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**HAEMODYNAMICS OF THE CORONARY HEART VESSELS  
IN CASE OF ATHEROSCLEROSIS**

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Haemodynamics is the movement of blood through blood vessels, resulting from differences in hydrostatic pressure in different parts of the circulatory system, atherosclerosis being one of the diseases leading to disruption of this process.

In fact, atherosclerosis is the process of cholesterol deposition in the vessel wall and the formation of atherosclerotic plaques causing narrowing of the artery, with reduced blood flow to the organs (ischaemia) and subsequent thrombosis with complete obstruction of the artery (occlusion). However, the interpretation of atherosclerosis varies due to its chronic nature in the coronary arteries of the heart, characterized by the formation of cholesterol plaques resulting from disrupted lipid metabolism.

The development of atherosclerosis can result in the following haemodynamic changes. The first change in haemodynamic function is decreased blood flow due to atherosclerotic plaques narrowing the vessel lumen. This can lead to reduced blood flow in the coronary arteries, increasing the risk of heart attack or blood clot formation. The next change is increased resistance, as atherosclerosis causes vascular resistance to rise, making it harder for the heart to pump blood through the vessels and resulting in high blood pressure and stress on the heart. Another dangerous change is the risk of thrombosis, as atherosclerotic plaques can cause blood clots that block the vessel and result in myocardial ischaemia. Vascular spasms can also occur, causing impaired haemodynamics, reduced blood flow, and an increased risk of heart muscle ischaemia.

According to statistics, the main cause of sudden death is atherosclerosis of the blood vessels of the heart and brain. The total mortality from vascular atherosclerosis is 800.9 per 100,000 population, which is the highest rate in the world.

The principles of hemodynamic monitoring have seen little change in recent years. The primary objective of monitoring hemodynamics in critically ill patients remains accurately assessing the cardiovascular system's response to tissue oxygen needs. Hemodynamic monitoring, when combined with oxygen transport assessment, helps distinguish the extent of pulmonary and cardiovascular dysfunction contributing to hypoxemia. This differentiation is crucial because treatments aimed at correcting pulmonary issues, such as increasing airway pressure, can negatively impact venous return and cardiac output. When monitoring cardiac function, both the right and left heart should be evaluated individually for their function, structure, and pressure generation. The pulmonary capillary bed, located between the right and left heart, is a compliant system with a high blood-sequestering capacity. All ICU patients should undergo standard basic hemodynamic monitoring, which includes ECG, heart rate, blood pressure, central venous pressure, temperature, peripheral venous oxygen saturation, and blood gas analysis.

The State Programme "People's Health and Demographic Security for 2021-2025" is being implemented in the Republic of Belarus in order to effectively prevent, reduce morbidity, mortality, disability of the population from diseases of the circulatory system, improve the quality and accessibility of medical care for patients with such diseases.

The study of coronary haemodynamics in conditions of atherosclerosis allows to determine the degree of blood flow disorders, identify possible complications and develop a treatment strategy to improve the patient's condition and prevent cardiovascular complications.