Thematic plan for practical classes in the discipline
"Emergency Cardiology and Other Emergency Conditions"
for 6th-year students of the Faculty of Foreign Students
(instruction in English)

1. Sudden Cardiac Death: Emergencies in Cardiology

Sudden cardiac death: definition, etiology, fundamentals of cardiac arrest pathogenesis, risk factors. Clinical, biological, and brain death. Asystole. Ventricular tachycardia. Ventricular fibrillation. Emergency medical care for ventricular tachycardia, ventricular fibrillation, and asystole.

Cardiopulmonary resuscitation. Stages of cardiopulmonary resuscitation. Cardiopulmonary resuscitation algorithm for pulseless ventricular tachycardia and ventricular fibrillation, asystole. Common errors during resuscitation. Post-resuscitation complications. Primary and secondary prevention of sudden cardiac death.

Conducting cardiopulmonary resuscitation (using simulation equipment) (cardiopulmonary resuscitation algorithm for pulseless ventricular tachycardia and ventricular fibrillation, asystole). Practicing cardiopulmonary resuscitation skills and treatment strategies for critical conditions using simulation equipment.

Examination of patients who have suffered ventricular tachycardia, ventricular fibrillation, asystole, after interventional or cardiac surgery: collection of complaints and anamnesis of the disease, physical examination, drawing up a plan for laboratory and instrumental examination, interpretation of the results of laboratory and instrumental research methods, formulation of a diagnosis, treatment plan.

Instrumental diagnostic methods in emergency cardiology. Echocardiography, Holter monitoring, stress testing, single-photon emission computed tomography, magnetic resonance imaging, spiral computed tomography, CT angiography. Coronary angiography: indications and technique. Indications for interventional and cardiac surgery in patients with cardiovascular pathology.

2. Hypertensive Crises. Primary and Secondary Prevention of Acute Cardiovascular Events

Hypertensive crisis: definition, main causes, classification, mechanisms of formation, clinical diagnostic criteria, emergency medical care, indications for hospitalization.

Examination of patients with hypertensive crisis, interpretation of laboratory and instrumental research results, formulation of a diagnosis, and preparation of a treatment plan.

Hypertensive crises associated with acute coronary syndrome, acute left ventricular failure, aortic dissection, and acute cerebrovascular accident. A differentiated approach to patient management for various cardiovascular diseases and internal organ pathologies. The appropriate rate of blood pressure reduction depends on various clinical situations (complications, comorbidities).

Basic approaches to cardiovascular risk stratification. Primary and secondary prevention of cardiovascular events. Principles of primary prevention of cardiovascular diseases. Non-pharmacological methods of preventing cardiovascular diseases, the importance of reducing table salt in the diet, comprehensive dietary changes, principles of physical exercise. Secondary prevention of cardiovascular events. Adherence to pharmacological treatment. Developing an action plan aimed at primary and secondary prevention of cardiovascular events. Medications that reduce mortality in individuals with cardiovascular pathology. Basic ways to reduce mortality from diseases of the circulatory system.

3. Acute coronary syndrome in patients with comorbid pathology.

Examination of patients with acute coronary syndrome with and without ST segment elevation, determination of optimal organizational tactics, interpretation of laboratory and instrumental research results, formulation of a diagnosis, and development of a treatment plan.

Management of acute coronary syndrome with and without ST-segment elevation in the prehospital and inpatient settings, emergency medical care (differentiated approach), and reperfusion therapy strategies. Characteristics of the disease course and management of acute coronary syndrome with various comorbidities.

Pharmacological therapy depending on the method of reperfusion of the infarct-related artery. Thrombolytic, antiplatelet, and anticoagulant therapy. Indications for percutaneous coronary intervention and other cardiac surgical treatment options.

Criteria for diagnosing unstable angina and acute myocardial infarction. Treatment options for various complications of myocardial infarction.

4. Acute heart failure

Classification, etiology, diagnostic criteria. Examination of patients with acute heart failure. Differential diagnosis, emergency medical care at acute left ventricular failure.

5. Syncope. Tachyarrhythmia.

Diagnostic criteria, pathogenesis, clinical picture, classification of syncopal conditions.

Syncope associated with cardiovascular pathology (coronary heart disease, cardiomyopathy, channelopathy and other pathological conditions), main etiological and pathogenetic aspects.

Methods for examining patients with syncope, a differential diagnostic algorithm for syncope. Basic approaches to treating patients with syncope. Risk stratification for sudden death in syncope.

ECG diagnostics of tachyarrhythmias. Extrasystole, paroxysmal tachycardia, atrial fibrillation/flutter: diagnosis and treatment. WPW and CLC preexcitation syndromes: pathogenesis, ECG criteria, classification, clinical manifestations, treatment and diagnostic strategies.

6. Bradyarrhythmia

ECG diagnostics of bradyarrhythmias. Sinoatrial and atrioventricular blocks, diagnosis, and treatment.

Pacemakers, cardioverter-defibrillators, cardiac resynchronization devices: classification, operating principles, indications and contraindications for installation.

7. Acute respiratory failure.

The main causes of acute respiratory failure are: severe pneumonia, bronchial asthma, bronchiolitis, respiratory distress syndrome, and foreign bodies in the respiratory tract.

Examination methods for acute respiratory failure. Differential diagnosis and emergency medical care for acute respiratory failure. Oxygen therapy options, extracorporeal oxygenation, indications and main methods.

8. Pulmonary embolism

Etiology, risk factors, pathogenesis, clinical manifestations, and diagnosis of pulmonary embolism. Differential diagnosis of pulmonary embolism. Treatment strategies for pulmonary embolism.

9. Shock states in certain diseases of internal organs

Examination methods for shock conditions, diagnostic criteria, differential diagnostics.

Anaphylactic shock. Mechanisms of development, diagnostic criteria, diagnostic algorithms, and intensive care for anaphylactic shock.

Hypovolemic shock: mechanisms of development, diagnostic criteria, diagnostic algorithms, intensive care.

Septic shock, shock: mechanisms of development, diagnostic criteria, diagnostic algorithms, intensive care.

Diagnostics and emergency medical care for bleeding from various sources.

Multiple organ failure, pathogenesis, clinical manifestations (ischemic encephalopathy, acute kidney injury, liver injury, respiratory distress syndrome), diagnostic methods, diagnosis formulation, principles of treatment tactics, prognosis.

10. Acute liver failure. Acute kidney injury.

Acute liver failure, acute kidney injury: etiopathogenesis, diagnostic and treatment algorithm.

Examination of patients with acute liver failure and acute kidney injury, interpretation of laboratory and instrumental examination results, diagnosis formulation, and development of an examination and treatment plan.