

THE ROLE OF LACTATES IN MEDICINE

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Lactate, or lactic acid (2-hydroxypropanoic acid), is a normal product of metabolism and is formed from pyruvic acid under anaerobic conditions in skeletal muscle tissue (25%), brain (20%), skin (25%), erythrocytes (20%), leukocytes, mucous membrane of the small intestine and the renal medulla. Preferably lactate is metabolized in the liver (60%), kidneys (30%) and only a small amount is utilized in other tissues (10%).

Measuring blood lactate levels is especially important in cases of severe sepsis and septic shock. In this context, lactate is commonly used to assess the severity of the disease, analyze the response to treatment and further prognosis. Hypoperfusion, which is most often associated with blood loss, is observed in patients with trauma. Elevated lactate levels may help to identify patients in whom normal vital signs are initially masked by tissue hypoperfusion. In patients with cardiogenic shock who require extracorporeal membrane oxygenation, lactate is a useful parameter for predicting mortality. Lactate levels increase during strenuous exercise, mainly due to anaerobic glucose metabolism. A common feature of primary and metastatic cancer is an increase in the rate of glycolysis, which leads to increased glucose uptake and lactate formation even under normal oxygen levels.

A number of drugs and toxic agents are associated with elevated blood lactate levels. These include metformin, acetaminophen, linezolid, beta2-agonists, propofol, adrenaline, theophylline, ethanol, cocaine, carbon monoxide, cyanides.

Elevated lactate levels occur in many clinical pathologies, which puts patients at significant risk of developing the disease and is a predictor of mortality. Measurement of lactate levels (except for intensive care units) is recommended in routine laboratory tests, as this laboratory test may help to differentiate the patient's diagnosis.

References:

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