CLINICAL AND LABORATORY FEATURES OF CORONAVIRUS DISEASE AND RISK FACTORS OF LETHAL OUTCOME IN PATIENTS WHO REQUIRED HOSPITALIZATION DURING THE THIRD WAVE OF COVID-19 IN UKRAINE: A SINGLE-CENTER RETROSPECTIVE STUDY

T. O. Pertseva, K. Y. Gashynova, V. V. Rudakova, V. V. Rodionova,
V. V. Dmytrychenko, O. Y. Kovalenko, O. V. Kravets, N. O. But,
N. V. Laksha, L. A. Hlyniana, O. F. Mykhailenko, S. P. Novikov

Abstract

August 2021 in Ukraine marked the beginning of the third wave of COVID-19, catastrophic in terms of hospitalization and mortality, when, according to the Ministry of Health, the Delta strain was the dominant variant of the virus. By that time, it had already been established that clinical characteristics of patients and levels of inflammatory markers differed between Delta and non-Delta variants.

The aim of the study was to analyze the anthropometric, clinical, anamnestic and laboratory characteristics of patients with COVID-19 who required hospitalization during the third wave of the epidemic in Ukraine, in order to determine the risk predictors of fatal outcome.

Materials and methods. The study was a single-center retrospective analysis conducted on an original cohort of 632 patients who were admitted with confirmed COVID-19 to Public Non-profit Organization "City Clinical Hospital № 4" Dnipro City Council during August-October 2021. The following data were obtained and analyzed from the medical records of the studied patients: degree of severity at the time of admission according to the COVID-19 Severity Index, demographic characteristics, comorbidity, presentation, vital signs and laboratory parameters at admission, results of chest computed tomography, treatment options and the outcomes.

Results. The patients' median age was 63 years, 38,8 % were male. Hospital mortality rate was 23,58%. The median of bed count days — 9 [6, 12]. Fever (76,3 %), dyspnea (85,4 %), cough (53,3 %) and fatigue (49,5 %) were the most common clinical manifestations on admission. The percentage of patients with comorbidities was significantly higher among deceased (96,0 % vs. 56,1 %). The most prevalent were cardio- and neurometabolic comorbidities. The median SpO2 on admission was significantly lower among deceased — 86 [75, 90]. There were 25,44 % and 57,23 % of all hospitalized patients who received ICU care and oxygen therapy, respectively. The regression analysis revealed the age older than 57 years (HR 3,198, 95 % CI 1,992–5,134), neuromuscular symptoms (HR 2,033, 95 % CI 1,358–3,045) and chest pain (HR 1,867, 95 % CI 1,055–3,306), the presence of co-morbidity (HR 26,678, 95% CI 8,498–83,750), primarily arterial hypertension (HR 3,945, 95 % CI 2,725–5,712), coronary heart disease (HR 7,619, 95% CI 5,155–11,259), heart failure (HR 2,823, 95% CI 2,020–3,944), diabetes (HR 2,966, 95 % CI 2,095–4,200), arrhythmia (HR 2,247, 95 % CI 1,524–3,312), cerebrovascular diseases (HR 2,746, 95% CI 1,725–4,372) were reliable predictors of fatal outcome in COVID-19. At the same time, after conducting the regression analysis of initial laboratory parameters, the additional prognostic risk factors were revealed: lymphocyte level ≤ 0,66 (HR 1,81, 95 % CI 1,19–2,76), AST > 50,2 (HR 1,86, 95 % CI 1,15–3,02), total protein ≤ 66,1 (HR 1,55, 95% CI 1,02-2,36), creatinine > 102,7 (HR 2,57, 95 % CI 1,51–4,34), urea > 7,54 (HR 2,30, 95 % CI 1,41–3,75), CRP > 46,8 (HR 4,37, 95 % CI 2,48–7,68).

Conclusion. The third wave of the coronavirus disease pandemic in Ukraine is characterized by a larger number of patients with a severe course and a lower level of blood oxygenation upon admission; accordingly, a more significant number of patients requiring oxygen support (57,23 %), treatment in the intensive care unit (25,44 %) and a higher mortality rate (23,58 %). For the timely identification of a high-risk group of patients with COVID-19 with the purpose of targeted monitoring and early change or intensification of treatment tactics, the following potential risk factors were determined: age > 57 years, presence of chest pain, and neuromuscular symptoms on admission to the hospital, more than 2 comorbidities, primarily, arterial hypertension, diabetes, cerebrovascular diseases, coronary heart disease, heart failure, and arrhythmia, as well as some laboratory indicators: lymphocyte level ≤ 0,66; AST > 50,2; total protein ≤ 66,1; creatinine > 102,7; urea > 7,54; CRP > 46,8.

Key words: COVID-19, hospitalized patients, risk factors for lethal outcome

Tetyana O. Pertseva
Dnipro State Medical University
Rector
Academician of NAMS of Ukraine, professor
9, Dzerzhynskogo str., Dnipropetrovsk, 49044, Ukraine
Tel.: 38056 713-52-57, dsma@dsma.dp.ua