Наукові перспективи
Видавнича група

СУЧАСНІ АСПЕКТИ МОДЕРНІЗАЦІЇ НАУКИ: СТАН, ПРОБЛЕМИ, ТЕНДЕНЦІЇ РОЗВИТКУ

у рамках Видавничої групи «Наукові перспективи»

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POSSIBILITIES OF DIAGNOSIS OF PULMONARY EMBOLISM AT THE PREHOSPITAL STAGE IN PATIENTS WITH CORONAVIRUS INFECTION

Pulmonary embolism (PE) is a complete or partial occlusion of the trunk or branches of the pulmonary artery by thrombotic masses. PE occurs as a complication of various diseases, including coronavirus disease (COVID-19). It is known that patients with

COVID-19 have an increased tendency to thrombosis in the microcirculatory tract and in the main vessels, even in the absence of risk factors, the presence of which further increases the likelihood of PE [1].

Due to the high prevalence of COVID-19 worldwide, it is necessary to identify pre-hospital patients with possible development of PE to determine further tactics, including the need for hospitalization, anticoagulant therapy for prevention or, conversely, lack of treatment in patients who have a very low risk of PE.

PE has no specific symptoms. Clinical manifestations, which the doctor pays attention to in terms of PE, often indicate a high risk of death and have manifestations of hemodynamic instability (chest pain, presyncopal or syncopal state, drop in blood pressure, hemoptysis or severe shortness of breath with signs of severe pulmonary insufficiency). In outpatient practice, low-risk PE is most common, which requires, first of all, stratification of the patient for the possibility of the occurrence of PE. The Geneva scale and the Wales scale are used for clinical stratification [2]. If a high risk of PE is detected on these scales, the patient should be advised to undergo computed tomography (CT scan), and if impossible or contraindicated, ventilation-perfusion (V/P) scintigraphy of the lungs. Once the diagnosis is confirmed, the severity of PE should be assessed using the PESI or sPESI scale and indications for hospitalization should be determined according to Hestia criteria. If the severity of PE is determined or at least one Hestia criterion is present, the patient needs to be hospitalized. Patients with a I-II class (scale PESI) or a reduced PESI (sPESI) gain 0 points should be considered for outpatient treatment of PE. They do not need to assess the risk of bleeding, and they do not need to determine the ratio of the size of the right and left ventricles according to computed tomography or

right ventricular dysfunction according to echocardiography. In cases where dilatation of the right ventricle was detected by CT scan or echocardiography-examination in patients suitable for outpatient treatment, the definition of biomarkers is shown: natriuretic peptide B-type (BNP), natriuretic peptide N-terminal B-type, troponin I or T. Increasing their level requires hospitalization. At detection of dysfunction of a right ventricle of such patients carry to group of high risk of development of hospital death. They need more aggressive therapy [2].

Attention should also be paid to patients who have "masks" of low-risk PE. These are recurrent pneumonias of unknown etiology, transient dry pleurisy, hemorrhagic pleurisy; recurrent syncope (collapse), collapse with shortness of breath and tachycardia; sudden attacks of chest tightness, difficulty breathing and further fever; unexplained fever that does not respond to antibacterial therapy; the appearance or progression of symptoms of heart failure resistant to treatment; the appearance and / or progression of symptoms of acute or chronic pulmonary heart disease in the absence of indications for chronic diseases of the bronchopulmonary system; exacerbation of coronary heart disease; septic conditions. Accordingly, this category of patients should also be stratified for the clinical probability of pulmonary embolism.

Finding PE in every patient with shortness of breath or chest pain can lead to high costs and complications due to unnecessary tests, so criteria have been developed for emergency department patients to select, on a clinical basis, patients who are so likely to have PE. diagnosis should not even begin: age less than 50 years; heart rate less than 100 beats per minute; oxygen saturation more than 94%; no unilateral swelling of the leg; no hemoptysis; no recent injuries or surgeries; no history of venous thromboembolism; no oral contraceptive use.

Consideration should also be given to the management of a patient who is at low risk during clinical stratification of PE. According to all the recommendations, it is necessary to determine the D-dimer, which helps to exclude low-risk PE in the first stage of the study in 99%. However, in patients with COVID-19, the D-dimer is elevated and has an unfavorable prognostic value and does not always indicate the presence of PE. According to the recommendations of 2019 [2], it is less sensitive, and in COVID-19 even less, because the increase may be due to various reasons. For patients at intermediate risk or for low-risk individuals who do not meet all the exclusion criteria, the initial test is still to determine the level of D-dimer in plasma.

Age-adjusted thresholds are used in patients over 50 years of age (age × 10 ng / ml, not the threshold of 500 ng / ml), because the threshold levels of D-dimer increase with age. Patients with D-dimer levels below the age limit do not require any imaging studies and do not require anticoagulants. Patients with elevated D-dimer levels should be imaged (contrast-enhanced CT scan and, if impossible or contraindicated, V/P lung scintigraphy). Accordingly, when confirming the diagnosis of PE, an assessment of the need for hospitalization is performed. It should be noted that hospitalization of patients with COVID-19 has its own additional criteria [1] given the severity of the disease itself, and not just the presence of PE.

Another category of patients who should be considered at the outpatient level and recommended the assessment of thromboembolic events are patients who were discharged from the hospital after treatment of COVID-19 [1]. They are stratified according to the IMPROVE DD scale and determine further management tactics and the need for anticoagulant drugs at the outpatient level.

Therefore, the presence of coronavir infection in patients requires a more detailed assessment of the clinical condition,

stratification of the risk of PE at the outpatient level. In addition, stratification of the risk of thromboembolic events should be performed in patients who do not require hospitalization and in those who are discharged from the hospital.

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