Cardiac and vascular surgery

Discipline

Cardiac and vascular surgery

Obligatory

Master Degree
Lectures, seminars, practical exercises at the patient's bed

IV and V (English)

Exam: Yes/ after IX semester /

26 hours

Technical methods:
Multimedia presentations, discussions, demonstration of patients, algorithms of behavior and
discussions on certain topics

Tests, practicaol examination

Exam:
Yes / written and oral /

State Examination:
No
Leading lecturer:
Habilitated lecturer from the Department of Cardiac and vascular surgery
Department:

Cardiac and vascular surgery

Anotation

Training in cardiac and vascular surgery for medical students includes contemporary methods of physical and instrumental examination of the patients with cardio-vascular diseases. Basic knowledge of the principles of extracorporeal circulation and electrocardiostimulation. Surgical tactics in congenital and acquired heart disease, contemporary diagnosis and treatment of coronary artery disease, etiology, diagnosis and treatment of acute and chronic

arterial and venous diseases. Vascular aneurisms – types and classification of arterial and venous aneurisms. Vascular injuries. Acute and chronic venous and lymphatic vascular insufficiency. Congenital vascular diseases. Contemporary treatment of carotid artery disease, vertebro-basilar syndrome and jugular vein diseases. Endovascular and hybrid treatment of arterial and vascular diseases. Principles of fibrinolytic, antiplatelet and anticoagulant treatment in patients with cardiovascular diseases.

Aims

The main purpose of the training in cardiac and vascular surgery is medical students to get acquainted with basic principles of diagnosis and treatment tactics in patients with cardiac and vascular diseases.

Students have to learn how to diagnose, transport and treat emergency cardiovascular patients, as time is crucial in such cases. Students are trained to fulfill some of the required life-saving
procedures in case of cardiac tamponade, severe arterial or venous bleeding, cardiac arrest. These are not always demonstrated during practicals, but they require sufficient theoretical knowledge.

TASKS OF THE SUBJECT

• Students will master the basics of the physical and instrumental methods for accurate and timely diagnostics and to be able to orientate in further treatment in patients with acute and chronic cardiovascular diseases.

• To be trained to perform basic and life-saving actions when necessary.

• To master and maintain the most necessary knowledge regarding diagnostics and treatment in this category of patients.

TRAINING METHODS

Lectures, practical training, group discussions. During the pre-graduate internship, the students will have the possibility to participate in diagnostics and treatment of patients with cardiovascular diseases.

TECHNICAL EQUIPMENT APPLIED DURING TRAINING

• Demonstration of specific tehniques for physical examination in patients with cardiovascular diseases.

• Demonstrating how to use and work with the most commonly used technologies and devices for diagnostics and treatment of such patients.

• Showing pattern, tables, and photos to demonstrate the subject matter.

• Use of the modern audio-visual equipment.

• Demonstration of clinical and operative findings in occasional and interesting cases (direct transmission from the operating room, showing video recordings).

CONTROL AND EVALUATION

• Current control - each exercise starts with an interview.
• Final exam – interview and written exam.

Form of control: tests.

MANDATORY COMPETENCES

• Students must gain the basic theoretical and practical knowledge about examination of patients with cardiovascular and surgical diseases including: interviewing patients, physical examination - especially palpation and auscultation of blood vessels, mastering the techniques for mechanical haemostasis in cases of bleeding from arterial and venous vessels, learning and application of the rules for aseptic and antiseptic treatment in patients with vascular injuries, prevention and protection of limb ischemia.

• Students must acquire theoretical knowledge that allows them to perform practical life-saving manipulations and procedures such as decompression of cardiac tamponade, stopping life threatening bleeding, appropriate pose of patient for transportation, etc.).

• Management with life-saving medications and treatments in situations such as: acute thrombosis - arterial or venous, cardiac arrest, use of defibrillator, etc - as primary treatment and patient refferal for furder treatment.

Lecture course timetable
Cardiac and Vascular Surgery

Lecture #1 (2 hours)

Examination of patients with Cardiac and Vascular surgical disorders/diseases - Congenital and acquired cardiac and vascular disorders.
Extracorporeal circulation, (ECC) / Cardio-pulmonary bypass, (CPB) - basic principles
Cardiac electric stimulation (Pacemakers) - basic principles

Lecture #2 (2 hours)

Congenital heart defects, Acquired valvular heart disorders, Ischaemic heart disease (Coronary artery disease - CAD) - surgical aspects

Lecture #3 (2 hours)

Acute and chronic peripheral vascular/arterial disease (PVD).
Vascular aneurysms.
Vascular trauma.

Lecture #4 (2 hours)

Acute and Chronic venous disorders: (superficial and deep vein thrombosis (DVT), pulmonary thrombembolism, varicose disease, post-phlebitic venous disorder, etc.)

Lecture #5 (2 hours)

Acute and acquired lymphatic disorders.
Contemporary surgical and endovascular strategies in Carodid artery disease.

Lecture #6 (2 hours)

The impact of endovascular diagnostic and interventional techniques in the field of patient treatment with Cardiac and Vascular surgical disorders.
Basic principles of Fibrinolytics, Anticoagulation and Anti-platelet therapy in Cardiac and Vascular surgery**.**

Practice session timetable
Cardiac and Vascular Surgery

Practice #1

Cardiac surgery
Extracorporeal circulation/Cardio-pulmonary bypass demonstration.
Surgical approach to patients with congenital heart malformations, acquired valvular heart disease and coronary artery disease - familiarisation with patient cases, demonstration and analysis, management plan.

Practice #2

Surgical management of pericardial disorders (pericardiocentesis, pericardial window/fenestration, etc.)
Management of cardiac conduction and rhythm disturbances - pacemakers.
Cardiac trauma management - basic principles

Practice #3

Vascular diagnostic and investigation modalities: (palpation, auscultation, Doppler ultrasound, rheography interpretation, photoplethysmography, angiography, etc.)

Practice #4

Examination of patient suffering from Acute arterial disorder
(diagnostic and management plan)

Practice #5

Chronic arterial disorder/Peripheral vascular disease (PVD): (Etiology, Clinical presentation, Diagnostics, Management, Surgical procedures).
Surgical strategies in Carotid artery disease and Reynaud disease

Practice #6

Vascular aneurysms (Types, Clinical presentation, Diagnostics, Management).

Practice #7

Venous disorders: (Congenital venous malformations, Varicose disease, Post-phlebitic venous disorder, Superficial and Deep venous (DVT) thrombosis - diagnostic methods and management plan).
Pulmonary thrombembolism (Prophylaxis, Diagnostics and Management)

Practice #8

Examination of patient with surgical disorders of lymphatic system: (Congenital lymphatic malformations, Acquired lymphedema, Elephantiasis - etiology, diagnostics, conservative and operative management).

Practice #9

Fibrinolytic and anticoagulation treatment in Vascular surgery patients:
(Indications, Guidelines, Patient follow-up, Possible complications - prevention and management).

Practice #10

Cardiac Electric Stimulation (Indications, Guidelines, Methods of pacemaker support, Control).

CARDIOVASCULAR SURGERY

1. Anatomy of the heart and great vessels. Major vessels of the neck.

Mediastinum – definition, anatomy and contents.

2. Congenital heart defects - classification, diagnosis, surgery

3. Ischemic heart disease. Surgical treatment. Indications for myocardial

revascularization. Arterial and venous bypass grafts

4. Surgical treatment of complications of acute myocardial infarction

5. Acquired valvular heart disease - etiology, diagnosis, operative technique,

indications for surgery

6. Pulmonary embolism - etiology, clinical features, diagnosis, treatment

7. Aneurysms – classification, clinical manifestations, diagnosis, surgical treatment – indications
8. Acute aortic dissection - risk factors, classification, clinical manifestations, diagnosis, indications and operative techniques
9. Cardiac tumors – clinical manifestation, diagnosis and treatment
10. Cardio-vascular injuries - diagnosis and treatment. Iatrogenic injuries
11. Temporary and permanent electrocardiostimulation
12. Acute arterial insufficiency of the extremities and mesenteric arteries - clinical fearures, diagnosis, treatment
13. Chronic arterial occlusive disease of the extremities – clinical features, classification, diagnosis, operative techniques
14. Obliterating atherosclerosis, Thromboangiitis obliterans, diabetic angiopathy - specific features
15. Raynaud's disease, Raynaud syndrome
16.Superficial and deep thrombophlebitis. Phlegmasia cerulea dolens
17. Varicose disease - etiology, clinical manifestations, treatment
18. Postphlebitic syndrome.P aget–Schroetter disease – clinical features and treatment
19. Acute and chronic lymphatic insufficiency
20. Anticoagulant and fibrinolytic therapy in surgery – principles
21. Stenotic-obliterative diseases of extracranial arteries - surgical techniques

1. Lecture course

2. Cardiac Surgery, Kirklin/Barratt-Boyes, 4th edition

3. Rutherford's Vascular Surgery, 8th edition

4. Multimedia manual of cardiac surgery. (ctsnet.org)