

CLINICAL MANIFESTATIONS, DIAGNOSTIC CRITERIA AND THERAPEUTIC MEASURES FOR SUDDEN CORONARY DEATH

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Abstract

The problem of mortality from cardiovascular diseases continues to be relevant throughout the world. At the same time, SCD accounts for about half of all deaths. The implementation of the SCD scenario occurs as a result of the development of acute left ventricular failure against the background of malignant ventricular arrhythmias, the manifestation of which is accompanied by disturbances of both systemic and regional hemodynamics, primarily from the central nervous system. The presence or absence of structural pathology of the heart may be of decisive importance for adaptive changes in cardiac output parameters, and therefore for the nature of the clinical course of arrhythmia. In this regard, the key significance for the clinical interpretation of the malignant course of any arrhythmia and determination of its life-threatening nature should be considered: fainting, presyncope, dizziness, hypotension, progression of manifestations of heart failure, angina pectoris.

Keywords: Hypotension, angina , anoxia, acute left ventricular failure, ventricular fibrillation, asystole.

Introduction

Cessation of blood circulation causes rapid death due to anoxia of the brain if blood circulation and breathing are not restored within 3-5 minutes. A longer interruption in the blood supply to the brain leads to irreversible changes in it, which predetermines an unfavorable prognosis even if cardiac activity is restored at a later period. Approximately 3 minutes after stopping, irreversible changes occur in the cells of the cerebral cortex. Ventricular fibrillation occurs suddenly, after 3-4 seconds. dizziness and weakness appear. After 15-20 seconds. the patient loses consciousness after 40 seconds. convulsions appear - tonic contractions of skeletal muscles. At the same time, dilation of the pupils is noted, which reaches its maximum size after 1.5 minutes. The maximum dilation of the pupils indicates that half the time has passed during which the restoration of brain cells is possible. Noisy and rapid breathing gradually slows down and stops in the second minute of clinical death. The pulse is determined only in the carotid artery.

Diagnostic criteria:

1. Loss of consciousness. 2. Absence of pulse in large arteries (carotid and femoral). 3. Absence of heart sounds. 4. Stopping breathing or the appearance of agonal breathing. 5. Pupil dilation, lack of reaction to light. 6. Change in skin color (gray with a bluish tint). ECG - signs: With ventricular fibrillation - chaotic, deformed ventricular waves of high or low amplitude. With ventricular flutter, it is impossible to distinguish QRS, ST and P. There is no isoelectric line. With



electromechanical dissociation, a rare sinus nodal rhythm can be recorded, which turns into idioventricular, followed by asystole. With asystole - a straight line on the ECG.

Treatment of a patient with sudden death.

Only immediate diagnosis and emergency medical care can save the patient. In any case of sudden loss of consciousness, the following scheme for emergency measures is recommended: - the patient is placed on his back without a pillow on a rigid base - the presence of the carotid and femoral arteries is checked - if cardiac arrest is detected, external cardiac massage and artificial respiration are immediately started. Resuscitation measures begin with a single blow to the middle part of the sternum with a fist. 1. Immediately perform closed cardiac massage with a frequency of 80-90 compressions per 1 minute. 2. Ventilation in an accessible way (the ratio of massage and breathing movements is 5: 1, and when one resuscitator is working - 15: 2), ensure patency of the airways (throw back the head, extend the lower jaw, insert an air duct, according to indications - sanitize the airways): - use 100% oxygen; - intubate the trachea (the intubation process should not last more than 30-40 s); - do not interrupt cardiac massage and mechanical ventilation for more than 30 s. 3. In case of ventricular fibrillation and immediate defibrillation is impossible: - precordial stroke; - if there is no effect, continue cardiopulmonary resuscitation and ensure the possibility of defibrillation as quickly as possible. 4. Catheterize the central (peripheral) vein. 5. Adrenaline (epinephrine) 1 mg every 3-5 minutes of cardiopulmonary resuscitation. 6. As early as possible - defibrillation 200 J; - if there is no effect - defibrillation 300 J; - if there is no effect, act in accordance with clause 7. 7. Act according to the scheme: intravenous medication - cardiac massage and mechanical ventilation, after 30-60 s: - defibrillation 360 J; - lidocaine 1.5 mg/kg - defibrillation 360 J; - if there is no effect, repeat the injection of lidocaine in the same dose after 3-5 minutes - defibrillation 360 J; - if there is no effect - ornid (bretylum tosylate) 5 mg/kg - defibrillation 360 J; - if there is no effect, after 5 minutes repeat the injection of Ornid (bretylum tosylate) at a dose of 10 mg/kg - defibrillation 360 J; - if there is no effect - novocainamide (procainamide) 1 g (up to 17 mg/kg) - defibrillation 360 J; - if there is no effect - magnesium sulfate 2 g - defibrillation 360 J; 8. In case of asystole: - if it is impossible to accurately assess the electrical activity of the heart, proceed according to paragraphs. 1-7; - if asystole is confirmed in two ECG leads, perform steps 1, 2, 4, 5; - if there is no effect, administer atropine 1 mg after 3-5 minutes until the effect occurs or a total dose of 0.04 mg/kg; - establish cardiac pacing as early as possible; - eliminate the possible cause of asystole (hypoxia, hypo- or hyperkalemia, acidosis, drug overdose, etc.); - sometimes the introduction of 240-480 mg of aminophylline (aminophylline) is effective. 9. In case of electromechanical dissociation: - carry out measures in accordance with paragraphs. 1, 2, 4, 5; - establish and correct a possible cause (massive pulmonary embolism - see the corresponding standard, cardiac tamponade - pericardiocentesis, hypovolemia - infusion therapy, etc.). 10. Hospitalize the patient. 11. After ventricular fibrillation - special measures to prevent relapses (see section "Myocardial infarction"). Cardiopulmonary resuscitation can be stopped if: - persistent asystole that is not amenable to medication or multiple episodes of asystole are observed; - using all available methods, there is no evidence of CPR effectiveness within 30 minutes. Cardiopulmonary resuscitation may not be started: - in the terminal stage of an incurable disease (if the futility of CPR is documented in advance); - if more than 30 minutes have passed since the cessation of blood circulation; - with a previously documented refusal of the patient from cardiopulmonary resuscitation. The main dangers and complications: 1) after defibrillation -



asystole, ongoing or recurrent ventricular fibrillation, skin burn; 2) during mechanical ventilation - gastric overflow with air, regurgitation, aspiration of gastric contents; 3) during tracheal intubation - laryngo- and bronchospasm, regurgitation, damage to the mucous membranes, teeth, esophagus; 4) with closed heart massage - fracture of the sternum, ribs, lung damage, tension pneumothorax; 5) during puncture of the subclavian vein - bleeding, puncture of the subclavian artery, lymphatic duct, air embolism, tension pneumothorax; 6) with intracardiac injection - damage to the coronary arteries, hemotamponade, lung injury, pneumothorax; 7) hypoxic coma, encephalopathy; 8) respiratory and metabolic acidosis.

Notes

All drugs during cardiopulmonary resuscitation must be administered intravenously quickly. If there is no access to a vein, adrenaline (epinephrine), atropine, lidocaine (increasing the recommended dose by 1.5-3 times) is injected into the trachea (through an endotracheal tube or thyroid-cricoid membrane) in 10 ml of isotonic sodium chloride solution. Intracardiac injections (with a thin needle, with strict adherence to technique) are permissible only in exceptional cases, if it is impossible to use other routes of drug administration. Sodium bicarbonate 1 mmol/kg (3 ml of 4% solution per 1 kg of body weight), then 0.5 mmol/kg every 5-10 minutes, used for prolonged cardiopulmonary resuscitation in case of hyperkalemia, acidosis, overdose of tricyclic antidepressants, hypoxic lactic acidosis (adequate mechanical ventilation is required). In case of asystole or agonal rhythm after tracheal intubation and administration of drugs, if the cause cannot be eliminated, decide on cessation of resuscitation measures, taking into account the time elapsed from the onset of circulatory arrest (30 minutes). The criteria for the effectiveness of resuscitation measures are: constriction of the pupils with the appearance of their reaction to light. To reduce mortality in heart diseases, new approaches to the use of medicinal substances are being sought.

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