

PULMONARY ARTERY THROMBOEMBOLISM. ETIOLOGY, PATHOGENESIS, CLASSIFICATION, CLINIC, DIAGNOSIS, COMPLICATIONS, TREATMENT**Khamdamov Botirjon Nusratullo ogli, Khaydarov Ogabek Ulugbek ogli**4th year students of the faculty of Pediatrics Samarkand State Medical University students**Gaybullayev Kamronbek Fakhridin ogli, Narzullayev Dostonbek Murodulla ogli**4th year students of the faculty of Folk Medicine**Qodirov Javokhir Jasurbek ogli**2nd year student of the faculty of Pediatrics**Adkhamov Asror Adham ogli**3rd year student of the faculty of Treatment

Abstract: This article describes in detail about pulmonary artery thromboembolism, its etymology, causes and its practical treatment in medicine.

Key words: Pulmonary artery, blood pressure, blood vessels, respiratory diseases, treatment, etc.

The pulmonary artery is the main blood vessel that carries blood from the heart to the lungs. Its blockage by a blood clot (thrombus) is called pulmonary embolism (PE). The formation of a blood clot in the venous system occurs as a result of stagnation of blood in the veins, vessel injury, and increased blood clotting. These factors, acting individually or together, are called Virchow's triad. In the vast majority of cases (95%), the source of pulmonary embolism is the veins of the lower extremities and pelvis (deep vein thrombosis). With atrial fibrillation, pulmonary embolism develops in 3-15% of cases. Pulmonary thromboembolism occurs when a blood clot travels through the venous system, travels to the right side of the heart, and then into the pulmonary arteries. The consequences depend on the size and number of blood clots in the initial state of the lungs, the ability of the body's thrombolytic system to dissolve blood clots, and how well the right ventricle of the heart is functioning. PE is the third most common disease after myocardial infarction and cerebral stroke, and is also one of the leading causes of mortality. In our country, the prevalence of pulmonary embolism is 35-40 cases per 100 thousand population. The risk of embolization increases when thrombi are located in the popliteal vein or higher. Thromboemboli can also form in the veins of the arms or the central veins of the chest cavity (occur when using central venous catheters or as a result of compression syndrome of the upper thoracic outlet).

Massive embolism of the pulmonary arteries can be manifested by a sharp decrease in blood pressure, dizziness, fainting or fainting states, suffocation, and myocardial pain. Blueness of the skin (cyanosis) of the upper body appears. Symptoms of submassive PE are similar to those of a heart attack. The pain intensifies when inhaling. Cough and hemoptysis are noted. Body temperature rises to subfebrile levels. There is damage to the pancreas. Non-massive pulmonary embolism may not have clinical symptoms - they manifest only with further damage to the lungs. Patients with acute pulmonary embolism may present with symptoms of deep vein thrombosis

(pain, swelling and/or erythema of the lower or upper extremities, usually on one side). Chronic thromboembolic pulmonary hypertension leads to right ventricular failure, manifested by dyspnea on exertion, fatigue, and peripheral edema that develops over months or years. The likelihood of pulmonary embolism is assessed using the Welsh or Geneva criteria, which take into account the patient's history, symptoms and age. Pulse oximetry, chest x-ray, ECG, and measurement of arterial blood gas composition are used as initial diagnostic techniques.

The main source of blood clots is the inferior vena cava system (up to 85%). Much less often, blood clots form in the superior vena cava system (1.3-1.7%) or in the right side of the heart (10-12%). The most common place for a blood clot to form is the veins of the legs. From there, the thrombus spreads proximally towards the heart. The primary formation of blood clots in large vessels - the femoral and iliac veins, the inferior vena cava - usually occurs after injuries or surgical operations. The greatest danger is posed by so-called floating blood clots. After breaking off, the blood clot passes through the right side of the heart and enters the pulmonary artery, leading to blockage of its branches. The size of the thrombus determines the caliber of the obstructed vessel and, to a large extent, the severity of the clinical picture (shock, hemodynamic disturbances). Highlight:

1. massive thromboembolism - develops when 50-75% of the vascular bed is blocked, it is accompanied by a clinical picture of shock, hypotension, acute right ventricular failure;
2. submassive thromboembolism - occurs when less than 30% of the vascular bed is blocked, accompanied by the development of pulmonary hypertension, dysfunction of the right chambers of the heart, but without their insufficiency;
3. non-massive thromboembolism, or thromboembolism of small branches of the pulmonary artery, it is not accompanied by hemodynamic disturbances.

Shortness of breath - its degree can vary within very wide limits. Sudden development of severe shortness of breath is characteristic of massive pulmonary embolism. With submassive PE, shortness of breath often develops gradually, but can increase quickly (over several hours or days). With thromboembolism of small branches of the pulmonary artery, there may be no shortness of breath at all or it may be mild. Pain syndrome is the most common symptom. Pressing pain behind the sternum, significantly pronounced, not associated with the act of breathing (angina-like variant), is caused by ischemia of the right ventricular myocardium due to its acute overload and is characteristic of massive and submassive PE. With non-massive pulmonary embolism, pleural pain syndrome occurs due to the development of infarction pneumonia. An abdominal variant of the pain syndrome is also possible, characterized by pain in the right hypochondrium, associated with acute liver swelling with the development of right ventricular failure. Tachycardia is a symptom that develops in almost every patient with hemodynamically significant PE. Cough with pulmonary embolism is often reflexive in nature, it can be dry and intrusive. With the development of a pulmonary infarction, a cough may be accompanied by the release of sputum, sometimes mixed with blood, more often in the form of streaks or small clots.

Pulmonary embolism is a blockage of one of the pulmonary arteries in the lungs. In most cases, pulmonary embolism is caused by blood clots that travel to the lungs from the deep veins of the legs or, less commonly, from veins in other parts of the body. Because clots block blood flow in the lungs, pulmonary embolism is life-threatening. However, timely diagnosis and treatment of pulmonary embolism significantly reduces this risk. Taking steps to prevent blood

clots can help avoid this dangerous condition. Pulmonary embolism begins when a blood clot enters an artery in the lungs. These clots most often travel from the deep veins of the legs. In many cases, pulmonary embolism involves multiple clots. Parts of the lung fed by blocked arteries are deprived of blood and may atrophy. This is called a pulmonary infarction. Because of this, the supply of oxygen to other organs to the lungs is disrupted. Massive pulmonary embolism can be life-threatening. It can also lead to pulmonary hypertension, a condition in which blood pressure in the lungs and right side of the heart is too high. This forces the heart to work harder to push blood through these vessels, which increases blood pressure and ultimately weakens the heart muscle.

Clinical recommendations for the prevention of pulmonary embolism primarily include measures to prevent the formation of blood clots in the deep veins of the legs (deep vein thrombosis). To do this, you need to observe regular physical activity, use comfortable shoes, give up bad habits, and adhere to a healthy diet. If you are predisposed to varicose veins, it is recommended to wear compression hosiery, which improves blood circulation in the lower extremities. During long trips, you need to drink plenty of fluids and move periodically. If you are concerned about symptoms that indicate impaired lung function, please contact our clinic. The clinic employs experienced pulmonologists. Call for a consultation or make an appointment.

References:

1. Евразийские рекомендации по диагностике и лечению хронической тромбоэмболической лёгочной гипертензии (2020). [Текст] / И.Е. Чазов [и др] // Евразийский кардиологический журнал. -2021.-№1.-С.6-43.
2. Incidence and risk factors of chronic thromboembolic pulmonary hypertension after acute pulmonary embolism: a systematic review and meta-analysis of cohort studies/ M. Zhang [et al] // Journal of thoracic disease -2018. -№10(8). -P.4751-4763.
3. ESC Scientific Document Group: 2020 ESC Guidelines for the management of adult congenital heart disease [Текст] / H. Baumgartner [et al] // European Heart Journal -2020.
4. Acute central thromboembolic disease: posttherapeutic follow-up with spiral CT angiography [Текст] / M.Remy-Jardin [et al] // Radiology. -1997. -№203(1). -P.173-180.
5. Путь от тромбоэмболии лёгочной артерии к хронической тромбоэмболической лёгочной гипертензии: факторы риска. Патология кровообращения и кардиохирургия [Текст] / А. М. Чернявский [и др.] // -2021. -№25(3). –С. 11-19.