Роль маркерів запалення, тяжкості стану й інфузійної терапії при пневмонії, зумовленій COVID-19

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Обґрунтування. Коронавірусна хвороба (COVID-19), імовірно, в найближчі 2 роки залишиться важливим диференційним діагнозом у будь-кого, хто звернеться до лікаря з грипоподібним станом, лімфопенією та/або зміною нюху (аносмія) чи смаку.

Мета. З'ясувати, за якими маркерами запалення можна діагностувати ступінь тяжкості пневмонії, зумовленої COVID-19, із можливостями її інфузійної корекції.

Клінічні прояви захворювання за ступенем тяжкості можна класифікувати на п'ять форм. Безністомний (радше
Role of markers of inflammation, severity and infusion therapy in COVID-19-defined pneumonia

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Background. Coronavirus disease (COVID-19) is likely to remain an important differential diagnosis in the next 2 years for anyone seeing a doctor with a flu-like condition, lymphopenia and/or a change in smell (anosmia) or taste.

Objective. To consider by what markers of inflammation it is possible to diagnose the severity of COVID-19-defined pneumonia with the possibility of its infusion correction.

Materials and methods. The clinical manifestations of the disease by severity can be classified into five forms: asymptomatic, but rather presymptomatic, according to clinical manifestations, infectious process can be attributed to persons with a positive PCR-test result for SARS-CoV-2 and normal C-reactive protein (CRP), interleukin-6 (IL-6) and ferritin. Lymphopenia is a negative prognostic factor. A mild course of the disease is characterized by any of the different signs and symptoms (eg, fever, cough, sore throat, malaise, headache, muscle pain) without shortness of breath or with shortness of breath, or with atypical images on chest radiographs and within 10-15 % lesion and still normal CRP, IL-6 and ferritin (~70-80 %). Moderate disease occurs in patients who have evidence of lower respiratory disease on clinical assessment or imaging, oxygen saturation (SpO₂) >94 % and an increase in CRP, IL-6, ferritin, and D-dimer less than 50 % of normal. The severe course of the disease includes patients with respiratory rate >30 per minute, SpO₂ <94 %, the ratio of the partial pressure of oxygen in arterial blood to the fraction of inhaled oxygen (PaO₂/FiO₂) <300 mm Hg, infiltrates affecting >50 % of the lung parenchyma and a possible increase in CRP, ferritin, IL-6 and D-dimer more than 2-3 times (~20 %). The critical course of the disease is respiratory failure, septic shock and/or multiple organ failure, subtotal lesions of the parenchyma of both lungs (1-5 %).

Because the disease manifests itself as pneumonia, radiological imaging plays a fundamental role in the diagnostic process, treatment, and follow-up. Standard X-ray examination of chest has low sensitivity in detecting early changes in the lungs and in the initial stages of the disease. At this stage, it can be completely negative. In later stages of infection, chest X-ray usually reveals bilateral multifocal alveolar opacities, which tend to coalesce until the lung is

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completely opaque. Pleural effusion may occur. Given the high sensitivity of the method, computed tomography (CT) of the chest, in particular high-resolution CT, is the method of choice in the study of COVID-19 pneumonia, even in the initial stages.

There is no specific antiviral treatment recommended for COVID-19, and there is currently no vaccine. Treatment is symptomatic, and oxygen and fluid therapy represent the first step towards resolving respiratory distress and intoxication. Non-invasive and invasive mechanical ventilation may be required in cases of respiratory failure that is resistant to oxygen therapy. For the treatment of severe forms of the disease (>50% of the lesion of the lung parenchyma), antioxidant therapy is necessary. The key requirement is to influence mitochondrial permeability, that is, to pass through the membrane of cells and mitochondria and accumulate in mitochondria (inactivation of ROS), as well as block the signals of pathways that transmit instructions from the surface to the nucleus to start inflammation (IL-1, -6, -18) in order to ensure the survival of cells as long as possible. With this pathogenetic purpose, to stop the “cytokine shtrom” we use edaravon (Xavron) 30 mg and Tivorel 100.0 ml.

Conclusions. We have shown that in patients with moderate, severe and critical COVID-19-defined pneumonia (CRP ≥100 mg/l, ferritin ≥900 ng/ml, IL-6 >202.3 pg/ml) Xavron and Tivorel as an intravenous infusion caused clinical improvement in 71% of patients.

Key words: pneumoniae, COVID-19, cytokine shtrom, antioxidant therapy, infusion.