and maintenance of the infectious process. The risk of pneumonia is almost three times increased in patients with type 1 diabetes and by 58% in patients with type 2 diabetes.2

Recent studies have shown that the new coronavirus infection caused by SARS-CoV-2 (COVID-19) is more severe in patients with DM3. 4, the therapeutic response in the treatment of COVID-19 is weaker in them. In addition, COVID-19 predisposes to the development of hyperglycemia.6

The purpose of the study

To study the features of the treatment of relapse of COVID-19 pneumonia in patients with diabetes mellitus on the example of the Andijan region and to investigate possible causes of their mutual aggravation.

Materials and methods of research

An open comparative study was conducted, during which 64 patients with COVID-19 were hospitalized in the AOIB in the period 2020-2022, of which 32 people had concomitant diabetes (the main observation group).

The results of the study

Criteria for inclusion in the main group: 1) type 2 diabetes (type 2 diabetes), which was diagnosed taking into account anamnesis, as well as glycemic and glycated hemoglobin (H1C) indicators that exceeded the target values in most patients; or 2) newly diagnosed diabetes (diagnosed on the basis of a characteristic glycemic profile in combination with an increase in H1C levels at the time of hospitalization).

The control group (COVID-19 without diabetes) was formed according to the "case-control" principle: after the inclusion of a DM patient in the main group, a hospitalized patient without DM of the same sex and belonging to the same age group was included in the control in turn.

As a result, the control and main groups were comparable by sex (31.2% for 10 men), age (56.1±13.8 and 60.4±12.0 years) and body mass index (31.8±5.5 and 33.7±6.9, respectively; $p>0.05$ for all indicators).

Among concomitant diseases, hypertension was most often detected, and its prevalence was significantly lower in the control compared to the main group — 10 (31.2%) and 20 (62.5%) patients, respectively, $p=0.012$. In addition, there was a tendency to a higher frequency of detection of coronary heart disease among patients with DM — 3 (9.4%) and 8 (25.0%), $p=0.09$. The groups did not differ in the prevalence of other concomitant diseases, including chronic liver diseases — 4 (12.5%) and 3 (9.4%), lungs — 2 (6.2%) and 1 (3.1%) and kidneys - 1 (3.1%) and 2 (6.2%); $p>0.05$ for all indicators.

In the main observation group, there were 19 patients with newly diagnosed DM (59.4%), and 13 patients with previously diagnosed DM 2 (40.6%). In individuals with a history of DM, the duration of the disease was 3.7±5.9 years, most were diagnosed with diabetic polyneuropathy before hospitalization (12 out of 13 people); in the subgroup of patients with newly diagnosed DM, there were no persons with manifestations of microangiopathies. Glycated hemoglobin in patients of the main group averaged 8,3±1,6% (9,1±1,9% — in patients with previously diagnosed and 7.9± 1.3% — in patients with newly diagnosed DM; $p= 0.062$).

The data obtained confirm the role of coagulopathies in the pathogenesis and clinical picture of SARS-CoV-2 infection, their particular severity and duration in concomitant diabetes, as well as a significant contribution to the development of adverse outcomes. Taking into account the results of single- and multifactorial analysis, it cannot be excluded that the influence on the prognosis of some metabolic disorders characteristic of COVID-19, including those associated with liver and kidney dysfunctions, can be realized through the aggravation of coagulopathies.

Conclusion

Patients with COVID-19 are characterized by impaired renal and hepatic functions, which may worsen in the first days after hospitalization and the start of active therapy; at the same time, creatinine and AST levels are correlated with the risk of adverse disease outcomes (ICU hospitalization and/or death). In diabetes mellitus, acceleration of these disorders is possible, especially in the form of a larger initial increase in creatinine levels.

With COVID-19, pronounced and persistent systemic inflammatory disorders occur, which decrease, but do not disappear by the end of the hospital period. The presence of diabetes mellitus in infected SARS-CoV-2 contributes to an additional increase in the degree and duration of manifestations of systemic inflammation. An increase in the level of CRP is a predictor of the severe course of COVID-19.

Patients with COVID-19 are characterized by the development of hypercoagulation, which is accompanied by a pronounced and steady increase in the content of D-dimer and fibrinogen in the blood. The severity of coagulopathies and the timing of normalization of the main coagulogram indicators are significantly increased against the background of concomitant diabetes mellitus. The fibrinogen level is an independent predictor of adverse outcomes for the population of SARS-CoV-2 patients in general and especially in diabetes mellitus.

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