The Role Of Polymorbidity During Covid-19

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ABSTRACT

We analyzed 340 cases of coronovirus infection in patients hospitalized in the COVID center, taking into account polymorbidity and its contribution to the severity and outcome of the infection.

Severe polymorbidity according to CIRS was significantly more common in both men and women (P<0.01), which was significantly more often diagnosed in patients with severe and extremely severe COVID-19, which allows us to confidently speak about the contribution of polymorbidity to the severity of the course of coronovirus infection in men and women.

Keywords: Coronovirus infection, severity of COVID-19 course, polymorbidity.

Introduction. The pandemic of coronavirus infection COVID-19 (COronaVIrus Disease-2019), which is caused by a new strain of coronavirus – SARS-CoV-2 (severe acute respiratory syndrome coronavirus-2), has caused a rapid increase in the number of cases and high mortality throughout the world [1]. Despite the tropism of SARS-CoV-2 for the lungs, with COVID-19 there is a high risk of developing multiple organ failure, including due to damage to the cardiovascular system [5, 7, 11]. Most young people and children experience a mild form of the disease. Severe forms of the disease are more likely to develop in people with polymorbidity, which contributes to the course and outcome of coronavirus infection and requires additional healthcare efforts [3, 4, 5, 6, 11]. It has already been published that such multimorbid conditions as COPD increases the risk of severe coronovirus infection by 5 times, cardiovascular diseases by 3 times, and the risk of death by 11 times, hypertension increases the risk of severe course by more than 2.3 times, and mortality rate is 3.5 times. NAFLD – contributes to an increase in the severity of COVID-19 by 4-6 times. Diabetes increases the risk of severe disease and mortality by 2 times, CKD - by 3 times, oncology increases the risk of severe disease by 76%, with obesity - the risk is 6 times higher [6].

Thus, the problem of multimorbidity is one of the leading health problems, including against the backdrop of a new coronavirus infection. Both individual aspects of co-/polymorbidity and the problem as a whole are

being studied, especially in therapeutic practice [2, 6, 7, 10, 11].

Purpose of the study: To study the contribution of multimorbidity during the course of a new coronavirus infection in inpatients.

Materials and methods. The subjects of the study were 340 patients aged 18-85 years who were undergoing inpatient treatment at the COVID center. A retrospective analysis of the medical history was carried out with the study of the clinical diagnosis, laboratory, biochemical and instrumental studies confirming both the main diagnosis and concomitant pathology. The severity of COVID-19 was determined using the recommended classification of the Ministry of Health of the Russian Federation, 2020[3]. The severity of multimorbidity in patients with COVID-19 was assessed using the CIRS (Cumulative Illness Rating Scale) system, which is the most suitable for studying multimorbidity, since it covers all organs and systems and evaluates their condition in points, depending on the severity of the disease [8, 9].

Research results. Of the 340 patients examined, 57.1% were women and 42.9% men, whose average age did not differ statistically. We studied the frequency and structure of COVID-19 by severity depending on age and gender differences.

To study the contribution of polymorbidity to the severity of coronavirus infection, we studied hospital morbidity by internal organ systems in patients with COVID-19 of different ages and genders. The largest percentage were pathologies of the bronchopulmonary - 28.5% and cardiovascular systems - 28.1%. Gastrointestinal pathology was diagnosed in 18.7%, urinary system diseases in 12.0%, endocrine diseases in 8.2%, rheumatic diseases in 4.5%, with no significant difference by gender. A significant frequency of anemia was revealed, which was diagnosed in 89.8% of patients.

The contribution of multimorbid status according to the CIRS system to the severity of coronavirus infection was assessed.

To solve this problem, from the general cohort of patients with COVID-19, we identified patients who did not have multimorbidity; there were only 4 of them. – 1.2%, and these were persons with mild COVID-19 - who were not included in the group for statistical analysis.

Therefore, we were unable to conduct a comparative analysis between groups with and without multimorbidity, which was of scientific interest.

The results of the analysis showed that the number of patients with a mild degree of multimorbidity according to the CIRS system (i.e., less than 2.0 points) among those examined was only 4.0%: 5.7% among men and 2.7% among women. Polymorbidity of moderate severity (i.e., from 2.0 to 2.9 points) was 35.9%, with approximately the same frequency in women and men: 36.4% and 35.3%. And severe polymorbidity (i.e., more than 3.0 points) was determined in 60.1%, amounting to 59.0% in men, 60.9% in women, without significant differences.

It should be noted that severe polymorbidity was significantly more common ($P<0.01$) when compared with moderate-severe polymorbidity. No significant differences were obtained between moderate, severe and mild polymorbidity, probably due to the small number of patients with mild polymorbidity, both among men and women.

In addition, having analyzed the age aspect of the severity of polymorbidity according to the CIRS system in men and women, it was found that a mild degree occurred mainly at a young age - 18-30 years, in both men and women, 38.5% and 20.0%, accordingly, and not defined was divided into older groups of patients 61 years of age and older. The average severity of polymorbidity was quite often detected in all age groups except the older group. In persons over 70 years of age: in men it was diagnosed in 21.7%, in women in 24.0%, $P <0.05$. But severe polymorbidity was much more common in elderly patients, both men and women, in 78.3% and 76.0%, respectively, while in young patients it was 23.0% in men, and in women 30.0%, $P<0.05$.

When studying the contribution of polymorbid status according to the CIRS system to the severity of COVID-19 in men and women, it was found that in patients with moderate-severe coronovirus infection, moderate-severe polymorbidity was most common: in men in 74.6% and in women in 68.9%, without a significant difference, P>0.05, amounting to 71.7% in the general group. Severe polymorbidity in this group was 19.7%, and mild 8.6%. In patients with severe COVID-19, mild polymorbidity was not observed in either men or women. Moderate-severe degree occurred only in 4.6%, and severe degree occurred in a significant number of patients - 95.4%: in 96.9% of men and in 94.2% of women, P>0.05. During the critical course of COVID-19, there was no mild or moderate-severe polymorbidity, and in 100% of cases a severe degree of polymorbidity was diagnosed, both in men and women, without a significant difference by gender.

Conclusions: 1. In the structure of multimorbid pathology, a significant percentage was accounted for by the pathology of the bronchopulmonary and cardiovascular systems and, especially, anemia, which distinguishes our population from patients in other countries, which certainly influenced the severity and outcome of COVID-19.

2. Severe polymorbidity according to CIRS was significantly more common in both men and women (P<0.01).

3. Analyzing the data obtained, namely, a significantly higher percentage of severe polymorbidity according to the CIRS system in patients with severe and extremely severe COVID-19, allows us to speak with confidence about the contribution of polymorbidity to the severity of coronavirus infection in men and women.

Literature

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