

# DEPENDENCE OF ENDOTHELIN-1 LEVEL IN PATIENTS SURVIVED COMMUNITY-ACQUIRED PNEUMONIA ASSOCIATED WITH COVID-19 ON THE FEATURES OF ACUTE AND POST-ACUTE PERIODS

**T. O. Pertseva, N. O. Habshydzhe**

*Dnipro State Medical University, Dnipro, Ukraine*

**Abstract.** The impairment of endothelial function is one of the mechanisms contributing to the increased risk of cardiovascular and cerebrovascular events in patients who have experienced community-acquired pneumonia associated with COVID-19.

**The aim** of the study was to establish the connection between the level of endothelin-1 in peripheral blood of individuals who have experienced community-acquired pneumonia associated with COVID-19, with clinical-anamnestic, demographic, laboratory, and functional indicators in both the acute and post-acute periods.

**Materials and methods.** 39 patients (age — 57.0 (48.5; 64.0) years, male — 18 (46.2 %), female — 21 (53.8 %)) survived COVID-19-associated community-acquired pneumonia were investigated. They were investigated on the 45.0 (40.0; 60.0) day from the onset of COVID-19 and had the dyspnea at the moment of the investigation. The examination included analyzing complaints, medical history and documentation, physical examination, pulse oximetry (SpO<sub>2</sub>), a 6-minute walk test (6MWT), measurement of lung diffusion capacity (DLco), laboratory methods (C-reactive protein (CRP), D-dimer, platelet count, endothelin-1 measurements).

**Results.** Since it was found that patients, on one hand, had varying degrees of respiratory failure, different laboratory parameters during the acute period of COVID-19, and varying severity of dyspnea in the post-acute period of the disease, and on the other hand, exhibited wide fluctuations in endothelin-1 levels, a cluster analysis was conducted. Two clusters of patients were identified. Cluster 1 comprised 15 individuals with higher body mass index, lower SpO<sub>2</sub> levels at the time of examination, and poorer results in the 6MWT and DLco compared to Cluster 2, which included 24 individuals. The level of endothelin-1 in Cluster 1 was significantly higher than that in Cluster 2. Clusters 1 and 2 were comparable in terms of age and gender but differed in terms of treatment conditions (outpatient or inpatient), duration of hospitalization, minimum SpO<sub>2</sub> levels, CRP, and D-dimer levels in the acute period, and severity of the acute phase of COVID-19.

**Conclusion.** A high level of endothelin-1 in patients who have experienced severe or critical COVID-19, accompanied by elevated levels of CRP and D-dimer, overweight or obesity, significant dyspnea, low tolerance to physical exertion, and poor DLco in post-acute period of COVID-19, indicates the necessity of careful monitoring of these individuals to prevent the development of adverse events in post-acute period of COVID-19.

**Key words:** COVID-19, SARS-CoV-2 infection, post-acute COVID-19, endothelial function, endothelin-1, CRP, D-dimer.